# **Brunswick River – Surface Water Management**

# **Issue Scoping Report**



# **Beckwith Environmental Planning Pty Ltd**

Prepared for

Department of Water Government of Western Australia

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Sincerely,

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### **Report authorship**

This document is the property of Beckwith Environmental Planning Pty Ltd. The opinions and recommendations in this report are those of the authors and do not necessarily reflect Department of Water policy or positions. Any questions or comments regarding this report should be directed to Dr Jo Ann Beckwith, Director, Beckwith Environmental Planning Pty Ltd via email jbeckwit@bigpond.net.au or phone (08) 9450 8711.

The Department of Water intends to publish a follow-up report that will address issues raised by stakeholders during the scoping exercise and set forth its public involvement process for subsequent stages of the water resource management planning process. Any questions regarding the Department's work in relation to the Brunswick River should be directed to Mr. Rob Donahue, Programme Manager, email <u>robert.donohue@water.wa.gov.au</u> or phone (08) 6364 6500.

# **Executive Summary**

The Brunswick River, like many surface water resources in the South West, currently does not have a water resource management plan. Given its proximity to the rapidly expanding Greater Bunbury Region, both the demands on and value of the Brunswick River and its tributaries will continue to grow. Without management plans, surface water resources may become over used, resulting in diminished ecological values and increased conflict among water users.

With funding from the South West Catchments Council (SWCC), the Department of Water (DoW) has commenced development of a management plan for the Brunswick River. The surface water planning process will establish the sustainable water yield and set limits on abstraction. This will guide the Department's approval of licences to take and use water for purposes such as irrigation, industry, mining and the servicing of rural and urban communities.

As one of the first steps in the planning process, an issue scoping exercise was conducted by Beckwith Environmental Planning Pty Ltd. Interviews were conducted with representatives of local governments, state agencies, local landholders, environmental groups, and the mining and agriculture sectors. The interviews explored stakeholders' views of the surface water management issues associated with the Brunswick River.

Future expansion of the Worsley Alumina Refinery and a potential Water Corporation (WC) dam were viewed as the main threats to long term water security on the Brunswick River. At present there is little water infrastructure (e.g. dams) along the River and many stakeholders commented that they liked this and wanted to see it maintained. For many years the Water Corporation has identified the Brunswick River as a potential future source of potable water. Some stakeholders expressed concern about the potential impacts of such a dam on the Brunswick River including: environmental impacts due to reduced flows, aesthetic impacts and impacts on downstream water users and the Leschenault Estuary.

The Leschenault Estuary is of high value to the community and for some it has achieved icon status in the South West. In terms of resource management, many stakeholders viewed the Brunswick River and catchment as part of the larger Estuary catchment. They commented that management issues on the Brunswick River also need to be considered in the context of the Estuary. They highlighted the contribution the Brunswick River's strong winter flows make to flushing out the Leschenault Estuary.

Many stakeholders were also concerned about the lack of riparian zone management, which has led to a proliferation of weeds, the displacement of native vegetation, erosion and bank slumping. Stakeholders wanted management responsibilities defined and sufficient resources provided. The shortage of public access points to the river foreshore limits the River's recreation potential.

As part of good water resource management, stakeholders identified the need to monitor water quality and river flows as well as the amount of consumptive use. It was identified that

more consistent, long-term monitoring data was needed to determine trends and problems both in terms of water quality and water quantity.

For some stakeholders, water quality was a larger concern than river flows. Water quality issues included nutrient run-off, acid sulfate soils, erosion and industrial discharge. Again concern was expressed regarding the potential impacts these issues could have on the Leschenault Estuary.

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# 1 Introduction

## 1.1 The Brunswick River and Surface Water Planning

The surface water resources of the Brunswick River and its tributaries serve an array of consumptive and non-consumptive uses. These include irrigated horticulture and dairying, ecosystem maintenance, industry, recreational activities and heritage values.

Although the Brunswick River Catchment was proclaimed in 1954, the demand for water from the Brunswick River has been low in comparison to other rivers in the area (e.g. the Harvey and Collie Rivers). Currently there is little water infrastructure (e.g. dams) along the River and only seven surface water licences have been issued.

Despite the relatively low demand for water from the Brunswick River for consumptive uses, several factors make this an appropriate time for a formal surface water management plan to be put in place:

- The health of the Leschenault Estuary is in large part reliant on continued fresh water flows from the Brunswick River.
- Water resources in the South West are increasingly a source of conjecture regarding their possible use as part of the Water Corporation's Integrated Water Supply System.
- Given its proximity to the rapidly expanding Greater Bunbury Area, the profile of landholders and potential surface water users along the River may change as more land is converted from agriculture to lifestyle and residential blocks.

The Department of Water (DoW) is the State Government agency responsible for water resource planning in Western Australia. With funding from the South West Catchments Council, the Department has commenced development of management plans for selected surface water resources in the South West including the Brunswick River. A similar planning process is being undertaken for the Capel River, Willyabrup Brook, Cowaramup Brook, Margaret River, Chapman Brook and Lefroy Brook.

The surface water planning process will establish the sustainable water yield and set limits on abstraction. The planning process includes:

- Determining the values associated with water resources including environmental, social and economic values
- Identifying current consumption and predicting future demand for surface water resources
- Gaining an improved understanding of the hydrologic relationships between ground and surface water resources
- Assessing the quantity of water needed to support the natural environment and the amount that can be diverted to consumptive uses.

The plan will guide the DoW's approval of future licences to take and use water for purposes such as irrigation, industry, mining and the servicing of rural and urban communities. This will prevent the resource from becoming over allocated and allow it to continue to meet multiple uses. It will also protect individual entitlements and the economic viability of licensed users.

# 1.2 The Catchment

The Brunswick River and its main tributaries (i.e. the Wellesley and Augustus Rivers) flow into the Leschenault Estuary via the Collie River. The vast majority of the 228 km<sup>2</sup> catchment is situated within the Shire of Harvey with a small portion in the Shire of Collie.

The study area is shown in Map 1. It includes the catchments of the Brunswick River (purple) and its main tributary the Wellesley River (green). For the purposes of this report, these two surface water management sub-areas will be referred to as the Brunswick River Catchment.



Map 1 Brunswick River Catchment

The upper part of the catchment lies along the Darling Scarp and is dominated by State Forest and the Worsley Alumina Refinery. The lower part of the catchment is situated on the Swan Coastal Plain where agriculture and horticulture are the dominate land uses. The land around Australind and near the City of Bunbury has been cleared and is increasingly dominated by lifestyle and residential properties.

The lower portion of the Brunswick River, as well as the Wellesley River, has been substantially altered over the years. Engineering projects have modified the course of the Brunswick River.

### **Licensed Entitlements**

The Brunswick River Catchment was proclaimed in 1954, under the *Rights in Water and Irrigation Act 1914*. Proclamation of a catchment gives the DoW the power to require that all surface water users be licensed, except in cases where water is used for private domestic or stock purposes.

Since the catchment was proclaimed only seven surface water licenses have been issued. One licence was issued to industry, four to irrigators for agriculture and one to the Water Corporation (Bennett per comm. 2006). Currently there are six licensed surface water users in the catchment.

The currently licensed users have entitlements totalling  $3.5 \text{ GL}^1$  of water from the Brunswick River or its tributaries (Bennett per comm. 2006). Irrigated agriculture accounts for five of the surface water licences. The combined irrigation entitlements are an estimated 1.3 GL.

