



TWEED SHIRE
COUNCIL

CPO2

Banora Point West Drainage Scheme

Section 94 Plan No 2

INFRASTRUCTURE
PLANNING UNIT



www.tweed.nsw.gov.au

DRAFT Version 5
October 2009

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TWEED SHIRE COUNCIL

CERTIFIED IN ACCORDANCE WITH
THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979
AND REGULATIONS

| GENERAL MANAGER

DATE: 11/2/98

SECTION 94 PLAN No 2

BANORA POINT WEST DRAINAGE SCHEME

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APPENDICES

- A Cash Flows and Works Program
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VERSIONS/EDITIONS:

Version 1: Interim measure - contributions of \$13,857/ha required to allow early release of urban lands in DCP 3 prior to adoption of an integrated local drainage scheme/levy.

Version 2: By Council resolution dated 15 April 1992 to assume responsibility for the further preparation, implementation, and financial management of the Banora Point West Drainage Scheme. A levy of \$5,000 per hectare was nominated.

Version 3: s94 Western Drainage Scheme Contributions was formalised into a contribution plan following the introduction of legislation, taking effect from the July 1, 1993:

1. *Version 3.0:* Operational from 7.7.93 to 8.12.95
2. *Version 3.1:* This amendment has not been exhibited, nor adopted.
3. *Version 3.2:* Operational from 9.12.95 to 11.02.98. Council resolved on 5 April 1995 to apply a surcharge of 10% to all s94 developer contributions received by Council to fund administration, development and review of Section 94 contribution plans (Resolution No 560).

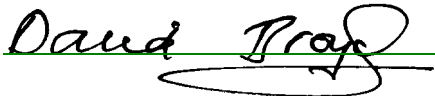
Version 4: A revision to CP No2 in response to significant changes to the original drainage concept plan for the area:

1. *Version 4.0:* Operational from 11.02.98.

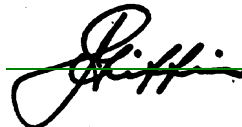
DRAFT Version 5: Reduces admin levy from 10% to 5% to be consistent with Minister for Planning's Direction dated 10 July 2009 and with the application of the IPD to the Feb 1998 contribution rate of \$8,414 per HA results in a levy per HA of \$13,144.

CERTIFICATION

This Section 94 development Contribution Plan, the **Banora Point West Drainage Scheme Drainage - Contribution Plan No 2 - Version 4.05.0** was adopted by Tweed Shire Council on the ~~21.01.98~~xxxx. The Plan comes into effect on the ~~11.02.98~~xxxx.



Director, Development Services



General Manager

EXECUTIVE SUMMARY

VERSION 4.0 (11/2/1998)

Broad acre developments in Banora (Figure 1) are levied \$8805 per hectare, in accordance with Contribution Plan No2, to fund the Western Drainage Scheme.

This document is Version 4.0 of Contribution Plan No2. It represents a significant shift in direction from previous Plans in response to changing circumstances. Failure of development approval for essential channel works around Shallow Bay and the presence of significant fresh water habitat in Vintages Lakes precludes the injection of salt water into the drainage system. Saline water was to be injected into the drainage system as a cleansing mechanism, flowing from Shallow Bay to Trutes Bay, taking advantage of the natural hydraulic gradient. Accordingly the work items contained in the previous plans needed to be rationalised.

In addition, developer income into the Plan is or will be much lower than expected due to the uncertainty of the future development at some sites. Again the works schedule has been revised with the essential or priority items being funded and others not so essential, or no longer required, being deleted.

Finally Version 4.0 allows the Plan to be wound up following the completion of drainage works in the Flame Tree and Vintages Lakes Developments and the construction of Frasers Drive culvert, gross pollutant traps and Linear Park improvements. Council over time will continue to improve the Linear Park in particular financed by rate revenue, as funds permit. The Plan will have provided all essential drainage works required by DCP3 which permitted filling of the local flood plain for residential development.

DRAFT VERSION 5.0 (NovemberOctober 2009)

Reduces the admin levy from 10% to 5% to be consistent with the Direction from the Minister for Planning dated 10 July 2009.

Notes:

1. All references to "Development Control Plan No 3" and "DCP 3" are to be read as "Tweed Shire Development Control Plan Section B3".
2. At the date of amendment the application of the IPD to the adjusted Feb 1998 contribution rate of \$8,414 per HA results in an amount of \$13,144 per HA. This figure to be revised regularly.
3. Version 4 referenced the ABS IPD Index for 'Private Dwellings'. It should be noted that the ABS now publishes IPD figures for 'Residential Building' which if applied to the contribution would have resulted in an increase of 74%. Tweed Shire Council has more recently been applying the IPD for 'Engineering Construction' which is believed to be more relevant to increases in Council's construction costs. In version 5 this resulted in an increase of 56.21% on the 1998 amount.



1.0 INTRODUCTION

Much of the land included in the Banora Point West Drainage Scheme Area is subject to the provisions of the Tweed Shire Council's Development Control Plan No 3 (DCP3 - September 1990, and subsequent amendments) for Banora Point West and Tweed Heads South. The provisions of DCP3 allow the development of the South Tweed Floodplain by filling and draining, and the creation of a floodway corridor, including a series of lakes, thus providing an adequate, efficient and environmental safe drainage system.

1.1 Background to the Plan

Council resolved in April 1992 to prepare a Section 94 Contributions Plan to enable the Banora Point West Drainage Scheme to be implemented. In DCP3, a drainage corridor for the West Banora Point Basin is identified running north along the western boundary of the Twin Towns Sports Club and then generally west and south-west to Trutes Bay in the Terranora Broadwater. The DCP provided for the implementation of a co-operative drainage scheme, financed and constructed by developers. However, after nearly a year of meetings, draft proposals, legal and technical argument, and extensive correspondence, no scheme acceptable to all interested parties was able to be formulated whereupon Council took management control of the Scheme.

