PRICEWATERHOUSECOOPERS

Goulburn Broken Catchment Management Authority

Lower Goulburn Floodplain Rehabilitation Scheme

Business Plan Summary

July 2001

Contents

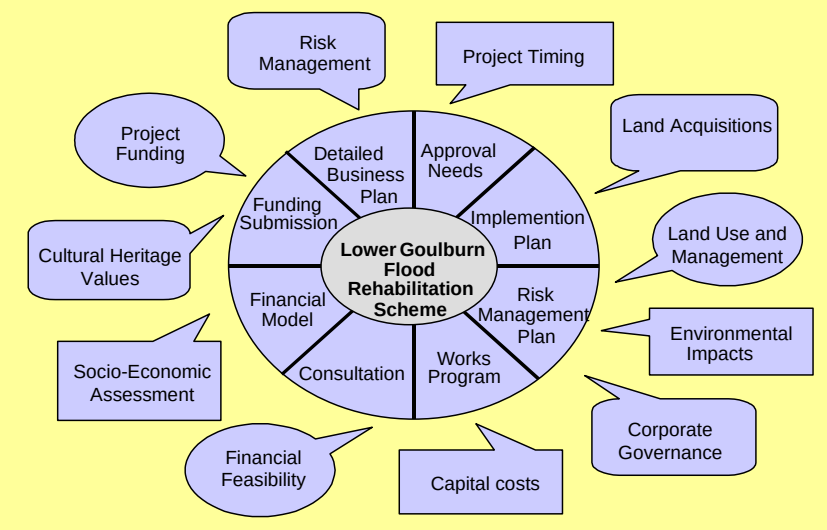
Glossary

ARI	Average Recurrence Interval
BCR	Benefit Cost Ratio
DCF	Deep Creek Floodway
Deep Creek Junction	The residential area situated on the junction of Deep Creek and the River Murray
GBCMA	Goulburn Broken Catchment Management Authority
GHG	Greenhouse Gases
IRR	Internal Rate of Return
Land Monitor	Government representative who oversees large land transactions that have been facilitated by ministerial approval.
LGFRS	Lower Goulburn Floodplain Rehabilitation Project
NITA	Notice of Intention to Acquire
NOA	Notice of Acquisition
NPV	Net Present Value
SMEC	Snowy Mountains Engineering Group
VCAT	Victorian Civil and Administrative Tribunal
VGS	Victorian Government Solicitor
VPPs	Victorian Planning Provisions

1. Business Plan Overview

1.1 Business Plan Overview

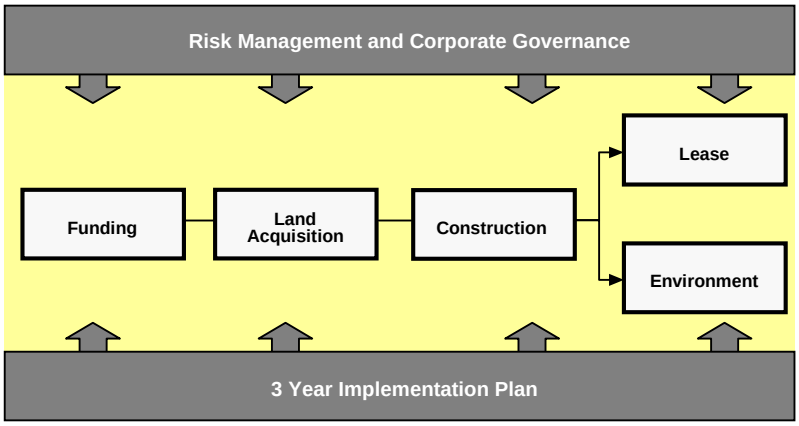
This report sets out the underlying strategy, optimal structures and implementation plan for the LGFRS. The following diagram depicts the key elements of this Business Plan and the different analytical processes required in completing the plan.



Prior to the commencement of this Business Plan two other studies were carried out into facets of the LGFRS which confirm the validity of the Scheme. These studies were:

- The Lower Goulburn Levee Audit Report produced by the SMEC
- An Economic Assessment of the LGFRS produced by Read Sturgess and Associates.

The key process for the implementation of the LGFRS is illustrated below:



1.2 The Floodplain Rehabilitation Scheme

The meandering 156 km stretch of the river between Shepparton and Kanyapella is closely flanked by a system of levees built prior to the turn of the century. During a large flood the levees cannot contain the amount of water flowing down the Lower Goulburn. Despite controlled releases at Loch Garry and elsewhere, in floods equal to or greater than approximately a 10-year ARI water spills over and through the levees onto the surrounding floodplains to both the north and south of the river. In addition, the high levels of nutrient and salinity loads carried into the Murray by the Goulburn River floodwaters poses an environmental problem to the community.

In the past damaged levees were repaired using Natural Disaster Funds, but such funding is unlikely to be available in the future unless the community is willing to put in place strategies to minimise flood damage. This requirement is now incorporated into the Conditions for Commonwealth Financial Assistance. This project seeks to find a solution to the Lower Goulburn flooding problem based on the concept that the Deep and Bunbartha Creeks on the northern floodplain offer the most effective location utilising the natural floodplain to allow natural flows to occur.

The Scheme will entail rehabilitation of the floodplain so that it operates in a more natural fashion. It will require the development of a leveed floodway of approximately 10,500 ha with a possible buy back of up to 9,700 ha of land from the relevant landholders.

Detailed hydraulic modelling will determine the protection level that will be achieved through the Scheme. However, it is expected that the Scheme will protect the Lower Goulburn Region from an equivalent flood to 1993.

The details of the land utilised for the Scheme are provided below:

Land Details	Current Land Usage
From Shepparton to Echuca	Essentially dryland
Approximately 10,500 ha of land affected	Predominantly grazing with some cropping
95 farmers (landowners) affected	Minimal water rights attaching
Close to Bunbartha and Nathalia	No substantial recreational use
Predominantly flat	No substantial crown land
	Minimal housing

There is also a linkage between the Broken Creek and the Lower Goulburn floodplains upstream of Nathalia. However, this linkage is currently blocked by a Goulburn-Murray Water channel. It is expected that the option of reinstating this floodplain to reduce flood heights at Nathalia will be considered as part of the planned Nathalia floodplain study.

2. Land Acquisition Strategy

2.1 Land Acquisition Strategy

Land acquisition will be the primary method of compensation for the creation of the DCF, with the process governed by the Land Acquisition and Compensation Act 1986.

GBCMA will acquire all the land within the DCF as well as any portions that may lie outside the levees. Based on the draft alignment, the GBCMA may potentially acquire 13,891 ha of land of which 4,151 ha will be outside the DCF (and will be subsequently sold). This gives net land to be acquired in the DCF of 9,740 ha.