The Worsley Alumina Refinery on the Augustus River is licensed to take up to 2.1 GL per year from the Augustus River. The Worsley Alumina licence requires it release water into the Augustus River at a minimum rate of 35 kL/hour during summer<sup>2</sup>. This condition was set in 1996 to re-establish the summer base flow, which had been reduced by water users along the River.

Until recently, the Water Corporation was licensed to take 0.6 GL from the Beela Dam reservoir on the Brunswick River. The dam has since been decommissioned and the licence has expired. There has been no request by the Water Corporation to renew the licence.



Photo: Beela Dam (WRC 2001)

<sup>&</sup>lt;sup>1</sup> A Gigalitre (GL) is the equivalent to 1 trillion litres of water.

<sup>&</sup>lt;sup>2</sup> Summer is defined as being the period from 1 December to 31 March.

#### Beela Dam

Located 10 km upstream of Brunswick Junction, the 4 m high Beela Dam was the primary water source for the Brunswick Junction Regional Water Supply Scheme, which supplied the communities of Brunswick Junction, Burekup and Roelands. The catchment for the dam is approximately 135 km<sup>2</sup>. In the summer of 2001/2002, water levels in the reservoir were severely affected by drought. The Water Corporation decommissioning the dam in 2004 due to water quality and security of supply issues caused by insufficient stream flows (Water Corporation 2003). Brunswick Junction, Burekup and Roelands are now supplied by the Integrated Water Supply System (IWSS) via the Australind Groundwater Scheme. Although the dam is no longer used for public supply, the *Brunswick Catchment Area Water Source Protection Plan* put in place by the Water and Rivers Commission (WRC) in 2001 is still in effect.

Many irrigators in the Brunswick River catchment receive their water supply from the Harvey Water irrigation co-operative rather than pumping from the Brunswick River. This water is sourced from the Wellington Dam which is outside the Brunswick River Catchment. As a condition of its licence to use water from Wellington Dam, Harvey Water is required to release a small volume of water to the Brunswick River. It releases 1.5 GL per year to the River at Brunswick Junction to maintain water levels in the Brunswick pools — a popular recreation venue for swimming (Bennett per comm. 2006).



Photo: Brunswick pools

As part of the surface water planning process, the Department of Water recently conducted a water use survey with landowners along the Brunswick River to determine the actual level of surface water use.

A number of rehabilitation projects have been undertaken along the River, several of which have been joint efforts between the Water and Rivers Commission (now the DoW) and community groups. The recent Brunswick River Restoration Project was a cooperative project conducted by the Brunswick Self Help Group, the Brunswick Tidy Towns Committee and the Department of Environment<sup>3</sup> (DoE) (National Heritage Trust 2004). The project sought to restore natural, cultural and heritage values along a 900m section of the Brunswick River near Brunswick Junction. This involved stabilizing the river bank, removing exotic vegetation and replanting native species, fencing about 850m of the River, and developing public access pathways.



# 1.3 Issue Scoping

Public involvement is an integral component of water resource management. As a first stage of the water resource planning process the Department commissioned the issue scoping exercise documented in this report. The objectives of the scoping exercise were to:

- Gain an understanding of and document stakeholder issues and concerns about surface water resource management for the Brunswick River and catchment
- Design a public involvement strategy as an integral component of the water resource planning for the Brunswick River.

The scoping exercise involved individual interviews with representatives of a range of stakeholders with an interest in the future of the Brunswick River. With the assistance of the DoW's Bunbury Office, representatives of the various stakeholders in the Brunswick River catchment were identified for interviews. This included representatives of local governments,

<sup>&</sup>lt;sup>3</sup> The DoE merged with the Department of Conservation and Land Management on 1 July 2006 to form the Department of Environment and Conservation.

state agencies, local landholders, environmental groups, and the mining and agriculture sectors.

Prospective interviewees were contacted by telephone and email to request their participation and arrange a convenient date and location for an interview. A brief background document was sent to all study participants in advance of the interviews. It described both the planning and issue scoping process (Appendix A).

The face to face interviews explored the water resource management issues facing the Brunswick River. A total of 25 face-to-face interviews were conducted between 9 March and 9 June 2006 (Appendix B). One stakeholder provided comment via email rather than an interview. Following review by the DoW, each person who participated in the scoping exercise will receive a copy of the scoping report.

The interviews identified a broad range of issues and topics which have been organised into five themes:

- Land use planning
- Ecosystem management
- Water security
- Water quality
- Management issues

Each of these themes is discussed in subsequent chapters of this report. The final chapter includes recommendations regarding future public involvement in the surface water planning process for the Brunswick River.

# 2 Land Use Planning

The relationship between surface water resource management and land use planning was frequently raised during stakeholder interviews. Many noted that the problems experienced in the Brunswick River system and Leschenault Estuary often involve a combination of land use and water management factors. For example, high sedimentation in the River and Estuary is a result of surface water run-off gathering sediment from cleared land, a situation in which a land.

The majority of stakeholders discussed one or more aspects of land use planning, including changes in land use patterns, the management of riparian zones and drain management.

## 2.1 Changes in Land Use Patterns

There is a commonly held perception among stakeholders that land use along the Brunswick River, especially on the Swan Coastal Plain, is in transition. Some stakeholders anticipated the land west of Brunswick Junction would be bought and changed from agricultural land into residential or lifestyle blocks. This transition was attributed by some to the deregulation of the dairy industry, which occurred in 2001. Others pointed to an increasing number of people moving southward to escape the 'city life'.

The land use plans covering the catchment paint a slightly different picture with less transition predicted to occur of agricultural land between Brunswick Junction and the Bypass. The main land use plans covering the catchment are the *Greater Bunbury Region Scheme* (Western Australian Planning Commission (WAPC) 2000a) and *Shire of Harvey District Planning Scheme No. 1* (Department for Planning and Infrastructure (DPI) 2006). Both plans suggest some change in land use in the Australind area. This area is likely to host more residential and/or lifestyle properties in the future. The rest of the catchment is predicted to remain relatively unchanged over the next 30 years. The upper portion of the catchment will remain predominately State Forest.



Map 2 Greater Bunbury Region Scheme zoning along the Brunswick River (WAPC 2000a)

The *Greater Bunbury Region Scheme* was prepared by the Western Australian Planning Commission (WAPC) as a statutory plan. It provides direction for current and future land use in the City of Bunbury and the Shires of Harvey, Dardanup and Capel. The majority of the Brunswick River catchment is included in the Scheme. An exception is the Augustus River, a tributary of the Brunswick River, which lies outside the Scheme.

The Region Scheme outlines the current and future land uses along much of the River. The section of the Brunswick River between where it joins the Wellesley River and its confluence with the Collie River is bounded on either side by land zoned as regional open space (dark green on Map 2). Between the Wellesley River and Brunswick Junction the land is zoned as rural (pale green on Map 2). Around Brunswick Junction is a mixture of urban, industrial and regional open space. The section between Brunswick Junction and the State Forest is zoned as rural land.

The Shire of Harvey District Planning Scheme No. 1 was prepared by the Department for Planning and Infrastructure (DPI) (2006). The Scheme delineates zoning for the Shire of

Harvey; which is similar to that found in the *Greater Bunbury Region Scheme*. There are few planned changes in land use. An exception is the area around Australind, where lifestyle and additional residential properties may establish.

The *Greater Bunbury Region Scheme – Strategic Agricultural Resource Policy* (WAPC 2000b) delineates the areas zoned for agricultural uses. This policy highlights the priority given to agricultural uses in the lower catchment of the Brunswick River. The land on either side of the Brunswick River between the Wellesley River and Brunswick Junction is identified as strategic agricultural land (green on Map 3). Strategic agricultural land is considered to be State and regionally significant and is protected under the *Greater Bunbury Region Scheme* for agricultural purposes.