During the subsequent five years since, a number of significant and fundamental changes to be proposed drainage scheme have been made in consultation with stakeholders. It is these changes that have necessitated amendments to Contribution Plan No 2 and in particular this version/edition, Version 4.0:

- * the failure of a development application for a proposed canal system which would have provided drainage for the section of the study area to the east of the Pacific Highway;
- * the change in size and shape of the proposed Lake Metricon (or Banora Waters) development; and
- * the possibility that the proposed lake associated with the Vintage Lakes development would not be allowed to be saline on environmental grounds. (Source: WBM, 1997)

In addition, projected income into the Plan has fallen by nearly 20% due to uncertainty concerning the future extent of development of the "Sullivan" Estate. Parts of the Vintage Lakes Development is very steep and geotechnically unstable, also reducing income into the Plan.

1.2 Legislative Framework

Section 94 (s94 of the *Environmental Planning and Assessment Act 1979* - the Act) permits Councils to require developers to pay monetary contributions and/or



dedicate land in order to fund the increased demand for public amenities and public services generated by the carrying out of development. The Land and Environment Court has determined that s94 is the exclusive method by which Councils can require contributions from developers. The three general principles to be satisfied in validly requiring s94 contributions are:

- * the contribution must be for, or relate to, a planning purpose;
- * the contribution must fairly and reasonable relate to the subject development; and
- * the contribution must be such that a reasonable planning authority, duly appreciating its statutory duties, could have properly imposed the contribution.

Council may require a contribution by way of the payment of monies and/or either or both of the following methods:

- * the dedication of land, free of cost to Council,
- * the carrying out of works approved by and free of cost to Council,

where such contribution is for the carrying out of public works and/or provision of public facilities which are reasonably required by the particular development.

Internal drainage in subdivisions and other developments is normally accepted as part of the works associated with the development. This work will generally be wholly provided by the developer, and no s94 contribution will be required.

In determining a reasonable trunk drainage contribution, the necessary land reservation and construction costs need to be identified. The costs may relate to any or all of the following:

- * studies;
- * acquisition of land;
- * construction of drainage facilities;
- * pipelines;
- * culverts;
- * pollution control measures;
- * formation of detention and retention basins;
- * all ancillary works; and
- * topdressing and grassing

Ecological mechanisms which help drainage, such as appropriate planting and measures to reduce potential downstream impacts, may also be incorporated when assessing the contribution.

It is proposed that works from all of these nine categories be included in the works for which s94 contributions to be obtained, to the extent that they are fundamental to the Banora Point West Drainage Scheme.



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2.0 PURPOSE OF THE PLAN

2.1 Aims and Objectives

The aims of this Section 94 Contributions Plan are:

- * To enable s94 contributions to be required and obtained by the Tweed Shire Council for the purposes of constructing trunk drainage at Banora Point West;
- * To provide a degree of certainty for owners, developers and the Council about s94 contribution liabilities for trunk drainage in the Banora Point West Scheme Area.

The objectives of this Plan are as follows:

- * To provide for the recovery of the balance of costs of implementing the Banora Point West Drainage Scheme;
- * To determine the costs of providing the Drainage Scheme;
- * To establish the area of land that will benefit from the provision of the Drainage Scheme; and
- * To determine reasonable and equitable rate of contribution to be paid by developments in the Scheme Area.

2.2 Land to Which the Plan Applies

This Plan applies to land within the Banora Point West Drainage Scheme Area. The boundaries of this Drainage Scheme Area are shown on **Figure 1**.

2.3 Relationship to Other Plans

Other planning instruments applying to the land to which this Plan relates are principally the following:

- * Tweed Local Environmental Plan (1987 and subsequent amendments); and
- * Development Control Plan No 3 - Banora Point West and Tweed Heads South (1990 and subsequent amendments)

One intention of DCP3 is to permit the development of the South Tweed Floodplain by filling and draining, including creation of an adequate floodway corridor sufficient for major drainage existing from the southern slopes. The purpose of this Plan is to enable s94 contributions to be sought for trunk drainage in order to implement a drainage scheme to allow for development in the South Tweed Floodplain as intended by DCP3.