The GBCMA is to offer as much flexibility to the existing landowners as possible to alleviate any potential social impacts that the land acquisition would have on the landowners. A specifically tailored package will be offered to each landowner, giving the landowner choices regarding the specific nature of the acquisition of his land. The package to be offered will be based on the following principles:

- The package will apply to landowners within the DCF only.
- The package will be negotiated with individual landowners, and each lot within the DCF will be considered individually.
- Each landowner will be given the option of selling only the portion of the land within the DCF, any piece of land outside the DCF that is part of a lot within the DCF and/or his entire farm should the acquisition make his business unviable.
- Each landowner will be given the option of selling water rights to the GBCMA.
- Each landowner will be given a maximum initial lease option of 3 years on the land acquired subsequent to reversion to a floodplain.
- Where acquisition of the land will make a landowner's business unviable, the GBCMA will offer to purchase (and then resell) all the plant and equipment associated with business at a rate determined by a valuer. The GBCMA may also offer to purchase the entire business should it be deemed necessary. This will be subject to a business valuation conducted by a qualified accountant.
- Specific caveats will be put on land use during the term of the lease, and these will be included on a lot by lot basis.
- GBCMA will acquire land prior to the completion of planning amendments in special circumstances.

In addition, existing landowners will be given preference in:

- the purchase of land outside the DCF which the GBCMA will dispose of by:
  - offering the land to neighbouring landowners;
  - where there is more than one neighbouring landowner, offering the land through a closed tender process;
  - if the land is not sold to the above, conducting a public auction.

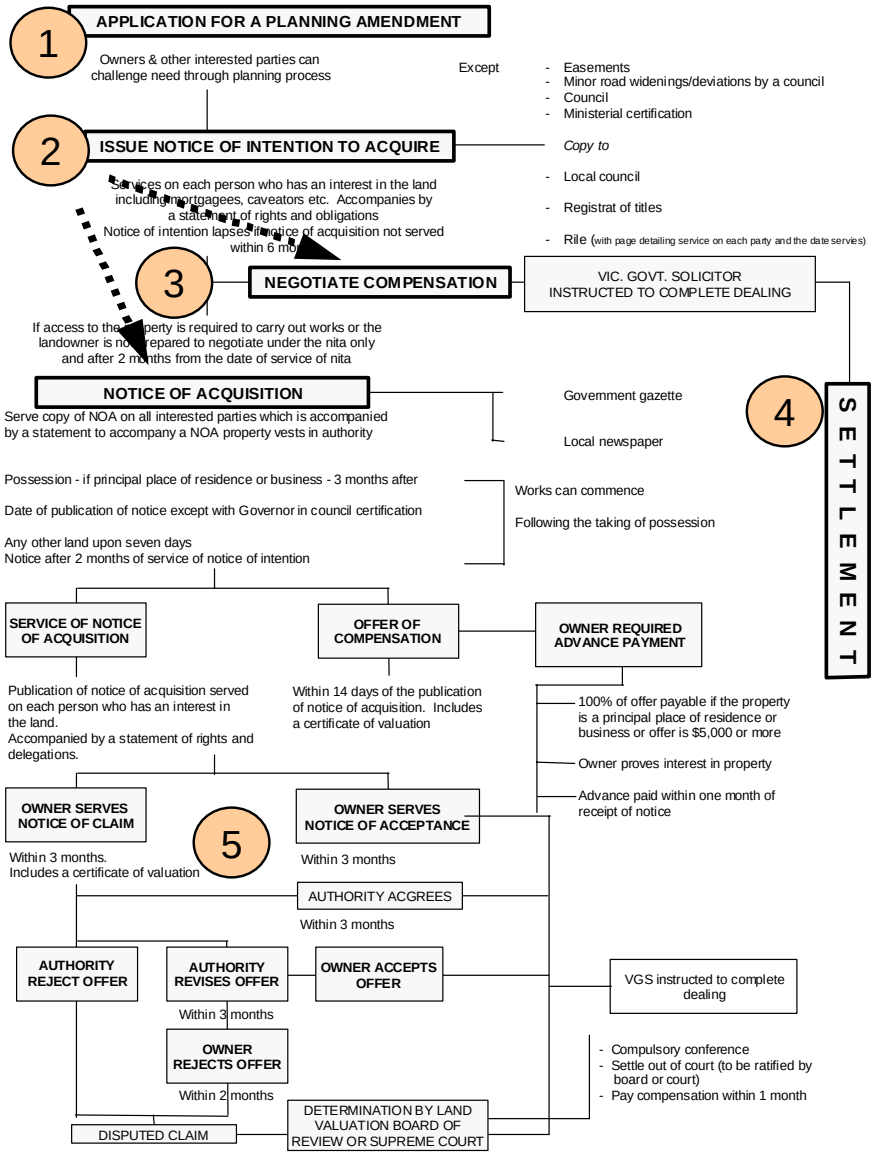
  Where appropriate, land holdings will be amalgamated to increase the possible value of the total holding; and

- the initial lease of land acquired by the GBCMA inside the DCF which has not been leased by the original owner.

2.2 Land Acquisition Process and Timeframe

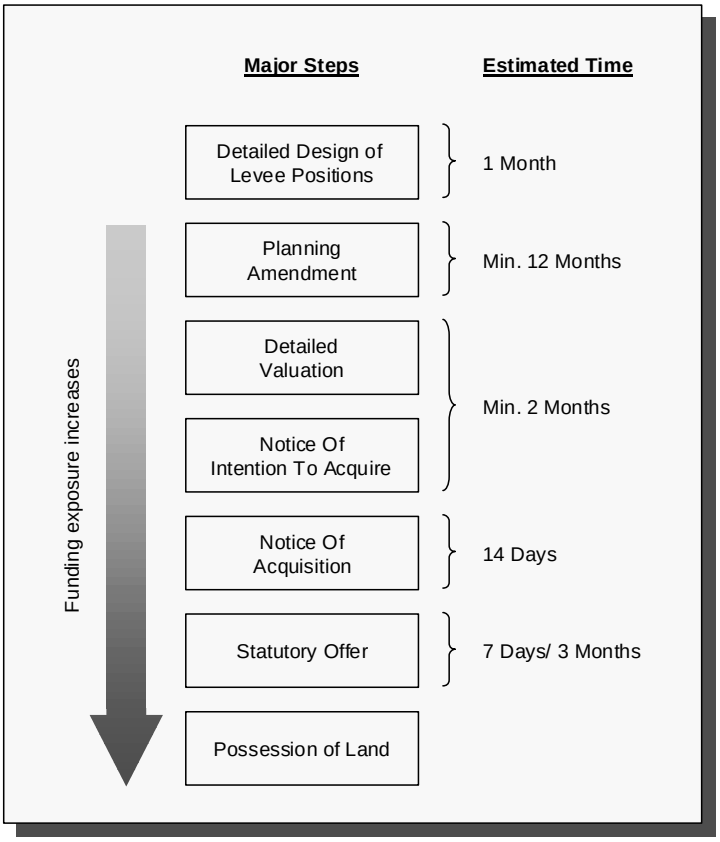
2.2.1 Land Acquisition Process

The acquisition of land by the GBCMA will be carried out in accordance with the Land Acquisition and Compensation Act 1986, which defines the following process:



2.2.2 Land Acquisition Timeframe

The diagram below shows the flow of events surrounding the land acquisition process and how the Scheme's funding exposure increases over time:



- The land acquisition process can easily take up to two years. However, construction works can commence once the NITA is lodged so the LGFRS should not be unduly delayed by this process.