Map 3 Agricultural zoning along the Brunswick River (WAPC 2000b)

### 2.2 Riparian Zone Management

*Riparian zone:* The zone along or surrounding a water body where the vegetation and natural ecosystems benefit from and are influenced by the passage and storage of water (Water and Rivers Commission 2000a).

The land use planning process has been driving the creation of public open space along riparian zones. As new developments are proposed along the River, the DPI attempts to ensure the riparian areas are planned as public open space.

However, responsibility for the long-term management of these areas has not yet been resolved. Some stakeholders attributed the proliferation of weeds (e.g. blackberry) to the lack of active management of riparian areas. Several were particularly concerned about the increase in exotic species and the displacement of native vegetation. Recent rehabilitation projects along the River may have heightened awareness of this issue. Other problems attributed to the lack of active management were a shortage of public access points to the River and stock roaming freely in the water.

Many of those interviewed wanted to see improved riparian zone management, including clearly defined roles and responsibilities. Some made recommendations regarding who should manage the riparian areas. Some stakeholders made a case for management by local government because the riparian areas were within their geographic jurisdiction. Others suggested that the Department of Conservation and Land Management (CALM)<sup>4</sup> or the DoW should be the manager as they were seen to be the State Government agencies with the best knowledge regarding how to manage the riparian areas.

Others thought adjoining landholders would be the best riparian zone managers because they regularly observe the riparian areas and thus can tell when work needs to be done. In addition, many of the landholders are farmers and thus have the equipment to carry out the necessary work (e.g. spraying for weeds).

Most local and State Government officials interviewed indicated their organization's resources were already too stretched to take on the additional responsibility of riparian zone management. Some State Government agency representatives indicated their agencies would take on the additional responsibility if it was adequately resourced.

Stakeholders were generally supportive of agency calls for additional resources to manage the riparian areas. The State Government was the most frequently identified potential source of funding and many stakeholders indicated this should occur in a timely fashion. While some recommended that government agencies be allocated the funds to manage the land, others wanted the funds distributed to local landholders to manage the riparian areas.

A number of stakeholders mentioned the limited public access to the River. There are few public access points to the River as the majority of riparian areas adjoin private property. This restricts the recreational activities that can occur on the River (e.g. fishing, marroning). The River can only be accessed at Bill Arthurs Bridge on Wellesley Road, at the pools in Brunswick Junction, and along several small bridges in the upper catchment. Several stakeholders indicated that fishing would increase if there was greater public access to the River and riparian areas.

According to a recent fish study of the Brunswick River (Morgan & Beatty 2006), recreational fishing could be a popular activity along the River if there was greater public access. River flows support good populations of a number of endemic freshwater crayfish – the Gilgie and the Marron. The Gilgie is the more widespread in the Brunswick River.

A stakeholder suggested that a walkway be built along both sides of the River, with various points of access through private property. The stakeholder cited the short walkway near the Brunswick pools which provides public access to the River and recreational opportunities (e.g. walking, fishing) as a good example of what a walkway could look like.

<sup>&</sup>lt;sup>4</sup> CALM merged with the Department of Environment 1 July 2006 to form the Department of Environment and Conservation.

Limited public access was also identified as an issue for management of the riparian zone. Those responsible for management would need to cross private property in order to gain access to some riparian areas. This may require moving heavy equipment across private property.

A few stakeholders were also concerned about the impact of stock roaming freely in the River, particularly from adjacent properties. This occurs because only a small portion of the River's riparian zone is fenced. The stock contributes to diminished water quality through erosion, increased turbidity, and the addition of faecal matter (see Chapter 5).

# 2.3 Drains

Several stakeholders were concerned about the lack of management of drains on public property and wanted clarity regarding who is responsible for their management. Concern was expressed that in the absence of management, waste including agricultural run-off was entering the River and damaging water quality.

One stakeholder noted that farm drains or other private property drains are typically managed by the property owner. However drains on 'public' property appeared to be unmanaged. Another stakeholder indicated that public property drains were once the responsibility of the Public Works Department. When the Department ceased to exist, the responsibility for drain management was left to no particular agency.

# 3 Ecosystem Management

## 3.1 Leschenault Estuary

Stakeholders frequently discussed the management of the Brunswick River in the context of its contribution to the health and future of the Leschenault Estuary. The Estuary is highly valued by the community not only for its ecological but also social values. It has achieved icon status in the South West.

Many stakeholders noted that the future of the Estuary is closely linked to the surface water resources that flow into it. The Leschenault Estuary and the rivers that contribute fresh water flows were often described as an ecosystem or management unit. The Brunswick River is one of three rivers that contribute fresh water flows to the Leschenault Estuary (Map 4). The other rivers are the Collie River and the Preston River.

The Leschenault Estuary has undergone a number of engineered changes since the 1950s. The original outlet to the ocean was filled in 1951 to stop the accumulation of silt in the old port area (DoE 2004). At the same time a new 'cut' was made opposite the mouth of the Collie River. In 1968/69 the Preston River was realigned for construction of the Bunbury Inner Harbour. Then in 1971 when the Inner Harbour was completed, the original outlet was again reopened to enable water to circulate and allow the passage of boats from Koombana Bay.

The reopening of the original outlet resulted in the development of two water bodies – the Leschenault Inlet and the Leschenault Estuary.



Map 4 Leschenault Catchment

The 'cut' changed the Estuary from a tide-dominated to a wave-dominated estuary (DoE 2004). This means the Estuary is now more efficient at trapping sediment. It also has a higher risk of habitat loss due to sedimentation, a lower natural turbidity, and less salt water circulation. In 1960, the Wellington Dam increased its capacity, resulting in less freshwater flow from the Collie River. This increased the relative importance of the flow the Brunswick contributes to the Estuary.

Stakeholders noted that the Estuary is experiencing increasing pressure from a variety of sources. These include: land clearing, erosion, urbanisation, pollution, nutrient run-off, acid soils, introduced pests, river damming, and dredging of river bars. These pressures have resulted in four key water quality issues: nutrient enrichment, deoxygenation events (which cause fish deaths), sedimentation and salinity.

These pressures are having a detrimental effect on the Estuary's ecology. The Estuary has lost more than half of its seagrass beds, which are an important food source and breeding shelter. This has decreased its ability to support fish and crab populations (DoE 2004), which in turn negatively impacts on recreational anglers who frequent the Estuary.

A number of management committees have formed over the years to help manage the Estuary (e.g. the Leschenault Catchment Council and the Leschenault Community Nursery). These committees were cited as evidence of public concern for and commitment to the Estuary's long term sustainability. Other organisations including Coastcare, Bushcare and Ribbons of Blue have also contributed to its management.

# 3.2 Contribution of the Brunswick River

In terms of water infrastructure, the Collie River is highly developed with both the Wellington Dam and the Collie Irrigation District located along the River. For several stakeholders this meant the Brunswick River should be left undeveloped and specifically no construction of a dam for public water supply. An undeveloped Brunswick River was seen as good for the health of the Leschenault Estuary, because it would provide higher quantities of water to flush the Estuary.

The quality of the water entering the Estuary was also a concern. A few stakeholders noted that the water of the Brunswick needs to be of high quality to help maintain a healthy Estuary ecosystem.

One stakeholder approached management of the Estuary from another direction. He/she indicated the only way to fix the problems in the Estuary was to engineer a solution, rather than monitoring and undertaking small rehabilitation projects. The individual supported projects that encouraged fencing along waterways but believed this was not enough to ensure a healthy River and Estuary environment.