SECTION 94 PLAN NO 2 – BANORA POINT WEST DRAINAGE SCHEME

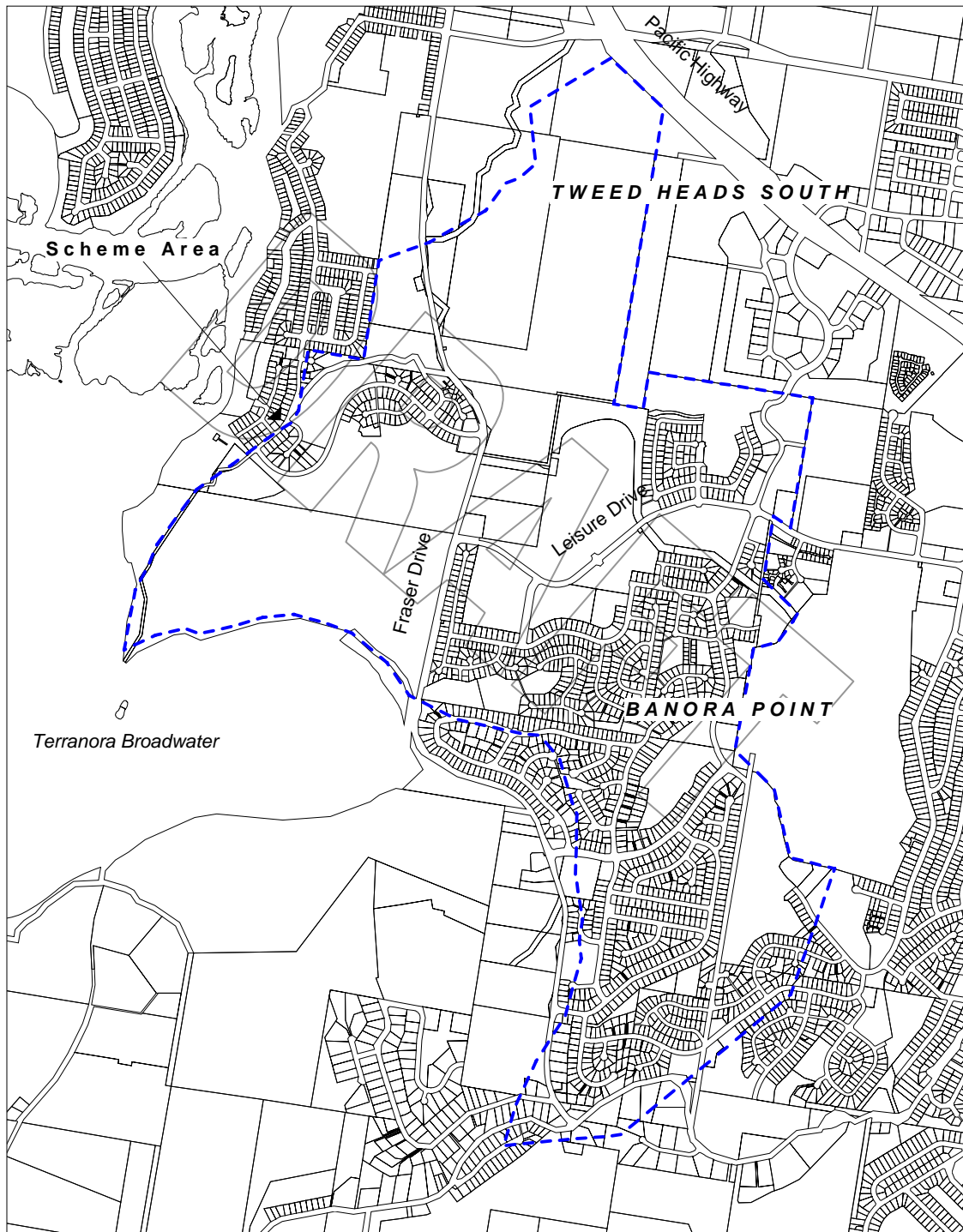


Figure 1
Scheme Area



3.0 NEXUS

3.1 Impact of Development

In general, urban development of any type changes and increases natural runoff by altering ground levels and landforms (through filling, excavating, etc) and by increasing the proportion of "hard surfaces". Existing natural drainage systems often cannot accommodate such change and accordingly, it is necessary to construct trunk drainage systems as a result of new urban development.

Much of the land in the Banora Point Scheme Area is within the floodplain of the Tweed River.

In 1985, Section 582A of the *Local Government Act* was amended by the *Local Government Act (Flood Liable Land) Amendment Act* to provide immunity from prosecution to local authorities whose flood plain management was consistent with the "Public Works Department Floodplain Development Manual". To enjoy the immunity provided under Section 582A of the *Local Government Act*, (thereby minimising exposure to legal action), a local authority can only provide for exploitation of flood liable land in accordance with the principles adopted in the "Floodplain Development Manual" (1986).

In accordance with the New South Wales' Government's principles, the Tweed Shire Council:-

- * has adopted a policy of 100 year event flood immunity for residential development, and
- * will not consent to development within a floodplain unless it is satisfied that such development will not cause a rise in upstream flood levels.

For the Banora Point West area, the estimated 1 in 100 year flood level is RL 2.65m AHD which is the design flood level adopted by the Council. The consequence of this design level is that most of the land within the Drainage Scheme Area cannot be developed unless it is filled to place it above the design flood height. The effect of raising the 'developable areas' above flood level is to reduce the storage available for stormwater runoff. Thus particular allowance needs to be made for a corridor to convey floodwaters so that no afflux or inundation of other lands is caused greater than occurred with pre-existing conditions.

Similarly, for the higher land within the Drainage Scheme catchment area, urban development results in both greater and more frequent stormwater runoff due to the increased percentage of "hard (impervious) surfaces" being created.

In summary, because of the very flat nature of the majority of this area and drainage inflows from high land, special 'drainage corridors' are required to eventually dispose of the major drainage flows to Trutes Bay. The use of retention basins and an artificial lake system is required to dissipate the large amount of drainage water expected from both natural and man-made features and to assist in the maintenance



of acceptable levels of quality for water entering Trutes Bay and the Terranora Broadwater.

As a substantial amount of fill is needed to raise the majority of the site above flood level, obtaining this fill from the lowest parts of the site would respect 'natural' drainage patterns and would be the least cost source of supply.

3.2 Benefited Land

Stormwater drainage philosophy and standards have been undergoing a significant redirection in the past decade. Previous practice has involved a philosophy of intercepting, collecting and disposing of stormwater runoff as rapidly as possible. There is now an increased awareness of the desirability of detaining or storing water close to where it falls in order to achieve a more efficient drainage network for an area.

This awareness has led to the adoption of a drainage philosophy involving the improvement of the effectiveness of natural systems rather than replacing, upgrading or ignoring them. The impact of urban development on flow regimes, erosion and siltation, and flooding can be substantially reduced by adopting stormwater management techniques that concentrate on continuing the function of the natural drainage system as far as possible.

The benefits of developing a drainage system in accordance with such a philosophy include the following:

- * reduced impact of storm and floodwaters within the area,
- * reduced peak discharge rates from the area,
- * prevention of afflux or inundation of other areas, and
- * improved quality of water discharged from the area.

How the different categories of land use at Banora Point West will benefit in these ways from the Drainage Scheme for the area is discussed below.

(a) Low-Lying Land

That land within the Scheme Area which needs to be filled so that it is raised above the 1 in 100 year event flood level most directly benefits from the drainage scheme. Such land would not be able to be developed without being filled and such filling would not be able to be undertaken without the trunk drainage system being created.

(b) Catchment Slopes

That higher land within the scheme area which benefits from the scheme in being provided with an external point of discharge that is readily available of a size adequate to accommodate the increased runoff resulting from development.