2.2.3 Land Valuation

- GBCMA will outsource the completion of the valuation of the entire DCF region to the Victorian Valuer-General.

- As two valuers will be required, the Valuer-General will complete one valuation and will contract out responsibility for the second valuation to one or more of the approved valuation companies.

2.2.4 Alternatives to Land Acquisition

The alternative strategies to land acquisition of paying flood easements (compensation) or a combination of both have been considered and found to be unviable. Land acquisition is clearly the only viable option for a floodplain rehabilitation scheme as large as the DCF project as it will fundamentally change the characteristics of the land, with regular flooding occurring every 1 to 2 years.

The land acquisition strategy brings the following advantages:

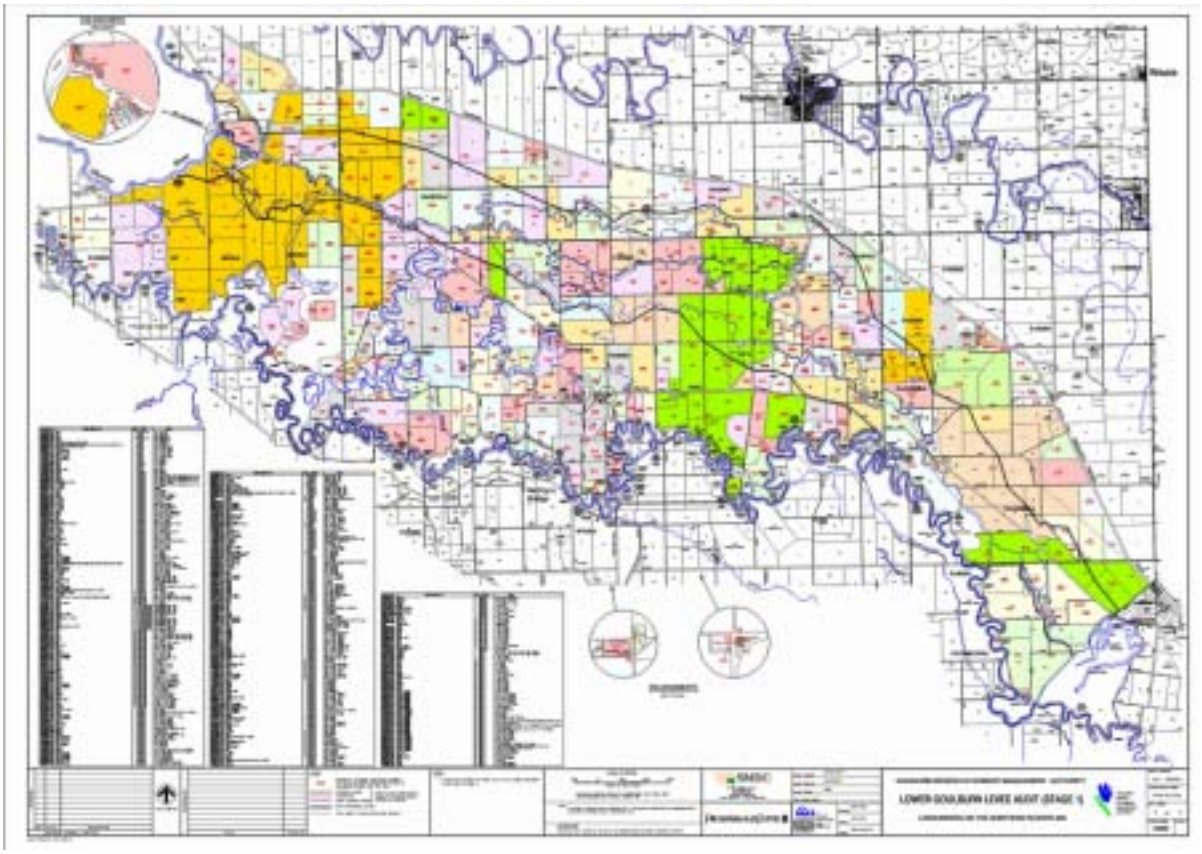
Flexible Land Use Options	Better Compensation to Landowners
• Greater flexibility in the future use of the land allowing options such as 'Natural Habitat' which deliver non-financial benefits.	• Opportunity for landowners to sell businesses and property holdings in the proposed floodplain region which may become unviable as a result of the flooding.
• Synergies from the treatment of the region as a whole under a homogenous ownership.	• Benefit over and above the single compensation payment approach, which may leave landholders with worthless land which are required by law to be maintained.
	• Time allowance given for landowners to relocate via the lease back application.

2.3 Key Issues

Key issues examined in the review and development of the GBCMA's land acquisition strategy are:

Salient Point	Application to the LGFRS
- Public Acquisition Overlay	
The VPPs introduced by the Department of Infrastructure required each municipal council to prepare a new planning scheme which includes the introduction of a public acquisition overlay. The public acquisition overlay is applicable to compulsory acquisitions of land by statutory authorities.	• The implementation of a public acquisition overlay will allow the original land use (or zone) to be carried forward across the land acquisition. • For the GBCMA, this will mean that previously existing uses of the land (e.g. farming or cropping) will be maintained subsequent to the addition of the overlay in the event of the lease back scenario. • The application of the public acquisition overlay requires Ministerial Amendment, similar to the application for the reservation of land for public purpose under the preceding planning regulations.
- Timing of Levee Construction	
Under the Water Act (1989) the GBCMA is legally entitled to construct levees on the land prior to land re-zoning or acquisition.	• While the GBCMA may legally have access to the land for construction at any time during the land acquisition process, the GBCMA shall negotiate with the various landowners for the maximum flexibility for the use of the land surrounding the proposed levees.