# 4 Water Security

## 4.1 Perceived Threats

Security of water is a concern for many stakeholders. Concerns were expressed in two forms: supply for river users<sup>5</sup> and water for the environment. For some agriculturalists along the River, this meant water in the River for their stock to wander through and drink. Others wanted the water needs of the natural environment to be guaranteed in the long term. Some wanted both security of water supply and security for the environment.

<sup>&</sup>lt;sup>5</sup> River users include agriculturalists who allow their stock to roam the river and agriculturalists who irrigate directly from the River.

There are 17 landowners along the Brunswick River who irrigate their properties. Of these, 12 irrigators receive their water supply from Harvey Water irrigation co-operative (Calder per comm. 2006). The other five irrigators pump water directly from the River (Bennett per comm. 2006). This means the majority of local irrigators do not rely on the Brunswick River for their water supply. This is a very different situation to that found along the Capel River, where the majority of irrigators rely on the river for their water supply.

The low level of reliance on the water from the Brunswick River for irrigation purposes may explain why stakeholders were often not as concerned about water availability as they were about other management issues. However stakeholders did point to two potential threats to the long term water security on the Brunswick River – future Worsley Alumina Refinery expansion and a potential Water Corporation (WC) dam for public water supply.

# 4.2 Worsley Alumina Refinery

Worsley Alumina Pty Ltd has a refinery in the upper portion of the Brunswick River catchment. The refinery processes and refines crushed bauxite ore from the Darling Plateau to produce alumina for export via the Bunbury Port. Worsley Alumina currently processes 3.3 million tonnes per annum (Mtpa) of alumina but has approval to produce 3.7 Mtpa. The planned expansion would enable Worsley Alumina to produce 4.4 Mtpa of alumina.

The refinery is licensed by the DoW to use up to 2.1 GL per year from the Augustus River, which is a tributary of the Brunswick River. In order for the expansion to proceed, Worsley Alumina needs to increase their licensed allocation to 2.6 GL per year (Strategen 2005). They have lodged an application with the DoW to increase their license by 0.5 GL. The application is currently under review (Bennett per comm. 2006).

The Refinery's expansion was recommended for approval by the Environmental Protection Authority in November 2005. The Hon Mark McGowan, Minister for the Environment, approved the proposal in mid-April 2006. Although approved, the expansion has been postponed by BHP Billiton (86% partner in the Worsley Alumina venture) due to unfavourable economic conditions.

In the longer term, Worsley Alumina recognizes that climate change may reduce the amount of available water. To meet its needs, the company has increased water efficiency at the Refinery and identified potential future water supply options. These include: water from a service provider, nearby regional surface sources, supplies from coal field dewatering and further increasing the allocation from the Augustus River (Strategen 2005). These options are at the early planning stage and would need to be fully investigated and approved before development.

## 4.3 Future Water Corporation Infrastructure

For many years the WC has identified the Brunswick River as a potential future source of potable water for the IWSS. Its 2005 Source Development Plan indicates that up to 30 GL per year could be abstracted. However, the Corporation has a low level of confidence the

Brunswick River will be developed as a source option at this stage, primarily due to the amount of time needed for planning and approval processes (WC 2005).

Some stakeholders expressed concerns about the potential impact of a WC dam on the Brunswick River. This included potential environmental (e.g. the Estuary), aesthetic and recreational (e.g. Brunswick Pools) impacts due to reduced stream flow.

Unlike many other rivers in the South West (e.g. the Blackwood River), the Brunswick River is not used extensively for recreation. The Brunswick pools are an exception. Located at Brunswick Junction near the South West Highway, there is a caravan park to the north of the pools and a picnic area and bowling club to the south. One stakeholder could remember when swimming lessons were offered at the pools and indicated that while some people still swim there, the pools are not used as frequently as they once were. The photo below was taken in 1970.



Photo: 1970 Brunswick Junction (National Archives of Australia)

Construction of a public water supply dam and reservoir would result in the inundation of some properties. The potential impact a dam could have on nearby properties owners was raised by a small number of interviewees. If a dam was constructed, the surrounding land would become part of a water source protection zone. Under a protection zone, existing land uses are grandfathered but new land uses may be restricted, as water quality is protected by

disallowing new incompatible land uses in the zone. Some stakeholders were concerned this would reduce the value of private land or make private properties difficult to sell because future owners would be restricted in how they could use the land.

It was suggested by several interviewees that the Wellington Dam be given greater consideration as a possible WC public water supply source rather than looking at the Brunswick River. Others felt the time had come for a decision to be made one way or the other regarding whether a public water supply dam would ever be constructed on the Brunswick River. They hoped the current surface water planning process would provide that certainty.

Several stakeholders gave examples of other watercourses in the area where the introduction of public water supply as a use had displaced pre-existing uses. The recent Logue Brook case (DoW 2006) was cited as an example of existing recreational uses coming under threat from a Water Corporation plan to shift the use of reservoir water from irrigated agriculture to public water supply.

# 5 Water Quality

A number of water quality issues were identified during the interviews. These included: nutrient run-off, acid sulfate soils, erosion and industrial discharge. Several stakeholders mentioned the occurrence of fish kills as a result of water quality issues. A recent South West Catchments Council (SWCC) (2005) report also cited the occurrence of fish kills in the past three years. Any reduction in water quality was viewed as a stress not only on the health of the Brunswick River system but of the Leschenault Estuary as well.

Several stakeholders made a clear distinction between the upper and lower portions of the catchment. The upper portion of the catchment was viewed as having few if any water quality issues because it is dominated by State Forest. The risk of contamination is perceived as higher in the lower portions of the catchment (the Swan Coastal Plain) because of the dominance of agriculture.

Some stakeholders recalled projects undertaken to help improve the water quality of the River, including fencing projects. However, the majority of stakeholders believed improved monitoring was needed to fully understand the River's water quality issues.

## 5.1 Nutrient Run-off

A number of stakeholders were concerned about run-off from agricultural lands in the lower portion of the catchment. This was seen as increasing the levels of nitrogen and phosphorous in the River. This view is consistent with the findings of a SWCC report that nitrogen and phosphorous levels are higher in the lower portion of the Brunswick River than in the upper portion (SWCC 2005). This in part has been attributed to agricultural activities in the lower portion of the catchment (SWCC 2005).

Several stakeholders commented that the Estuary relies on the Brunswick River to provide high quality water. Elevated nitrogen or phosphorous loads in the Brunswick River would have a flow on effect on the Leschenault Estuary.

The DoW, with assistance from the Leschenault Catchment Council and a number of key State Government agencies, is developing a decision support system  $(DSS)^6$  to help guide the management of the Leschenault catchment. The DSS will be based on hydrological conditions of the area and water quality data collected over the next year or so. Water quality data will include information on nitrogen and phosphorous, which will provide managers information on nutrient sources in the catchment. The DSS may be ready as early as July 2008 (Zammit per comm. 2006).

# 5.2 Acid Sulfate Soils

Several stakeholders identified acid sulfate soils as a serious concern, especially for the future of the Brunswick River and the Estuary. Those who did not raise the issue of acid sulphate soils on their own were prompted to do so by the interviewer. In response, some noted that acid sulfate soils are not a problem as they had not seen or heard of them occurring in the Brunswick River catchment. A few of these stakeholders did comment on the significant negative impact acid sulfate soils are having in other areas of Western Australia.