(c) Public Open Space and Roads

The shortened times of concentration due to conduiting of flood runoff apply to the mandatory open space components that must accompany subdivision approval. Although the extent of shortening is not as significant as occurs on land used for



building purposes, public open space areas do have some impact and should therefore attract a contribution. As each development contributes a proportionally equal amount of open space, this component of the contribution requirement should be equitably shared. Given a uniform area-based levy, the drainage contribution is not affected by whether the public open space contribution is land dedication or cash payment, and is therefore equitably shared. Similar comments apply to roads.

(d) Private Open Space

Private Open Space may be developed in a number of ways with varying amounts of "hard" and "soft" surfaces. Those recreational uses with a higher proportion of "hard" areas (eg tennis courts) will increase stormwater runoff to a similar extent as urban residential development and will therefore similarly benefit from the Drainage Scheme. Other recreational uses (like golf courses) may not increase runoff rates but they can have greater pollutant discharges (resulting from the application of fertilisers, pesticides, etc). Such uses would therefore benefit from the Drainage Scheme as a means of maintaining or improving the quality of water entering the bay and broadwater.

(e) Residual Lands

The issue of residual lands arises where a development application for subdivision creates large allotments or leaves a significant balance area. Whether the large allotments or balance area attract a contribution liability at that stage will depend on whether the development application allows the site to be improved by filling, draining, etc or to be dedicated and/or developed as open space.

In other words, unless it is left undisturbed in private title, any new allotment created should attract a full levy contribution. It follows that any development application for further subdivision of any allotment created after the schemes inception date (24 April 1991) requires a check of contribution credit. The new mandatory requirements for tracking s94 contribution payments will facilitate this process.

(f) Drainage Corridor

The proposed new lakes and drainage corridors have a runoff coefficient of nearly 1.0, and should attract a contribution if on privately-owned land.

The lakes are a component of the scheme that will reduce required drain dimensions by mitigating flood flows. Insofar as construction of the lakes will satisfy this role, the costs of acquisition and construction are a reasonable charge to the scheme. Dedication of these lands to the public by their owners would not attract liability for drainage contribution. However a share of the costs of creation would inevitably be passed back to the land owners as part of their overall scheme liability.

Land owners may choose to construct parts of the drainage scheme to final standard and dedicate them to Council after completion at no charge. Alternatively, Council would acquire the land including the value of won material, and construct the drainage facility. In these ways, where a drainage corridor traverses privately owned land, the land owner is not unfairly burdened.



3.3 Description of the Scheme Area

The Scheme Area, which comprises the “western sub-catchment” draining into Trutes Bay, includes 445 hectares of land in total with 357.4ha likely to be developed; drainage channels and the Vintage “lakes” are non-leviable (16.2ha) and 3.7ha in Vintage Lakes and 67.7ha of “Sullivan’s” property are effectively unusable. Of the 357.4ha approximately 94ha had already been developed when this Plan was initiated in 1992 and the liability for this developed land rests with Council.

The Scheme Area is part of a much wider a catchment defined by the following controlling elements:

- * Trutes Bay in the south-west corner of the area,
- * a clearly defined line of ridges running north-east from the western end of Trutes Bay to the Tweed Heads By-pass road,
- * the Tweed Heads By-pass road across the north-east corner of the area, and
- * a clearly defined line of ridges running in an arc around the south-eastern and southern parts of the area.

The catchment, physically defined by a combination of natural and man-made elements is divided into a western sub-catchment (draining to Trutes Bay) and an eastern sub-catchment (draining to Shallow Bay). These sub-catchments have been created through works to suit development in the area in response to the naturally flat topography and complex hydraulic patterns.



4.0 DRAINAGE SCHEME DETAILS AND COSTS

4.1 Description of Scheme Components

Details of the works and structures required for the implementation of the Banora Point West Drainage Scheme are provided in the Schedule to this Plan (Appendices) and are shown on **Figure 2**. These components relate to both the hydraulic and water quality aspects of the Scheme.

4.2 Costs

(a) Scheme

Cost estimates (in July 1992 values) for the works and structures required for the Drainage Scheme are included in the Schedule to this Plan.

(b) Administration

A 105% levy (surcharge) applies to all Section 94 charges to cover the costs associated with administration, development and review of Section 94 contribution plans.

4.3 Timing of the Works

The initial stage of implementation of the Scheme involves negotiation or resumption proceedings to acquire easements for drainage on private lands (with easements initially required to be only of a width to realise the design profile up to the natural surface). The full corridor may then be obtained as a development condition when development occurs.

In the first instance, compensation for easements will be offered at the Valuer General's assessment of the decrease in the overall property value. Final compensation is deferred until conditions are determined in respect of an actual Development Application. The up-to-date Valuer General's figure is then deducted from any s94 liability.

Construction of the Scheme works will be undertaken progressively, depending on the sequence of development proposals. Each development applicant will therefore be required to examine the downstream capacity available to the particular development and include sufficient work to realise any capacity shortfalls in the development application. If part of the nominated corridor is within the property subject of the application, the Development Application should provide for the creation of the drain or lake to finished standard. The Applicant may choose to dedicate the completed job to Council. Alternatively, Council may occupy the land and perform sufficient work to realise the channel profile, but full construction may be deferred until funds are available.