Salient Point	Application to the LGFRS
- Levee Positioning	
In the "Lower Goulburn Levee Audit: Deep Creek Floodway Option" report, SMEC carried out an investigation of the total capital costs of three DCF levee designs, or 'alignment of levees' with a view to achieving an optimal alignment.	• The recommended levee positioning is shown below, covering a total DCF area of 10,500 ha and a potential acquisition of area of 9,740 ha. • This draft levee positioning should be regarded as indicative only. The final levee positioning will be determined by the detailed hydraulic simulations being carried out by the GBCMA.
- Water Rights	
Water rights are a well-traded commodity within the region which can be sold as part of the land or separately.	• Water rights will not be compulsorily acquired as part of the land acquisition process. The existing owner will be given the option of selling the rights to the GBCMA or retaining the rights. • Any water rights acquired by the GBCMA will be on-sold separately, or packaged with land available for sale to enhance the value of the total offering.

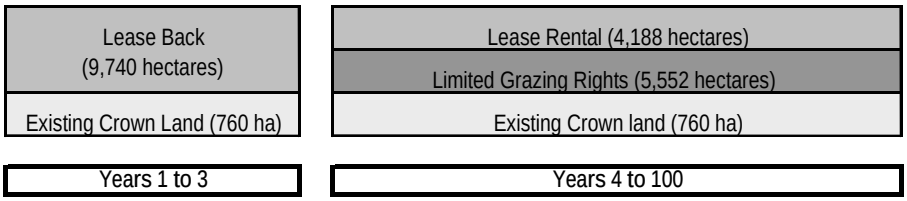


3. Land Use Options

3.1 Overview of Land Use Options

Various land use options for the land acquired for establishing the DCF, after completion of the levee construction, were considered. In determining the viability of these options detailed consideration has been given to the associated effects of each option on social, cultural and environmental factors.

The identified optimal future land use is focussed primarily on two options, leasing and the environment. The diagram below illustrates the identified land use strategy over time for the area within the bounds of the DCF:



3.1.1 Application of Lease Back Option

This option involves the lease back of all tracts of land within the DCF to its previous owners for an initial period of no longer than 3 years. The key elements of this approach are as follows:

- The option will be offered in the following order:
  - to original owner;
  - to surrounding owners based on private tender;
  - others.
- Lease rentals will be based on the value of the land subsequent to the implementation of the Scheme. The actual rate will be subject to commercial lease rates and conditions prevailing at that time.
- Land classified as environmentally significant will be subject to strict lease caveats over agricultural and land management practices, in anticipation of the land returning to its natural state. Caveats will also be placed on other land.
- After the initial 3 year term, all subsequent lease backs of the remaining 4,188 ha of land within the DCF will be available under a tender arrangement.

Advantages	
Time for affected businesses within the proposed floodplain region to settle affairs, harvest long term crops and search for alternative locations for business operations.	Income stream from leasing, although notional, would contribute to the costs of scheme maintenance.

3.1.2 Application of Natural Habitat Option

This represents optimal land use for specific areas of the DCF marked as having national, state or regional significance. This option considers the return of the identified land to its natural vegetation state, which consists primarily of Red Gum and Grey Box woodland. The Red Gums grow on the flat floodplain areas and are extremely resistant to being inundated for extended periods of time. Rarer Grey Box outcrops occur on the land that slopes up from the flat plain and is the natural habitat of the endangered Grey Crowned Babbler.

The environmental benefits of the return of the land to its natural state will outweigh the financial costs associated with the management of the regeneration. It is expected that within a period of five years, the area would be noticeably advanced in its conversion to a natural state.

The key requirements in the application of this option to the DCF are as follows:

- Specific sites for conversion will be identified. Highly environmentally sensitive areas (marked as being of national significance) are to be immediately fenced and controlled.
- The re-instatement of the natural habitat under a closely monitored park management program will be adopted for the identified sites after the end of the initial lease back period. Grazing livestock will be permitted in the less sensitive areas.

Advantages	
Regeneration of an important and vulnerable ecosystem.	Provision of a safe habitat for a number of species of endangered and vulnerable flora and fauna (e.g. Grey Crowned Babbler, Bush Stone Curlew, Woodland Blind Snake and tracts of Grey Box Woodland).
Restoration of a wetland ecology conclusive to supporting endangered aquatic species.	Protection and regeneration of an important 'biolink' zone.
Creation of a valuable educational and recreational resource available for the enjoyment of the community.	

3.1.3 Application of Grazing Rights

The key features in the application of grazing rights are:

- Grazing rights can be separated from the ownership rights attached to the land.
- Whilst maintaining control of the land, the GBCMA will permit cattle or sheep grazing by farmers in the Natural Habitat areas (in the less environmentally significant areas and in a controlled manner) in return for a charge.
- The grazing livestock will play an important part of weed control and fire prevention when permitted at appropriate times during the year. Probably the most suitable grazing animals in relation to weed control are soft-hooved animals like sheep, however, cattle grazing will also yield benefits.

3.1.4 Carbon Credits Potential[1]

Carbon sequestration refers to the absorption of carbon dioxide (CO2) from the atmosphere by forests or plantations as they grow through the process of photosynthesis. It is recognised that growing forests have an important role in the context of climate change as they can mitigate the build-up of atmospheric CO2 concentrations, thereby offsetting GHG emissions from other sources.

For the purposes of the floodplain rehabilitation scheme, it is expected that:

- Carbon sequestration will occur on Natural Habitat land.
- The rate of carbon sequestration in Red Gum within the 5,552 ha of land for conversion into Natural Habitat may approximate 13,900 carbon credits pa.
- Whilst there may be potential benefits arising from carbon credits, GBCMA will sell the carbon credits only when this is feasible, as there is currently no readily traded market for this commodity and no established price.

The economic impact of carbon credits have not been included as a potential revenue stream for the Scheme as revenue estimates are not readily verifiable.

Advantages	
Growing commercial demand for carbon credits.	Sale of carbon credits does not require additional costs, whilst benefits can be obtained without significant modification of land use within the DCF.

3.2 Caveats on Land Use for the Floodplain

Strict caveats on the specific use of the land will need to be included as conditions of use, as a result of the utilisation of the area as a floodplain. These caveats will take the form of conditions within the lease agreement. A number of possible caveats have been identified. They include but are not limited to :

- Provisions for the construction of floodplain infrastructure (levees etc), and restrictions on the types of infrastructure that can be placed on land by lessee/landowner (e.g. fence types and incompatible improvements).
- Specifications and restrictions on land use. For example, hard-hooved grazing to be disallowed on land tracts deemed to be of significant environmental value.
- Designation of land management responsibilities for lessees/landowners. These will detail requirements relating to weed and vermin control, fire hazard reduction and restrictions relating to the use of fertilisers and ecologically unsound agricultural practices.

[1] Prepared with the assistance of EcoSecurities Ltd.

4. Environmental Assessment

4.1 Overview of the Environmental Assessment

The positive impact on the environment is one of the most significant objectives of this Scheme. As part of the Environmental Assessment, two specialist reports were commissioned – Ecology Australia Pty Ltd was commissioned to evaluate the existing conservation values of the land lying within the bounds of the proposed floodway, and SMEC was commissioned to prepare a report on the principles and guidelines for the design and construction of wetlands within the DCF region.