The WAPC (2003) has mapped the potential for acid sulfate soils on the Swan Coastal Plain (Map 5). The risk maps are based on the depth of pyrites in the soil. Where pyrites are located closer to the surface, the potential for acid sulphate soils to form is greater (i.e. higher risk). Between the confluence of the Collie and Brunswick Rivers and Brunswick Junction, properties in the vicinity of the Brunswick River have a moderate to low risk of acid sulfate soils forming. Land in proximity to the Brunswick River between Brunswick Junction and the Lunenburgh River poses a low risk. However, the risk in the riparian zone is rated as moderate to low. The remaining portion of the River is not mapped.

Several stakeholders noted the Wellesley River is already experiencing acid pulses that are then carried into the Brunswick River. This was attributed to acid sulfate soils created by declining groundwater levels and changes in land use. The land to the east of the Wellesley River (near Benger Swamp) is rated as a high risk for acid sulfate soils (Map 5).

<sup>&</sup>lt;sup>6</sup> Decision support systems are computerised systems that help managers make informed decisions.



#### Acid Sulfate Soils

This is the common name given to soils containing iron sulfides, primarily in the form of pyrites. Under natural conditions acid sulfate soils are covered by water and vegetation and are safe. However, when the soils are exposed to the air, by draining, digging or lowering of the water levels, the soils are oxidized. The oxidation of the soil produces sulphuric acid.

Sometimes the soils can neutralize the acid causing no impact other than to the soil. This is common when soils contain a high amount of limestone. If the soils are unable to neutralize the acid, the sulphuric acid moves out of the soil. As the acid moves it can dissolve metals and other chemicals (e.g. arsenic) in its path and carry these into groundwater and surface water.

The sulphuric acid which moves out of the soil can:

- Cause major damage to aquatic ecosystems (e.g. cause fish kills)
- Contaminate groundwater with arsenic and heavy metals
- Contaminate soils with heavy metals (i.e. reduce agricultural productivity)
- Damage infrastructure through corrosion of concrete and steel pipes.

## 5.3 Erosion

A few stakeholders commented that eroded sediments were finding their way into the Leschenault Estuary. Others noted that pools in the Brunswick River system were filling with sediment and voiced concern regarding the effect this would have on fauna dependent on these pools during the summer months. A series of pools once extended along the Brunswick River between Australind and Brunswick Junction. A 2004 report by the DoE on the health of the Leschenault system raised the same issue, noting that pools formerly 2-5 metres deep had filled with sediment (DoE 2004). A large delta is developing where the Brunswick River meets the Collie River.

## 5.4 Industrial Discharge

Several stakeholders were concerned about the potential for discharges from the Worsley Alumina Refinery in the upper catchment. Some believe Worsley Alumina is releasing contaminates to the Brunswick River. Others were complimentary about the efforts Worsley Alumina has made to reduce the amount of water used at the refinery and control releases of effluent. One stakeholder expressed concern that the Brunswick River (via the Augustus River) might become contaminated if the Worsley Alumina Refinery is not properly decommissioned at the end of its operational life.

The Kemerton Industrial Park is located 17 km north east of Bunbury along Marriott Road and to the east of the Wellesley River. A stakeholder was uneasy about the potential for contamination of the Wellesley River and the Benger Swamp due to industrial discharge from the Kemerton site. Located 4-5 km north-west of the Industrial Park in the CALM-managed Benger Swamp Nature Reserve, the Benger Swamp is a wetland of national significance. It has outstanding historical and cultural significance, supports a high number of native flora and fauna, and provides a drought refuge for flora and fauna (Environment Australia 2001).

# 6 Management Issues

Management issues identified by stakeholders included: flow regimes, monitoring, fencing, climate change, agency relationships and water use efficiency. Each issue is discussed below.

### 6.1 Flow Regimes

Several stakeholders commented that the River's flow is "not what it used to be", noting that summer flows are greater now than in decades past. They recalled a time when they were able to walk through the River's bed in mid-summer. Others had read or been told about how the River used to go dry during summer.

The River used to be ephemeral (seasonal) but this is no longer the case. As part of its allocation licence, Worsley Alumina is required to release water during summer to maintain a base flow for downstream irrigation. As a result, the River no longer dries completely during the summer months.

Part of the water resource management process is determining the management objectives for the River. When asked to comment on the preferred flow regime for the River, the majority of stakeholders were unsure what flow regime should be sought. Some noted that the ecology dependent on the surface water has adapted to the modified flow regime and these values should be retained by ensuring some summer flow. Others thought the system should go back to being ephemeral. One stakeholder indicated the continuous flow supplied by Worsley Alumina was environmentally harmful because it encouraged the presence of exotic plant species at the expense of native species. Some stakeholders commented that additional work needed to be done to determine which regime was 'better' environmentally. Several indicated that in selecting a preferred flow regime, not only the environmental impacts on the Brunswick River but those on the Leschenault Estuary should be considered. Research designed to support the determination of a preferred river flow regime was viewed as particularly important. Questions raised by stakeholders included:

- How does the groundwater and surface water interact?
- Where are the threatened and endangered communities both flora and fauna?
- How much water does the environment need to maintain its current ecosystems?
- How much water is being taken?
- Are licensed users taking more than their allocation?

The majority of stakeholders talked about flow regimes but only a few commented specifically about ecological water requirements (EWRs) and environmental water provisions (EWPs). These are terms used by the DoW in their water allocation planning process. Most stakeholders were not familiar with the terms or did not understand the differences in their meanings. There appeared to be some confusion as to what EWRs and EWPs were and how they are developed.

Ecological water requirements (EWR) are defined in *Statewide Policy No. 5 – Environmental Water Provisions Policy for Western Australia* as: "the water regimes needed to maintain ecological values of water dependent ecosystems at a low level of risk" (WRC 2000b, p. 2).

Environmental water provisions are defined as: "the water regimes that are provided as a result of the water allocation decision-making process taking into account ecological, social and economic impacts. They may meet in part or in full the ecological water requirements" (WRC 2000b, p. 2).

### 6.2 Monitoring Quality and Flow

Many stakeholders identified the need to measure water quality and river flows as well as the amount of consumptive use. These were viewed as key steps in surface water resource management. It was identified that consistent, long-term monitoring data was needed to determine trends and problems. Some stakeholders indicated that the existing monitoring data is patchy and thus prevents trends from being seen and makes predictions of future conditions difficult.

Most stakeholders appeared unfamiliar with the existing monitoring program. The DoW currently collects monitoring data at three sites along the Brunswick River – Bella, Sandalwood and Cross's Farm. Every three months, data is collected on the following: river level, pH, conductivity (an indicator of salinity), temperature and dissolved oxygen levels.

One stakeholder indicated that monitoring was a good idea but provided useless data if not used for enforcement. He/she suspected that little, if any enforcement occurred when monitoring revealed a problem. In turn, this did little to encourage water users to follow either the regulations set out in the *Rights in Water and Irrigation Act 1914* or rules established by DoW policy. Self-regulation was viewed as nice in an ideal world but without a 'big stick' little was likely to change. Enforcement was needed at all stages in the management process, including ensuring licensed users take only their allocation from the River. The stakeholder

was concerned some licensees may be taking more than the entitlements under their water licences.

# 6.3 Riparian Zone Management via Fencing

A number of stakeholders discussed fencing as a means to better manage riparian zones. Fencing can prevent uncontrolled access of stock to the River, and as a result prevent the loss of riparian vegetation and bank slumping<sup>7</sup>. Stock can: trample and/or consume riparian vegetation, spread weeds and erode the foreshore (White and Comer 1999). Stock roaming the River can also contribute to nutrient loads.