Where insufficient Scheme funds are available to provide a minimum hydraulic capacity for a development, Council may decide not to determine the Development

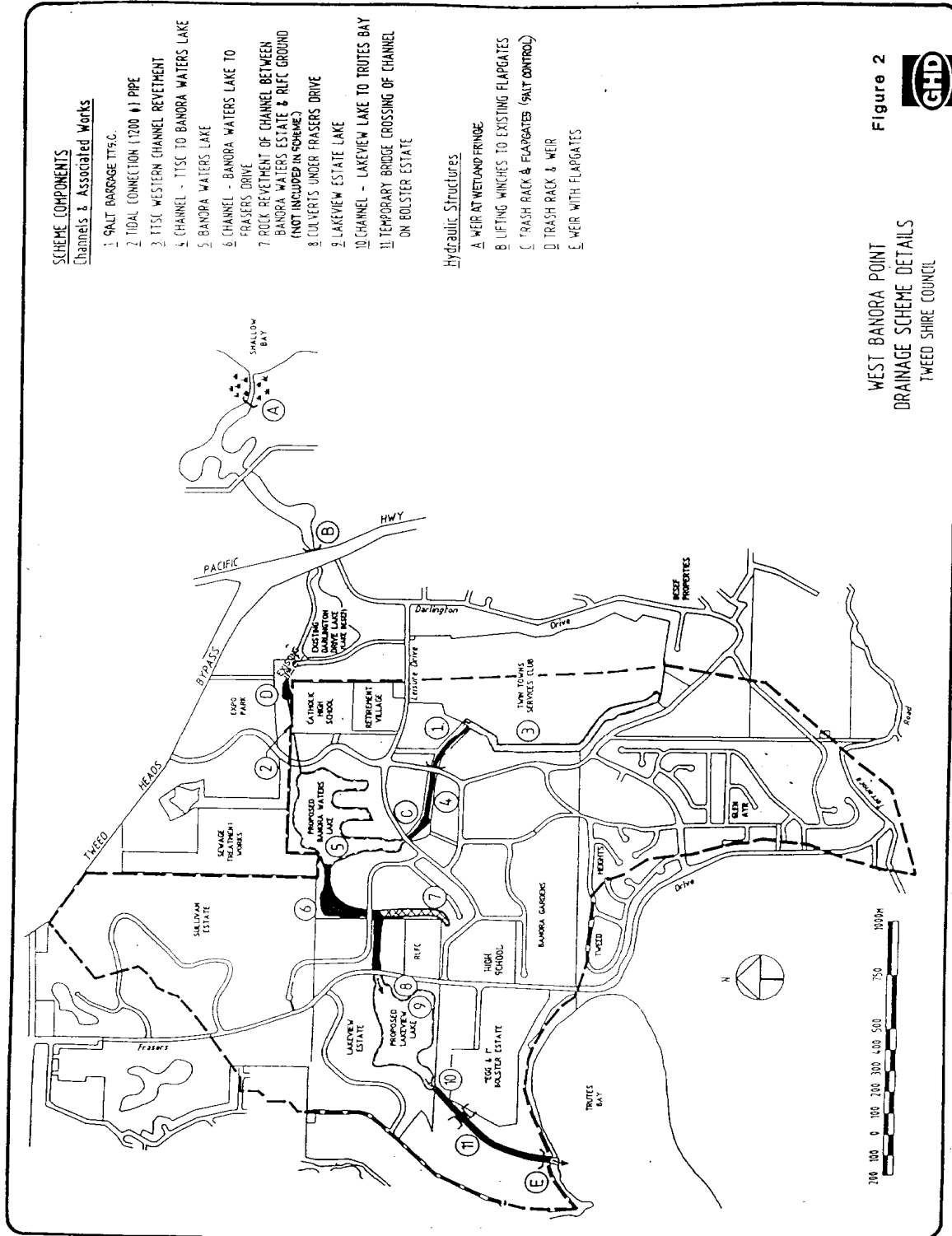


Application. In such cases, the applicant may enter into an agreement with Council to advance payment for the cost of the work, on the understanding that funds would be reimbursed when cash flows permitted. This would enable the application to be determined.

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SECTION 94 PLAN NO 2 – BANORA POINT WEST DRAINAGE SCHEME





5.0 CONTRIBUTION PROVISIONS

5.1 Contribution Formulae

The formulae to be used to determine the s94 contribution for trunk drainage in the Banora Point West Drainage Scheme Area is as follows:

$$\text{CONTRIBUTION RATE (\$/Ha)} = \frac{[(L1 + L2 + C1 + C2) \times S]}{A} - C$$

where:

- L1 = The actual cost to Council to date of acquiring land for trunk drainage purposes adjusted to current day values by the Implicit Price Deflator (IPD).
- L2 = The estimated future cost of acquiring land for trunk drainage purposes.
- C1 = The actual cost to Council to date of constructing works for trunk drainage purposes adjusted to current day values by the IPD.
- C2 = The estimated future cost of constructing trunk drainage works.
- A = The total developable area in the contribution catchment (in hectares).
- S = The area of the land which is subject to the development application (in hectares).
- C = The amount recorded in the "Register of Developer Contributions" as being the contribution previously paid towards the Drainage Scheme in respect of the subject land.

A central point of contention that has been evident in attempts to implement the Drainage Scheme to date has been whether all owners in the catchment would benefit equally from the Scheme and if not, how to achieve a defensible cost recovery scheme biased in favour of some owners and against others. The difficulties in achieving such a recovery scheme favour a uniform land-area based levy (ie dollars per hectare) to ensure that cost recovery is more predictable as it is not subject to uncertain development type and density outcomes.

Case history in the Land and Environment Court of NSW recognises the sufficiency of a catchment based levy for equity purposes. The most relevant Court judgement is found in *"Trustees of the Roman Catholic Church -v- Blacktown City Council 1991"*.

This judgement supported the application of a general levy for drainage on a catchment wide basis irrespective of the fact that not all properties benefited to exactly the same extent. The grounds were that the drainage program enabled a



general development of the catchment and its infrastructure which would not have otherwise been possible.

The decision also required that Council accept its proportional financial responsibility for that part of the catchment already developed.

5.2 Current Contribution Rate

The current contribution rate has been calculated using the formula detailed in Section 5.1 above and is ~~\$8805~~ \$13,144 per hectare which includes the administration component at ~~105%~~ and IPD indexation provided for in this plan, on the 1998 rate per ha of \$8,414 [see clause 4.2(b)].