It should be noted that more extensive field surveys and detailed modelling would need to be carried out before firm conclusions may be made on the environmental implications of the Scheme, wetland design and the management approach for the conservation and enhancement of flora and fauna values in the floodway. The findings presented should be treated as indicative only at this juncture of the planning process. In the immediate term, the GBCMA will be commissioning a more detailed report to investigate the environmental effects of the Scheme and the appropriate management approach to be adopted. This will include flooding simulations (which will be a component of the detailed hydraulic study).

4.2 Nature Conservation Values within the DCF

The environmental benefits flowing from the implementation of the LGFRS comprise terrestrial values and aquatic values.

4.2.1 Terrestrial Values

Value	Description
Importance of the Riverina Region	• The indigenous ecosystems of the Riverina biogeographic region are among the most poorly reserved in Australia. Less than 1% of the biogeographic region is currently protected in nature conservation reserves. • The reservation and/or acquisition of land for nature conservation in the Riverina bioregion is one of the highest priorities for the National Reserves System program.
Relatively untouched land within the DCF	• The landscape bounded by the Shepparton-Barmah Road, the Goulburn River and Loch Garry is one of the few large expanses of agricultural land in the Victorian Riverina which has not been developed for intensive irrigated farm production. • Much of the pasture has either never been cropped or is infrequently cropped. • As a consequence the study area supports extensive areas of remnant grassy woodland and native pasture. • Areas within the DCF may still support populations of significant plant and may support small remnants of grassland or herbland which have been almost completely destroyed in the Victorian Riverina through intensive agricultural practices.

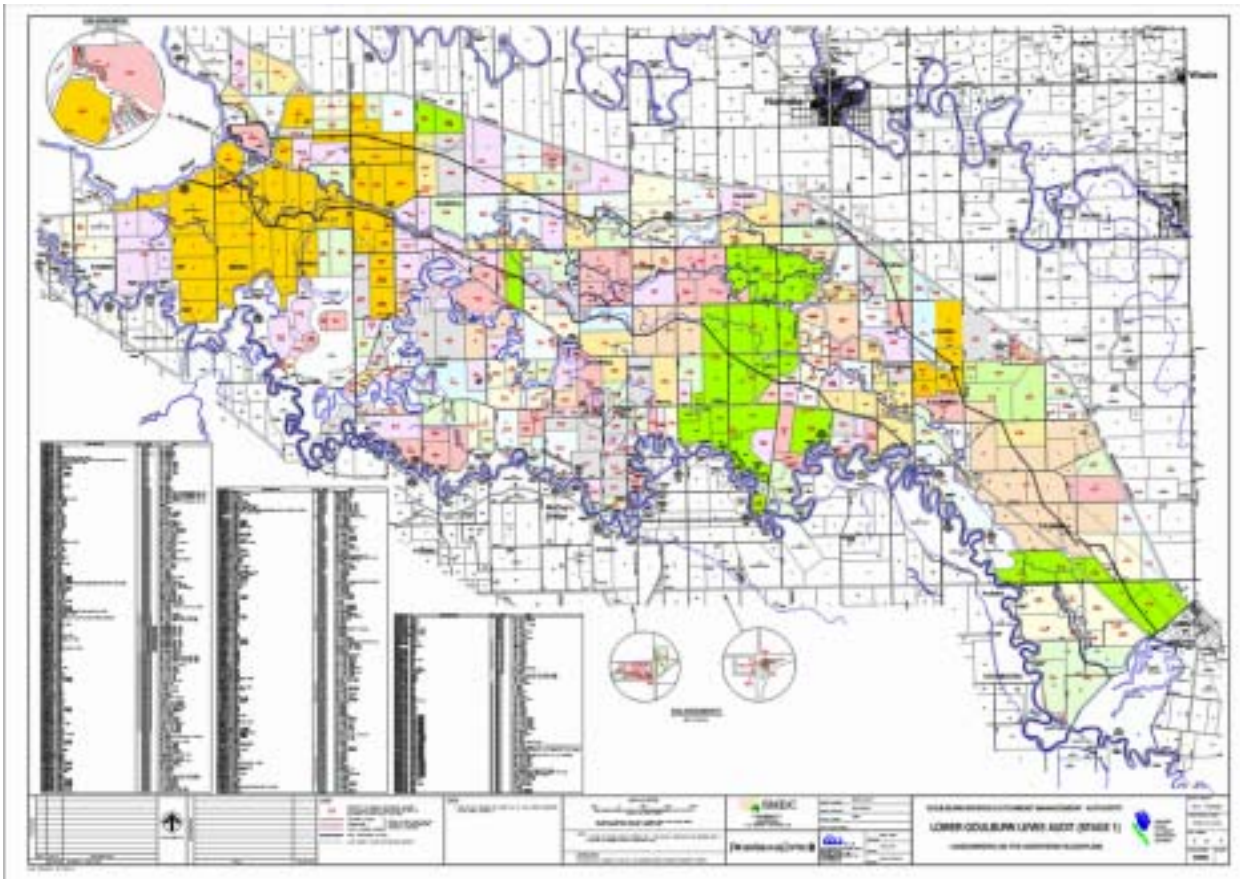
Value	Description
Management of regrowth of Red Gum	• Eucalyptus camaldulensis occur within the study area. • Single cohorts of mono-specific stands have developed in paddocks which were not heavily grazed subsequent to a past flood event which produced mass recruitment. • These trees are of indeterminate age as the stands have become 'locked up' and are typically small . • Without management these areas have limited conservation value.
Mature Grey Box grassy woodlands and Red Gum grassy woodlands (Plains Grassy Woodlands)	• Plains Grassy Woodlands persist on stream reserves and road reserves across the study area. • Plains Grassy Woodlands in northern Victoria and Southern NSW are particularly depleted in relation to their former occurrence. • Preliminary investigations show that the woodlands in the DCF region were generally in comparatively good condition.

4.2.2 Aquatic Values

Value	Description
Restoration and preservation of native and important fish species	• Flood waters supply and replenish fish stocks to Deep, Sheepwash, Bunbartha and Skeleton Creeks after periods of flow cessation. Residential fish populations are those species that can survive in the pools that do not dry up between flow events. • The DCF region has experienced the disappearance of several natural populations of native fish species, including the Macquarie perch, Southern purple-spotted gudgeon, Mountain galaxias, Two-spined blackfish, River blackfish and Bony bream. • Several important species of fish may still exist within the Lower Goulburn catchment, including species considered threatened in Victoria and species listed for protection under the Flora and Fauna Guarantee (1998). • The DCF could provide for these fish which are expected to include the Non-speckled hardyhead, freshwater catfish, Climbing galaxias, and the Golden and Silver perch. • Poor water quality and accumulated sediment could be regularly flushed allowing for improved habitat for aquatic biota that persist during flow cessation.