Although fencing was highlighted as a positive management technique, only a small portion of the Brunswick River's riparian zone is fenced. A number of stakeholders discussed past fencing projects, which have targeted farmers. They indicated that the primary objective of these projects has been to keep stock away from riparian vegetation and out of the River. For example, the Brunswick River Restoration Project in Brunswick Junction included fencing to exclude stock from the River and stabilisation of the river bank through rock pitching, revegetation, and removal of exotic species (National Heritage Trust 2004).

Stakeholders indicated that many of the rehabilitation projects have been successful, particularly in raising awareness of the problems associated with the riparian zones. However, some stakeholders have been disappointed by the unwillingness of farmers to fence their property. A few stakeholders attributed this to a lack of incentives for farmers, such as help to cover the costs of fencing. Others attributed this to farmers having to change farming practices they have relied on for decades. One stakeholder went as far as to say the only way to get fences put up along much of the Brunswick River would be to legislate its implementation.

## 6.4 Climate Change

Climate change was raised as an issue by only a few stakeholders. Initially this was puzzling given the high profile of climate change as an issue in the media. However, water is not viewed as a limiting factor by water users along the River. Those interviewed did not describe any local effects associated with the declining rain fall trend in the South West. In the absence of any visible impacts of reduced rainfall, climate change has yet to become an issue of concern in the Brunswick River catchment.

The stakeholders who raised climate change as an issue noted that it needed to be factored into future projections of water availability for the natural environment and other uses. The significant degree of uncertainty attached to climate change scenarios was also recognised by these stakeholders but did not diminish the need to address this issue in projecting future sustainable yields and use.

<sup>&</sup>lt;sup>7</sup> Bank slumping is the collapse of a river bank into the river channel. It can occur when the bank becomes heavily saturated, often a result of lost of native deep rooted vegetation. The best management is stock exclusion and fencing (White & Comer 1999).

The Indian Ocean Climate Initiative (2005) reported that the average annual rainfall in the South West has declined by up to 10% since the mid-1970s. There has also been a slight increase in temperature (0.7°C in the last 50 years). It is likely that both natural variability and the enhanced greenhouse effect have had a role in the changing rainfall patterns.

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) has developed climate change scenarios for the South West that extend out to 2030 and 2070. By 2030, under the worst case scenario, a 20% decrease is expected in the long term average annual rainfall. The best case scenario indicates a 5% increase in the long term average annual rainfall. By 2070, under the worst case scenario, a 60% decrease is expected in the long term average annual rainfall. The best case scenario indicates a 10% increase in the long term average annual rainfall (CSIRO 2001). It should be noted that within a region (e.g. the South West) not all local areas will be similarly affected. This adds to the complexity of factoring climate change effects into the water resource management process.

## 6.5 Inter and Intra-agency Relationships

The majority of State Government agency stakeholders noted a need to improve inter- and intra-government agency relationships. Some commented on tensions between the regional offices and Perth-based head offices of some state agencies. Regional agency staff members invest heavily in developing long term relationships with stakeholders in their regions. Some felt this work was undervalued by head office staff in Perth, especially when contentious issues arose. Some Perth-based staff members believed that regional staff members do not always follow policy directions set by head office and instead implement unofficial 'local rules'. This was viewed as problematic when regional rules contradict head office policy.

A few government agency stakeholders cited examples<sup>8</sup> where efforts to work collaboratively with other state agencies provided successful outcomes, but these were the exception. More often state agency stakeholders indicated it was difficult at times working with other state agencies. Several stakeholders commented that workloads were high and collaboration with other agencies only added to the workload while providing little benefit. Some believed their agency's advice had rarely been acted upon by other agencies when offered and rhetorically asked why they should continue to offer assistance.

# 6.6 Efficiency

The majority of stakeholders saw efficiency as a key part of good water resource management. They noted that water users generally, could be more efficient. A few people

<sup>&</sup>lt;sup>8</sup> One example is the recent coordination between the Department of Agriculture (DoAg) and the DoW. As part of the DoW's recent water use survey, DoAg provided the DoW with their land use data to help estimate the amount of water being used.

cited examples of increased water use efficiency, including the Harvey Water<sup>9</sup> piping project and efforts at the Worsley Alumina Refinery.

Several stakeholders noted that water efficiency may, in some cases, have undesirable side effects. They cited the Harvey Water piping project as an example. Harvey Water is in the process of changing its irrigation infrastructure from an open channel system to a piped system. The use of pipelines has made the system more efficient. As a result, Harvey Water has applied to the DoW to trade the 17.1GL of water savings to the Water Corporation (DoW 2006).

Several of the stakeholders believed that increased efficiencies will lead to negative impacts on the environment. The channels used to leak, which allowed habitat to establish along the channel edges. Some stakeholders were concerned that without the leakage, this habitat and associated fauna may suffer.

# 7 Public Involvement Options

# 7.1 Principles of Involvement

During the scoping exercise the following issues were raised by stakeholders with respect to public involvement and the Brunswick River water resource management planning process:

- Public engagement should start in the early planning stages not after the decisions have been made.
- The community typically receives management plans after they have been completed, with little opportunity for comment and change.
- The importance of engaging appropriately with Indigenous people on water management issues was raised by a number of stakeholders.
- The value of using local information sources was identified.
- The importance of providing feedback to participants regarding how their inputs have been used in the planning process.

In designing its public involvement strategy for the Brunswick River planning process, the above issues should be addressed by the Department of Water. The Department should also keep the following principles in mind:

• Different sectors of the community will want varying degrees of involvement in the planning process. For many this may take the form of reading about the progress of the planning process in their local newspapers or simply knowing that others in their community have an active role in the planning. Others, including the majority of those

<sup>&</sup>lt;sup>9</sup> Harvey Water is a private irrigator owned cooperative and is responsible for delivering water to their irrigators via a gravity pipe system as well as upkeep and maintenance of the system.

interviewed for the issue scoping study, are seeking a higher level of involvement. Their desired role extends beyond simply receiving information from the Department. They want greater hands on involvement in the planning process. The public involvement strategy should also provide support where it is needed in order for particular interests to participant meaningfully. For these reasons, a strategy typically includes a variety of activities geared to different interests and levels of involvement.

- The Department's public involvement strategy must be realistic and complement its resources. Resources in this context include monetary support, time and skilled personnel. It is critical that, whatever the final design of its public involvement strategy, the Department be in a position to deliver on its commitments. Too often, well intentioned but inadequately resourced public involvement programs have proven costly to government agencies in terms of loss of stakeholder trust.
- The issue scoping exercise forms one component of the Department's public involvement strategy. It is important that the agency build on the momentum of this initial work with stakeholders. When a planning process involves a protracted timeline of several years, it can be a challenge to maintain stakeholder interest. The Department is encouraged to look across the various stages of its timeline and seek out meaningful opportunities for dialogue and collaboration with stakeholder interests. The DoW's tentative timeline for the Brunswick River water management planning process is shown in Table 1. The staged timeline will be refined by the agency as the planning process progresses.
- Whenever the timeline for a planning process is lengthy, there are bound to be changes during its course. It will be important that the public involvement strategy is periodically reviewed and updated to reflect changing circumstances and new information. The issue scoping report is effectively a snapshot of a particular point in time. As additional information is generated over the course of the planning process and through interactions with stakeholders, stakeholder and agency perspectives may change on some existing issues and new issues will likely emerge. Additional stakeholders may also make themselves known. Ongoing monitoring of the public involvement strategy will allow the Department to make any needed adjustments in a timely and effective fashion.