It is necessary to index past expenditure and contribution rates to keep these relative to current day values.

Contribution rates and previous expenditure are indexed by use of the *Implicit Price Deflator for Gross Fixed Capital Expenditure - ~~Private Dwellings~~ Engineering Construction* (IPD). These figures are produced by the Australian Bureau of Statistics in its publication "Australian National Accounts National Income and Expenditure" and are published on a quarterly basis (current ABS ~~Catalogue~~ Product Number ~~52068782.0~~ 65.001).

The IPD is considered to be a more appropriate index than the Consumer Price Index because it takes into account increases in building costs. The IPD has been consistently recommended for use by the Department of Planning to index contributions.

The contribution rate is indexed according to the IPD as subsequent indexes are published. The method of indexation is to multiply the contribution rate by the most recently published IPD at the time a contribution is levied or paid and divide it by the IPD which was current at the time the rate was adopted, that is the IPD for the ~~March quarter, 1992,~~ December quarter 1997 which in September 2009 was ~~163.769.68~~.

5.3 Methods of Payment

Council will accept payment of s94 contributions under this Plan as a cash contribution. When a development consent is issued that involves the payment of a s94 contribution, it will contain a condition outlining the amount payable in monetary terms subject to indexation by the IPD. While a monetary payment is likely to be the most usual form of contribution, the cash payment can be offset by either or both of the following methods of payment.

(a) Dedication of Land

Where appropriate, Council will permit the dedication of the land required for the Drainage Scheme to offset the monetary contribution payable. If consent is issued for a development, then the applicant needs to contact Council in order to receive a valuation of the land proposed to be dedicated. Upon agreement being reached as to the land's value, and exchange of contracts subsequently occurring, Council will offset the value of the land against the monetary contribution payable.



(b) Works Agreement

Council may accept the construction of works by the applicant to offset the monetary contribution payable. The works provided must be in accordance with the Schedule of Works contained in this Plan. The applicant will need to initiate this option by giving Council full details of the work proposed to be undertaken. Council will then consider the request and advise the applicant accordingly.

If the works-in-kind are not completed prior to the release of the linen plan, then the applicant will need to provide Council with suitable financial guarantees (normally by way of a Bank Guarantee) for the amount of the works not completed. Upon completion of the works the financial guarantee will be discharged by Council.

(c) Administration Component

Council may accept “works-in-kind” in satisfaction for the administration component as defined by Clause 4.2.

5.4 Timing of Payment

- (a) (1) Council will accept s94 contribution payments under this Plan generally at the following times:
- (i) For development applications involving subdivision:-
prior to the release of the linen plan;
 - (ii) For development applications involving building work:-
prior to approval of the building application;
 - (iii) For other development applications:-
prior to commencement of use.
- (2) A contribution in respect of development of any land shall be required to be paid:
- (i) in full where no contribution has previously been paid, or
 - (ii) only for the balance amount where a part contribution has previously been paid,
- in respect of that land.
- (b) Council may accept payment for the cost of works in advance as outlined in Section 4.3 of this Plan.

5.5 Register of Contributions

- (a) Council will keep a "Register of Developer Contributions" in which shall be kept details of s94 contributions received under this Plan. The Register shall record the following:
- (1) details of the development consent for which a condition requiring a contribution under this Plan has been imposed;



- (2) the amount of the contribution required by the condition;
 - (3) the date or dates on which any contribution or part contribution required by the condition was received; and
 - (4) details of any agreement entered into between the Council and the applicant in relation to the contribution required by the condition.
- (b) Council will prepare an annual statement with respect to this s94 Contributions Plan in accordance with the requirements of Part 4A of the *Environmental Planning and Assessment Regulation 1980* as amended.
- (c) Council will keep available for public inspection, free of charge, at Council's offices during Council's office hours, the Register and each annual statement referred to above.

6.0 REFERENCES

WBM Oceanics Australia (1997),

Banora Point/South Tweed Stormwater Management Plan
Report prepared for Tweed Shire Council



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APPENDIX A
Cash Flows and Works Program



Council's Development Control Plan No. 3 for Banora Point West and Tweed Heads South identifies a trunk drainage corridor generally from the Twin Towns Sports Club to Trutes Bay in the Terranora Broadwater. The DCP provides for the implementation of the drainage scheme, financed and constructed by developers. This s94 Plan outlines the contributions which are required to fund construction of the necessary drainage scheme.

As development has already proceeded in the catchment area, Council has to accept some liability for a share of the costs of developing the overall drainage scheme. The estimated total cost of constructing the scheme is \$3.15 million (July 1992 costs). The scheme area includes a benefited area of land of approximately 357ha, which results in a uniform contribution rate of \$8,805.8,414 per ha. With 93.7ha of land within the catchment having been already developed, Council's cost liability is in the order of \$0.83 million. Construction of the scheme works will be undertaken progressively, depending on the sequence of development proposals.

The revision of Contribution Plan No 2, Version 3.2 to create Version 4.0 permits the income/expenditure projections to be revisited for the first time in five years.

Revised income projections are outlined in Tables A2, based the best estimates available.

Table A2 Revised Income Projection

Agent	Type	To Date	Short Term	Long Term
Development	Cash	\$ 853,700	\$ 40,000	\$ 309,495
	Works in Kind	\$ 1,346,037	\$ 520,000	Nil
Council		\$ 200,000	\$ 14,000	\$ 586,000

(October 1997)

Revised expenditure projections are detailed in Table A3.

Table A3 Revised Expenditure Projection

Agent	Type	To Date	Short Term	Long Term
Development	Cash	\$ 497,704	\$ 495,000	Nil
	Works in Kind	\$ 1,346,037	\$ 520,000	Nil
Council		\$ 200,000	\$ 14,000	\$ 586,000

(October 1997)

It is conceivable that Contribution Plan can be finalised by the year 2000 provided drainage works in the Flame Tree and Vintage Lakes Developments have been completed, the probable income sources exhausted, and funds expended.