4.3 Sites of Significance

The Environmental Assessment has identified three sites of significance in the DCF region, described in the following table and shown graphically on the following map. These are environmentally sensitive sites for which the optimal land use option is the conversion of the land to its natural state.



Site of Significance	Site Description	Conservation Values	Biological Significance
Deep Creek (Area: 4,008ha)	This site includes the interconnected stream systems of Deep Creek, Sheepwash Creek, Wallala Creek and Skeleton Creek along with associated streamside woodlands and nearby larger woodland remnants and road reserves. Cleared land with scattered trees is included within the site. The site extends from the Murray River in the west to McClellands road in the east.	• Supports comparatively large and intact remnants of threatened plant communities, particularly Riverine Plains Grassy Woodland. • Includes excellent roadside reserves supporting Black Box Woodlands which is an important foraging habitat for the nationally vulnerable Superb Parrot. • Is a known site for threatened fauna species including the Grey Crowned-babbler, Squirrel Glider and Woodland Blind Snake. • Supports habitat suitable for threatened woodland bird fauna including the Barking Owl, Powerful Owl and Bush Stone-curlew, all endangered in Victoria. • Is a known site for several rare and threatened plant species including the Allocasuarina luehmannii, Alternanthera sp. 1 (Plains), Eleocharis macbarronii and Digitaria ammophila.	**Provisionally National Significance**
Kaarimba (Area: 823ha)	Comprises a large block of remnant woodland and regrowth north of Bunbartha Creek.	• Supports comparatively large and intact remnants of threatened plant communities, particularly Riverine Plains Grassy Woodland. • Supports habitat suitable for other threatened woodland fauna including the Barking Owl, Powerful Owl, Bush Stone-curlew, Squirrel Glider and Woodland Blind Snake.	**Provisionally Regional Significance**

Site of Significance	Site Description	Conservation Values	Biological Significance
		• Provides an important corridor for the movement and dispersal of flora and fauna.	
Bunbartha (Area: 721ha)	Comprises several blocks of public land to the east of the Goulburn River levee connected by streamside reserves, road reserves and unimproved pasture.	• Supports excellent remnants of threatened plant communities, particularly Riverine Plains Grassy Woodland. • Is a known site for threatened fauna species including the Grey Crowned-babbler endangered in Victoria - at least two colonies of this species occur within the site. • Supports habitat suitable for other threatened woodland fauna including Barking Owl, Powerful Owl, Bush Stone-curlew, Squirrel Glider and Woodland Blind Snake. • Provides an important corridor for the movement and dispersal of flora and fauna.	**Provisionally State Significance**

4.4 Management of Flora and Fauna Values

The proposed floodway and the concomitant opportunities to review and modify land use and management, provides exciting opportunities for landscape design for nature conservation in an area which is important for the conservation of the biota of the Victorian Riverina and numerous rare and threatened species. Three indicative zones have been suggested for the management of flora and fauna values within the DCF. These are:

- **The Riparian Zone** (500-600 ha):
  - This zone collectively incorporates the complex of streams, drainage lines and associated freshwater meadows.
  - It supports a large proportion of the high quality remnant woodlands across the study area and traverses the three sites of significance. Much of this zone comprise crown land stream reserves and small adjoining bushland reserves.
  - Primarily to be used for nature conservation only. Highly sensitive to disturbances by stock and vehicles (no grazing and to be fenced off).
- **The Conservation Zone** (5,000 – 5,100 ha):
  - Incorporates all the identified sites of significance (Deep Creek, Kaarimba, Bunbartha) and may be used for controlled grazing.
- **Sustainable Agriculture Zone**:
  - Comprises the remainder of the floodway.
  - The primary objective of management will be animal husbandry where this activity does not have a detrimental impact on soil, water and adjoining nature conservation values. Suitable for lease back for use under present conditions subject to floodplain caveats on land use.

Whilst a detailed list of floodway management guidelines cannot be established without the conduct of a more comprehensive assessment of management issues and consultation with stakeholders, a series of broad management principles and strategies have been developed.

4.4.1 Pest, Plant and Animal Management

- Control of weed invasions is and will remain the most important vegetation management issue in the proposed Lower Goulburn River Floodway where a very large proportion of the total flora is exotic.

- Significant sites and/or plant or animal populations need to be identified and the most serious weed species threatening these resources evaluated.

- The broad strategy will be based on the use of grazing and fire (to a limited extent) to control weed and vermin population.

4.4.2 Revegetation Management

- The return to the plant communities which are structurally and floristically similar to those which dominated the pre-European landscape, in the Riparian and Conservation zones, will be a slow process. The revegetation will be largely reliant on 'passive' or natural regeneration processes and will only be successful if augmented by aggressive and vigilant weed control.

- Thinning of regeneration will be the main management issue in Red Gum areas.

- Active revegetation efforts should be directed towards:
  - the extension or creation of wildlife corridors or 'biolinks' within the floodway
  - livestock production (i.e. planting shelter belts or the replacement of senescing paddock trees)
  - improving faunal habitat
  - enriching depleted populations of significant plant species
  - erosion mitigation or the suppression of weed growth in disturbed areas.

4.4.3 Aquatic Ecosystems

- The major issue relates to the modification of the flooding regime due to its implications on the aquatic ecosystems. It is critical for the frequency, timing, volume and duration of inundation in the new flooding regime to approximate those levels which would have occurred prior to river regulation.

- A fishway on the lower end of the floodway would provide attraction flows assisting fish movement from the River Murray.

- The removal of the boards on the regulator at Loch Garry could allow movement of native fish into the northern floodplain.

- The DCF would retain the ephemeral nature of Deep, Sheepwash, Bunbartha and Skeleton Creeks and would reinstate a natural flood flow regime to these water courses.

- Poor water quality and accumulated sediment could be regularly flushed, allowing for improved habitat for aquatic biota in pools that persist during flow cessation.

4.5 Wetland Design

The design of wetlands would need to be evaluated in detail to ensure the protection and enhancement of the ecological values of the Deep Creek and Bunbartha Creek systems. Important principles which would need to be considered include:

- A mosaic of wetlands with varying water regimes and water depths is created.
- Wetlands are designed to offer, in addition to a variety of water regimes and depths, a variety of structural habitat features, such as roosting islands, areas where snags can strategically be placed, and complex shorelines (e.g. numerous small inlets or projections).
- Contour maps are investigated and site surveys conducted to explore opportunities to take advantage of natural variations in the landscape that can be utilized in creating a wetland (e.g. depressions, drainage lines), as wells as areas currently of high ecological values which need to be protected.
- The location of the wetlands takes into consideration the whole local landscape. Opportunities to link areas of high ecological value should be maximized (i.e. providing wildlife corridors).
- Semi-permanent wetlands are designed with connectivity with the creeks so that after a flood event, and particularly during draw down, fish are not isolated.
- Areas subject to water flows of high energy are identified (e.g. in channels) and protected from erosion (e.g. strategically placed snags, piles of local rocks, strategic planting).