## 7.2 Options for Providing Information

The provision of timely information to the community, including recognised stakeholder interests, is an important component of any public involvement program. However, as noted earlier, any information program should be complemented by activities offering other degrees of involvement.

In this case, the 'local community' is defined primarily by the Brunswick River Catchment. Various combinations of the following information mechanisms could be established by the end of Stage 1 and function over the course of the 4 year water resource planning process:

• A DoW webpage dedicated to the project

- Newspaper and radio articles/stories
- A periodic newsletter
- Creation of a public involvement database
- Information displays

### **Dedicated webpage**

Increasingly community members look to websites for both general background and detailed information on topics of interest. As part of the DoW's agency website, a separate page could be developed for the surface water management projects being undertaken in the South West. This would include the Brunswick River project as well as others such as the Capel River and Lefroy Brook.

The content of such a webpage might include:

- Information on the need for the water resource management plans.
- Brief background on each of the surface water sources highlighting key issues.
- Brief summaries of key outcomes and progress reports.
- Links to technical reports pertaining to the study
- Identification of ways the public can contribute to the study (e.g. up coming events, register for newsletter)
- A mechanism for readers to make comment (e.g. comment form, discussion thread)
- Contact information for the study, including the name of an individual to contact.

An interactive website could provide updated information on the project and obtain and respond to emailed comments from the public. At key project milestones, the website would be updated to provide the public with current information about the project.

One of the challenges in making a website effective is creating awareness of its existence. It is also important that those attempting to access the website are sent directly to the relevant page rather than simply to the welcome page of the DoW's agency website. The website could be promoted through other public information sources including newspaper articles and newsletters. Related interests, such as the South West Catchments Council, could be asked to provide information about the DoW planning process and links to the project pages on their websites.

The DoW cannot rely on the public accessing a website as their source of information. Other mechanisms (e.g. media) are needed to ensure the community is aware of the planning process.

#### Media

Local newspapers and radio provide an inexpensive and effective means of reaching the broader community with information about the Brunswick River study. Media outlets include: the ABC Radio Country Hour, South West Times, the Bunbury Herald and the Harvey-Leschenault Reporter. Additional information sources useful in communicating with farmers and rural community members include the Farm Weekly and Countryman publications.

# Table 1Tentative<sup>10</sup> timeline

	Year 1	Year 2	Year 3	Year 4
Stage 1				
Issue scoping				
Survey of consumptive use				
Gather data on Aboriginal cultural/social values				
Stage 2				
Develop hydraulic model				
Assess river hydrology				
Assess riverine ecology				
Develop flow model				
Develop digitised map of river hydrology and flow				
Report on social/cultural values of the Brunswick River				
Stage 3				
Determine ecological water requirements				
Develop alternatives to address water resource management				
issues				
Stage 4				
Evaluate alternative allocation scenarios (economic, social,				
Determine water provisions and preferred resource management				
measures				
Stage 5				
Prepare draft water resource management plan				

<sup>&</sup>lt;sup>10</sup> A refined planning timeline will be developed by the DoW at the end of Stage 1.

The DoW could provide the local media outlets with media releases and/or feature articles at various stages of the study to keep the general community informed of outcomes, key choices, and the status of the study.

The DoW could highlight key regional personnel in their communication efforts and demonstrate the collaborative nature of the work with the South West Catchments Council.

#### Newsletter

The DoW could publish a project newsletter at critical milestones in the project. The initial newsletter might focus on the need for the planning process and the Stage 1 outcomes. The first edition of the newsletter could be distributed extensively to households throughout the catchment. A newsletter would provide contact and project schedule information, and invite the public to participate and stay informed on upcoming events by joining a mailing list for future newsletters.

#### Public involvement database

A mailing list/database of stakeholders and interested parties is a valuable asset to develop. Such a database would contain contact details of local people who are interested in having a say in the study or simply being kept informed. Once registered on the database, individuals would receive regular updates (e.g. the newsletter) and be notified of upcoming events in which they could participate.

Opportunities to register on the database could be promoted through the website and newsletter. Information collected from those registering on the database might include:

- Name
- Email address (or mailing address)
- Affiliation
- Issues of particular interest
- Types of activities in which they would consider participating

#### **Information displays**

Information displays can provide a useful mechanism for bringing alternatives to the attention of the local community. Displays work most effectively when situated in highly trafficked areas (e.g. shopping centres) within a study area. By staffing the display some of the time, members of the public could also provide input to the evaluation through comment sheets or a brief questionnaire.

### 7.3 Opportunities by Stage

Each stage in the Department's planning process has the potential to generate opportunities for consultation and collaboration with stakeholder interests and the broader community. The exact nature of the opportunities will become clearer as the study progresses and the products of the various stages become more defined.

The following describes a number of possible options for consideration. These should not be viewed as definitive recommendation but as possible approaches.

#### **Option: Seminar on Stage 1 Findings**

The results of the Stage 1 activities could be presented to stakeholders and the general community through a public seminar and open house. In a two hour session the results of the following Stage 1 activities could be presented: the issue scoping exercise, the water use survey, and the Aboriginal cultural values. It would also provide the opportunity to update the community on the status of the project and identify the next steps in the planning process.

Some individuals like seminar style presentations but others would prefer a more informal atmosphere. For this reason, an open house could be associated with the seminar. This would also give an opportunity to those who cannot make the time of the seminar to speak with DoW staff. The seminar component might be held on an afternoon followed by an evening open house session.

#### **Option: Results of Stage 2 Studies**

Near the end of Stage 2 would present an opportunity to provide stakeholders and interested community members with the results of the studies on the River's hydrology and ecology, and the projected future demand for consumptive use. This activity might take the form of a workshop, open house or seminar.

#### **Option: Evaluating alternatives**

Stages 3 and 4 involve the development and evaluation of alternative water allocation scenarios and resource management actions. These planning activities lend themselves well to hands-on evaluation exercises such as workshops. Web-based evaluation exercises might also be conducted.

### 7.4 Aboriginal Community Engagement

There are several peak Aboriginal organisations in the South West, including the South West Aboriginal Land and Sea Council (SWALSC)<sup>11</sup> and the Noongar Employment and Enterprise Development Aboriginal Corporation (NEEDAC)<sup>12</sup>. Both of these organizations provide useful first contact points when identifying the appropriate people to meet with in the Aboriginal community.

Consultations should involve Elders, who are typically paid for their time, traditional owners and local Aboriginal people. Traditional owners do not always reside on their land; hence there is a need to talk with local Aboriginal people as well as traditional owners.

<sup>&</sup>lt;sup>11</sup> SWALASC represents traditional owners of the South West and assists in resolving Native Title claims. It is also working with traditional owners on the management of natural resources. This has included the creation of regional consultative working groups. The Brunswick River is part of the Region 3 working group.

<sup>&</sup>lt;sup>12</sup> NEEDAC facilitates the employment of Aboriginal people through community and/or enterprise development projects.

As with other stakeholders, local Aboriginal people should be invited to attend all public involvement opportunities related to the project. However, it may be necessary to provide additional opportunities for their input. Unless a good level of trust has already been established, their attendance at public meetings or similar events may be poor.

Separate meetings can provide a better forum for Aboriginal people to come together to talk about their river management concerns and form a position collectively. Such meetings are often lengthy (e.g. lasting all day) but this enables more in-depth discussion and time to reflect on the views presented at the meeting. Outdoor on-site meetings, especially if talking about specific areas of the River, are often preferred to indoor meetings.