Council has over many years spent considerable time and funds on the development and management of the Scheme. These inputs are brought to account. In addition, the WBM Report suggests that the maintenance of the Scheme will approach \$6-7,000 per annum. This level of maintenance was not expected since the introduction of saline water would have led to low maintenance outlays. After allowing for these additional costs, Council's contribution is estimated to be of the order of \$800,000 as required by the Plan.



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APPENDIX B
Schedule of Works and Costings



SECTION 94 PLAN NO 2 – BANORA POINT WEST DRAINAGE SCHEME

Table B.1 -- REVISED SCHEDULE OF WORKS (1997)

No.	Component	Quantity (m)	Unit Rate (\$/m)	Cost (July 92) (Version 3.2)	WBM Adjustments (Version 4.0)	Comments
1	Salt Barrage					See Items 12 & 13
2	Tidal Connection Pipe	450	400	\$ 180,000	\$ 150,000	Completed
3	Revetment of drain along Twin Towns Services Club (TTSC) western boundary	960	435	\$ 418,000	nil	Deleted to fund 'shared' multi- purpose service corridors
4	Channel - TTSC to Banora Waters Lake	520	882	\$ 459,000	\$ 459,000	Completed
	Stilling Basin - Leisure Dr		item	\$ 150,000	\$ 150,000	
5	Banora Waters Lake		item	nil	nil	Completed
6	Channel - Banora Waters Lake to Frasers Dr	850	927	\$ 788,000	\$ 788,000	Completed
7	Revetment - north - south drain adjoining RLFC land		item	\$ 80,000	\$ 80,000	Completed
8	Frasers Drive - culverts 3 x 1.5m x 1.8m RCBC		item	\$ 110,000	\$ 110,000	Single culvert 1.8m x 1.2m, but Fraser Drive is now to be 4 lanes
9	Vintage lakes		item	nil	\$ 50,000	Was \$ 5,000 however requires disposal of polluted water and excavation in acid sulphate soils
10	Channel - Lakeview Estate Lake to Trutes Bay	710	635	\$ 950,000	\$ 450,000	To be constructed by Metricon
11	Temporary Bridge Crossing - Egg & I site		item	\$ 120,000	nil	Not required
<i>Hydraulic Structures</i>						
	Shallow Bay (A) - Weir @ CL 0.3 AHD, 10m wide		item	\$ 330,000	nil	Not required
	Pacific Hwy (B) - Lifting winches to gates		item	\$ 61,000	nil	Not required
	Leisure Dr (C) - Trash rack + weir @ SL + 0.8m assumed		item	\$ 50,000	\$ 50,000	
	Tidal connection (D) - Trash rack + weir @ SL + 0.4m		item	\$ 14,000	\$ 14,000	Use amount to close tidal connection pipe
	Trutes Bay (E) - Double weir @ CL 0.5m AHD, with 3/525 dia RCP's and gates		item	\$ 120,000	\$ 20,000	Use to fund weir culvert at Trutes Bay and Vintage Lakes
<i>WBM Recommendations</i>						
12	TTSC Weirs and minor GPT				\$ 15,000	was \$ 2,500 in WBM
13	Restoration/replanting of waterway				\$ 200,000	was \$ 30,000 "
14	Fraser Drive Gross Pollutant Trap				\$ 225,000	was \$ 75,000 "
<i>WBM Additions</i>						
15	Floodgate into Lake Besef from TTSC moat				\$ 20,000	Not costed in WBM
16	Aeration of Lake Besef				\$ 15,000	WBM



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Studies

17	WBM studies & water quality monitoring	Not included	\$ 64,824
19	Administration Levy (+05%)		\$ 286,083 <u>143,041</u>
TOTAL		\$ 3,830,000	\$ 3,146,907 <u>3,003,865</u>

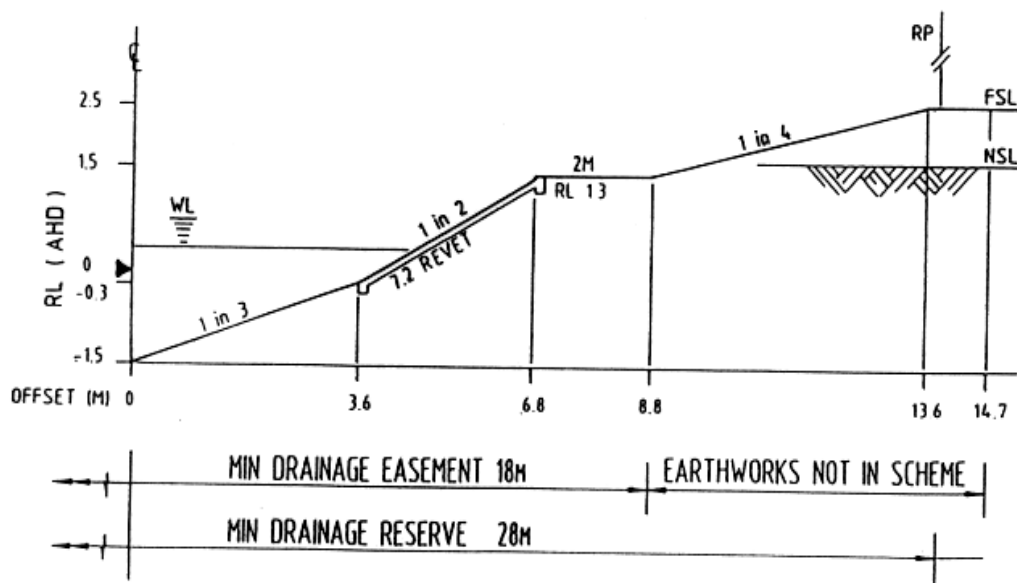
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SECTION 94 PLAN NO 2 – BANORA POINT WEST DRAINAGE SCHEME