5. Cultural Heritage Assessment

The GBCMA will be required to comply with the requirements of the following legislations whilst planning and constructing the DCF levees, to ensure Cultural Heritage issues are handled in the appropriate manner:

- Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)
- Archaeological and Aboriginal Relics Preservation Act 1972 (Vic).

The Cultural Heritage value of the land subject to construction will need to be assessed. This will entail the following procedures:

- Liaison with the local aboriginal clan (the Yorta Yorta People) to notify them of the nature and area of the levee works.
- Provision of notification to the office of Aboriginal Affairs Victoria (AAV) and arrangement to have the construction areas inspected for archaeological significance. AAV and local clan members will identify any areas of significance to Cultural Heritage which will be assessed by AAV for their archaelogical value.
- In the event a site within a planned construction area is identified as valuable for cultural heritage reasons, alteration of the construction plan to avoid disturbance of the identified site. As the land within the Scheme is already private and used for agricultural purposes, archaeological sites will only be relevant if they are located within a construction area and are at risk of disturbance by levee building activity.
- Consultation with the local clan on areas that may have inherent 'spiritual significance'.

6. Socio-Economic Assessment

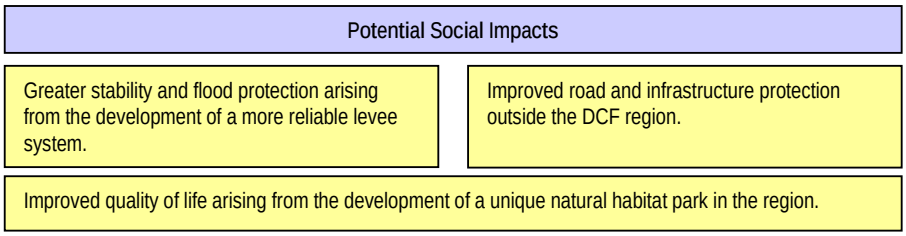
The social and economic impacts of the LGFRS are tied primarily to the compulsory acquisition of land by the GBCMA under the Scheme and the increased frequency of floods in the DCF. These socio-economic impacts have been arrived at through a broad process of review, and should therefore be regarded as preliminary at this juncture. As with the Environmental Assessment, the GBCMA is undertaking a more indepth evaluation of the key social and economic factors identified in the next stage of the planning process.

6.1 Social Assessment

The floodplain rehabilitation scheme involves the re-zoning of approximately 10,500 hectares of land into land reserved for a public purpose, and is potentially the largest scheme of its kind in Victoria. Recognising the size of the Scheme and the potential number of people affected by it who would therefore need to be protected, the GBCMA will:

- Maintain close communication with affected landowners, and the relevant Shires and government departments.
- Provide the existing landowners with the maximum flexibility possible in its planning approach.
- Offer an equitable payment for the land within the DCF (based on principles set out clearly in the Land Acquisition and Compensation Act 1986 which will include an allowance for 'social costs').
- Offer an initial lease back period of 3 years for all land that is compulsorily acquired, which will provide greater timing flexibility to the landowners for relocation.

Many of the social impacts are not quantifiable in monetary or other physical unit terms.



6.2 Economic Assessment

Economic impact studies and financial analysis have enabled the quantification of a number of the resultant impacts of the Scheme. These impacts are based on the premise that reduced flood damage will create economic benefits for the region outside the DCF. Additionally, there are indirect benefits that will occur that are deemed to be unquantifiable. The quantifiable economic impacts of the Scheme are used in the financial model in analysing economic viability.

Potential Economic Impacts	
Reduction in average annual flood damage across the catchment area, reducing in aggregate the extent of flood damage to agricultural land.	Reduced level of levee damage control due to downstream levee upgrade, leading to reduced payments of Flood Disaster Relief Funding.
Removal of Loch Garry Regulator will provide a net benefit through the reduction in its maintenance and operation costs.	Increase road protection.
Increased tourism and positive impact on GHGs due to restoration of nationally significant riverina grassy woodland area.	Flow on benefits from the increase in value and produce from protected lots.

6.3 Benefit Cost Ratio

A benefit cost analysis of the LGFRS has been carried out. This analysis is based on a number of core principles and assumptions, these being:

- That natural disaster funds will not be available in the future unless strategies to minimise flood damage are put in place.
- That the floodplain will be returned to a forestry situation and, therefore, will no longer require flood damage repair expenditure.
- Project life of 100 years with no residual value.

The benefit cost analysis resulted in a BCR of 1.78. This indicates that the LGFRS is substantially economically advantageous even before the unquantifiable benefits are taken into consideration.

7. Financial Forecasts and Project Funding

7.1 Financial Forecast

The financial forecast for the LGFRS, based on currently available information, is:

Financial Assessment

	2002 ($'000)	2003 ($'000)	2004 ($'000)	2005 ($'000)	2007 ($'000)	2009 ($'000)	2011 ($'000)	2013 ($'000)	2015 ($'000)	2017 ($'000)
Revenue										
Grazing Revenue	-	-	-	-	-	73	73	73	73	73
Lease Rental	-	-	-	300	300	151	151	151	151	151
Miscellaneous Revenue	-	-	-	-	-	9	9	-	-	-
Rating/Other Revenue	-	-	-	182	182	182	182	182	182	182
	-	-	-	482	482	415	415	406	406	406
Expenses										
Maintenance Expenses	-	-	-	(178)	(178)	(178)	(178)	(178)	(178)	(178)
Lease Rental Expenses	-	-	-	(90)	(90)	(45)	(45)	(45)	(45)	(45)
Rate Collection Expenses	-	-	-	(4)	(4)	(4)	(4)	(4)	(4)	(4)
Parks Management Contract	-	-	-	-	-	(200)	(200)	(150)	(150)	(150)
Project Management and Sundries	(131)	(117)	(117)	-	-	-	-	-	-	-
	(131)	(117)	(117)	(272)	(272)	(427)	(427)	(377)	(377)	(377)
Total Revenue/(Expenses)	(131)	(117)	(117)	210	210	(12)	(12)	29	29	29
Capital Costs	(722)	(928)	(19,968)	-	-	-	-	-	-	-
Government Funding	8,092	13,980	-	-	-	-	-	-	-	-
Borrowing	-	-	-	-	-	-	-	-	-	-
Cash Flow for the Year	7,240	12,934	(20,085)	210	210	(12)	(12)	29	29	29
Cumulative Cash Flow	7,240	20,174	89	299	719	694	670	686	744	801

Project NPV	$17,980,000
Project IRR	6.83 %
Payback	24 years
Project BCR	1.78

7.2 Project Funding

7.2.1 Capital Cost Funding

The land acquisition and capital costs of the LGFRS will be fully financed from State and Federal Government sources. While the benefits of the Scheme are significant, there is no one organisation which gets a direct substantial benefit.