During the scoping exercise it was recommended that notices of public involvement activities be placed in local Aboriginal Corporation offices, such as NEEDAC. Newspaper articles and advertisements were deemed insufficient to attract Aboriginal community participation. Ringing people directly and encouraging them to attend was recommended to achieve a better turn out.

Often consultation with Aboriginal groups involves the community providing their opinions or local knowledge but receiving little of value in return. Follow-up was identified as a key part of the consultation process. This included receiving any outputs such as management plans and also looking at opportunities to jointly manage the water resources.

The DoW could consider retaining an individual to liaise with the Aboriginal community over the course of the planning process. Ideally this person would be Aboriginal and already have good working relationships within the local Aboriginal community. The resource person could provide guidance to the DoW on preferred public engagement techniques, initiate contact with the community to plan public involvement activities and assist in removing barriers to Aboriginal participation in the planning process.

## 7.5 Collaboration

As the field of natural resource management has matured, acknowledgement of the value of collaborative relationships has grown. Collaborating with other parties can assist the resource manager in building strong working relationships and increasing credibility in the local community.

The Department is encouraged to seek out opportunities to partner with other stakeholder interests (e.g. environment, industry, Aboriginal community, agriculture) on specific public involvement activities focused on issues of shared interest. This might for instance take the form of co-sponsorship of a particular event. Examples of community-based groups within the Brunswick River catchment with whom the DoW might partner are shown in Table 2.

A number of stakeholders commented on the perceived lack of collaboration between state agencies, particularly on issues of a multi-disciplinary nature. Stakeholders recognised the linkages between land use planning and water resource management issues but concerns were expressed that the relevant agencies were failing to adequately join forces when tackling these issues. The future management of riparian zones was a primary concern. Partnering with state agencies (e.g. the Department for Planning and Infrastructure, Department of Agriculture, Department of Environment and Conservation) and local governments (e.g. City of Bunbury and Shire of Harvey) in the design and implementation of a riparian management workshop is one example of a possible collaborative multi-agency undertaking.

Group	Interest represented
South West Catchments Council	Environment
Leschenault Catchment Council	Environment
Western Australian Farmers Federation	Farming community
Ribbons of Blue	Environment and youth
Bunbury-Wellington Economic Alliance	Local government and economic development
South West Aboriginal Land and Sea Council	Aboriginal community
NEEDAC	Aboriginal community

Table 2 Community groups

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# Appendix A Background Document

# Issue Scoping and Environmental Water Provisions for Surface Water Resources in the South West

### Background

The lakes, wetlands and river systems of the South West Region provide a variety of uses or values including consumptive uses such as irrigated agriculture, public water supply, and mining; non-consumptive uses such as recreation and heritage values; and ecosystem maintenance. As the demands on these surface water resources continues to grow, so too does the challenge in meeting the current and possible future uses of these resources.

As the State agency responsible for water resource planning, the Department of Water (DoW) has commenced development of management plans for surface water resources in the South West. These plans will establish the sustainable water yield for an area and set limits on abstraction from surface water resources. The planning process includes:

- Determining the values associated with water resources including the environmental, social and economic values.
- Gaining an improved understanding of the hydrologic relationships between ground and surface water resources.
- Identifying current consumption and likely future demand for surface water resources.
- Assessing the quantity of water needed to support the natural environment and the amount of water that can be diverted to other uses.

The plans will guide the DoW's approval of future licences to take and use water for purposes such as irrigation, industry, mining, and the servicing of rural and urban communities. This will prevent the resource from becoming over allocated and thereby protect individual entitlements and the economic viability of licensed users. The resource planning process is expected to take anywhere between 12 months and 4 years for the priority surface water resources in the south west. The amount of time will depend on planning priorities, demand pressures and the complexity of the issues.

#### **Environmental Water Provisions**

A key early step in the water resource management process is the determination of Environmental Water Provisions or EWPs. This is the amount of water needed to maintain ecological and non-consumptive uses (e.g., cultural, recreation, aesthetics) of the surface water resource. Having a EWP ensures that abstraction for consumptive uses does not result in unacceptable changes to ecosystems or non-consumptive uses dependent on the surface water resource. The amount of water available for consumptive use is equivalent to the water yield of the water resource minus the EWP.

The DoW has commenced a research and public consultation programme to provide the information needed to set EWPs and allocation limits. By working directly with community stakeholders, the consultation process aims to:

- Ensure that public issues and concerns are understood, documented and addressed
- Involve the public in each aspect of the decision making process
- Ensure issues of concern to stakeholders that are reflected in the EWP determination
- Provide feedback to the public on how their issues influenced planning decisions
- Provide a way for stakeholders to provide advice and innovation in formulating solutions.

#### **Issue Scoping**

Our firm, Beckwith Environmental Planning, has been retained by the DoW to undertake issue scoping exercises in the following catchments: the Brunswick River, Capel River, Willyabrup Brook, Cowaramup Brook, Margaret River, Chapman Brook and Lefroy Brook.

The objectives of the issues scoping studies are to:

- Gain an understanding of and document stakeholder issues and concerns about surface water resource management in the respective catchments with a particular focus on the development of EWPs; and
- Design a public involvement strategy as an integral component of subsequent stages in the EWP process.

The primary output will be an issues paper for each study catchment. This will discuss stakeholder issues and propose a community involvement strategy for subsequent stages in the EWP process.

Our efforts will initially focus on the Brunswick River and Capel River catchments. We are currently contacting stakeholders, such as you, to request their participation in the scoping exercise. Representatives are being sought from a range of stakeholder categories including: local governments, community and environmental groups, agriculture, landowners, industry, and relevant state agencies (e.g., South West Development Commission).

Individual face to face meetings will be conducted with stakeholder representatives. The interviews will be undertaken by either Jo Ann Beckwith or Sabrina Genter. On average these meetings take 45-60 minutes of the individual's time.

Following a meeting with a stakeholder representative, he or she will receive a copy of the meeting notes for their review and comment. Once the meetings with stakeholder representatives have been completed, we will prepare a summary report synthesizing the key themes and issues raised during the consultations. While the issue scoping report may include some direct quotes to elaborate discussion points, no individual names will be attributed to any quotes or opinions in the report.

Each stakeholder representative will receive a copy of the issue scoping report we submit to the DoW.

### **Contact Information**

Thank you for your willingness to participate in this study.

If you have any questions please do not hesitate to contact us:

Jo Ann Beckwith PhD Director jbeckwit@bigpond.net.au Sabrina Genter Project Manager sgenter@bigpond.net.au

Beckwith Environmental Planning Pty Ltd Phone: 08 9450 8711 Facsimile: 08 9450 8722 www.beckwith-associates.com

The DoW project contact is: Robert Donohue Programme Manager Phone: 08 6364 6500. robert.donohue@water.wa.gov.au



AREAS OF RIVERS TO BE SURVEYED

Amilation
Department of Industry and Resources
Department of Agriculture
Department of Agriculture
Forest Products Commission
Forest Products Commission
Water Corporation
Department of Environment
Department of Environment
Department for Planning and Infrastructure
Department of Conservation and Land Management
Department of Conservation and Land Management
Department of Water
-
City of Bunbury
City of Bunbury
City of Bunbury
Shire of Harvey
Shire of Harvey
Bunbury Wellington Economic Alliance
South West Catchments Council
Harvey Water
WWF - Australia
Sw Environment Centre
Leschenault Catchment Council
South West Development Commission
Worsley Alumina
Dardanup LCDC
NEEDAC
South West Aboriginal Land and Sea Council
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Brunswick
Brunswick
Brunswick

# Appendix B Stakeholder Representatives