Key factors to note are:

- Funding will be predominantly sought based on the environmental benefits of the LGFRS.
- A clear funding commitment is needed prior to the commencement of the land acquisition process and the capital works program.
- The assumption is that funding of $22 million will be obtained, and will be utilised for the capital costs of the Scheme.
- The Victorian State Government supports the LGFRS as part of the National Action Plan for Salinity and Water Quality, and has written to the Commonwealth Government seeking agreement for funding as part of this Plan.
- Revenue generated from land use (i.e. lease and grazing revenue) will be used to cover the working capital requirements of the LGFRS.

7.2.2 Funding of Recurrent Expenditure

The GBCMA needs to raise approximately $180,000 pa to cover on-going operational and maintenance (O&M) costs of the LGFRS.

One option considered is the leveeing of a specific LGFRS rate. The legislative power to do so is enshrined in the Water Act (1989) which gives authority to the GBCMA to charge rates associated with the provision of flood protection. Subject to further stakeholder consultation, the key characteristics of the proposed rating regime are outlined below:

- The floodplain rate charged will be specific to the Scheme.
- Beneficiaries of the floodplain rehabilitation scheme will be rated on an equitable basis that considers derived benefits and land values.
- The regime reflects a user pays principle, consistent with Victorian Government policy. Stakeholders receive benefits from the Scheme through flood protection of the value of their assets.
- The rating model recovers all on-going O&M costs associated with the LGFRS. This ensures the project will be self-supporting after the construction period.
- The relevant municipal councils will be contracted to collect the LGFRS rates on behalf of the GBCMA, with this being an extension of existing arrangements.

If a system of rating direct beneficiaries is not adopted, alternative sources of funding to cover the recurrent cost shortfall will need to be identified.

It should be noted that, as the GBCMA is taking action to resolve the flooding problems, the GBCMA still qualifies for Natural Disaster Relief funding.

8. Risk Management and Corporate Governance

8.1 Risk Management Strategy

A scheme as large and complex as the LGFRS will carry risks. The GBCMA will take proper steps to mitigate the risks which may arise, with some of the risks being:

Investment Risk	Risk Mitigation Strategy
Uncertainty of funding available - Project feasibility is highly conditional on the availability of government funding, as the various identified revenue sources (e.g. rating, grazing etc) are insufficient to support the large upfront capital outlay involved with this project.	Funding needs to be sought and approved prior to any reservation of the land for a public purpose.
Inability to source Miscellaneous Revenue - Inability to source the requisite amount of Miscellaneous Revenue will see the project encounter liquidity difficulties in the first few years after construction is completed.	Proper investigation of the revenue sources available to be conducted.

Implementation Risk	Risk Mitigation Strategy
Cultural Heritage Risk - Identification of Cultural Heritage site within a planned construction area will require alteration of construction plan to avoid disturbance of the identified site, potentially leading to negative ramifications on construction time and costs.	Close liaison with the Yorta Yorta clan and implementation of a cultural heritage assessment early on in the design phase of the levee construction.
Environmental Risk - Identification of environmentally significant sites, flora or fauna within the planned construction area may have a direct impact on implementation cost and timing.	Conduct of an indepth environmental study of the region and close environmental monitoring during the detailed planning phase of the implementation.
Delay from planning approvals - Planning approvals for either the re-zoning of land or the addition of a public acquisition overlay may be delayed for substantial periods of time (up to 12 months minimum) should there be objections by any of the stakeholders.	Adequate time set aside for obtaining planning approval. The implementation plan should allow for objections, and the formation of an independent review panel.
Delay from disputes on land acquisition - Disputes on the value of the land acquired may result in the need for mediation or arbitration by courts.	Strict valuation guidelines in accordance with Government guidelines will be developed and followed.
Contractor Risk in capital works - The risk includes default by the contractor, delay in contractor obtaining access to the site, designs unfit for purpose, cost overruns, construction defects and operational efficiencies.	Tight contract monitoring and quality review procedures to be adopted.
Risk of flooding during the construction phase - There is a risk of a major flood prior to the completion of the new floodway given the considerable length of time needed for implementation (possible two years or greater).	The risk of flooding during the construction phase should be specifically borne by the contractor, and needs to be written into the construction contract.

8.2 Corporate Governance Strategy

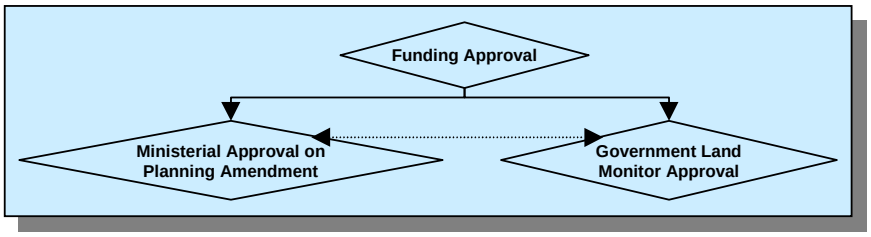
The efficacy of the risk management function will be augmented by the adoption of corporate governance principles and guidelines in the management of the Scheme.

The principles identified include, but are not limited to, the following approaches:

- All expertise relating to the development of the DCF, land use and land management to be contracted out on a competitive tender process.

- Participation of the Government Land Monitor and the Office of the Valuer-General to be sought early on in the land acquisition process to promote best practice in the land transactions.
- Objective valuation guidelines to be developed and strictly adhered to. Valuation work will also be contracted out.
- Close communication to be maintained with all affected parties.
- More extensive studies on the environmental and socio-economic impacts of the Scheme to be carried out. This will ensure that optimal benefits are derived from land management and all significant impacts are captured in the levee design.
- Strict performance criteria to be incorporated into capital works contracts as well as management contracts.
- Strict land use caveats and guidelines to be developed and applied to land use agreements.
- An experienced Project Manager to be appointed to undertake a dedicated role of coordinating the project implementation. The Project Manager will work under a defined reporting structure and will be accountable to the GBCMA management.

The need to obtain external approvals at various stages will also strengthen corporate governance compliance. The following diagram highlights the principal approval requirements which needs to be met by the GBCMA during the implementation of the LGFRS.



In particular, the approval of the Government Land Monitor will be required to provide the government with an assurance of accountability and integrity in land transactions.

(For more detailed information regarding the requirements of the GLM specifically relating to the land transactions see 'Policy and Instructions on the Purchase, Compulsory Acquisition and Sale of Land', Government Land Monitor (Department of Infrastructure) March 1998.)