CHANNEL PROFILE - TWIN TOWNS SPORTS CLUB TO BANORA WATERS LAKE

	Dimensions	Quantity	Unit	Unit Rate	Cost
Strip topsoil	18 x 0.15	2.7	m ³	\$2.00	\$5.40
Excavation	14 x 3.0/2	21.0	m ³	\$4.50	\$94.50
Sale topsoil	18 x 0.15	2.7	m ³	\$2.10	-\$5.70
Fertilize/seed	11 x 1	11.0	m ²	\$0.50	\$5.50
Concrete Footpath	1.5 x 1	1.5	m ²	\$28.00	\$42.00
Revetment	2 x 3.6 x 1	7.2	m ²	\$50.00	\$360.00
Landscaping	item	1		\$38.00	\$38.00
Sub-total					\$539.70
Prof. consultation	allow 11% of sub-total				\$59.30
Land purchase	28 x 1.0	28.0	m ²	\$6.00	\$168.00
Sub-total					\$767.00
Contingency	allow 15% of sub-total				\$115.00
TOTAL (per metre length)					\$882.00





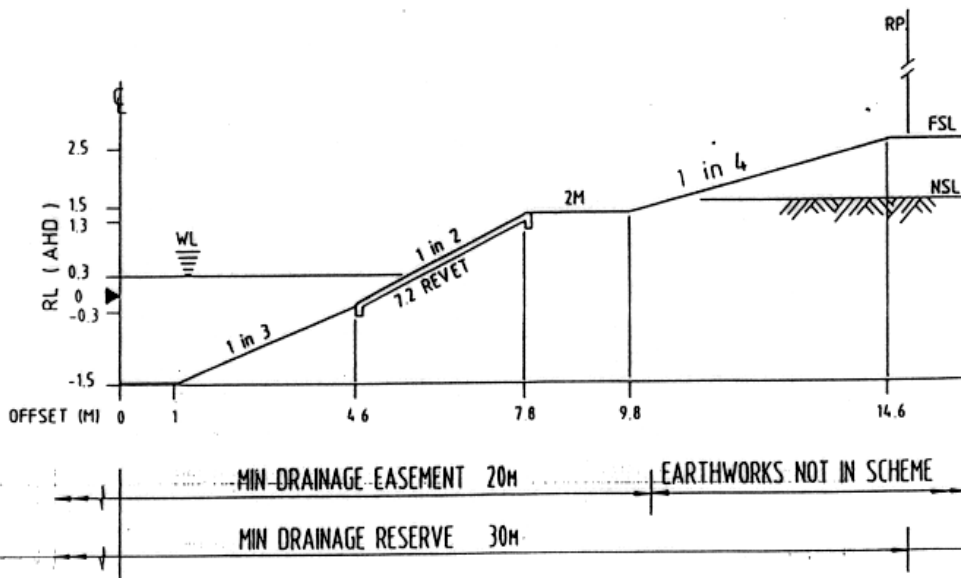
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SECTION 94 PLAN NO 2 – BANORA POINT WEST DRAINAGE SCHEME

CHANNEL PROFILE - BANORA WATERS LAKE TO FRASERS DRIVE

	Dimensions	Quantity	Unit	Unit Rate	Cost
Strip topsoil	20 x 0.15	3.0	m ³	\$2.00	\$6.00
Excavation	8.8 x 3.0	26.4	m ³	\$4.50	\$118.80
Sale topsoil	20 x 0.15	3.0	m ³	\$2.10	-\$6.30
Fertilize/seed	11 x 1	11.0	m ²	\$0.50	\$5.50
Concrete Footpath	1.5 x 1	1.5	m ²	\$28.00	\$42.00
Revetment	2 x 3.6 x 1	7.2	m ²	\$50.00	\$360.00
Landscaping	item	1.0		\$38.00	\$38.00
Sub-total					\$564.00
Prof. consultation	allow 11% of Sub-total				\$62.00
Land purchase	30 x 1.0	30.0	m ²	\$6.00	\$180.00
Sub-total					\$806.00
Contingency	allow 15% of Sub-total				\$121.00
TOTAL (per metre length)					\$927.00



**CHANNEL PROFILE - LAKEVIEW ESTATE - LAKE TO TRUTES BAY**

	Dimensions	Quantity	Unit	Unit Rate	Cost
Strip topsoil	27 x 0.15	4.0	m ³	\$2.00	\$8.00
Excavation		10.3	m ³	\$4.50	\$46.35
Sale topsoil	27 x 0.15	4.0	m ³	\$2.10	-\$8.40
Fertilize/seed	11 x 1.0	11.0	m ²	\$0.50	\$5.50
Concrete Footpath	1.5 x 1.0	1.5	m ²	\$28.00	\$42.00
Revetment		3.0	m ²	\$50.00	\$150.00
Landscaping	item	1		\$38.00	\$38.00
Sub-total					\$281.45
Prof. Consultation/design	allow 11% of sub-total				\$30.95
Land purchase	40 x 1.0	40.0	m ²	\$6.00	\$240.00
Sub-total					\$552.10
Contingency	allow 15% of sub-total				\$82.81
TOTAL (per metre length)					\$634.91

Drawing of channel profile replaced and revalued - see WBM report (1997) Figure 5.2 (page 20). As an option, this may be replaced with works scheduled in the Gilbert & Sutherland Report "Soil and Water Management Plan Flametree Park Stage 2 (Nov 1997)" on the election of a Development Applicant who wishes to perform such work; except that the overall estimate of the paid work shall remain unchanged from the exhibited plans and the lineal rate therein shall form the basis for any credits obtained for works-in-lieu of cash contributions.



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HYDRAULIC STRUCTURES

Structures	Order of Cost \$
A - Weir @ CL 0.3m AHD, 10m wide	330,000
B - Lifting winches to existing 5/1800 ϕ RCP flap gates	61,000
C - Trash rack + weir @ SL + 0.8m (assumed)	50,000
D - Trash rack + weir @ SL + 0.4m	14,000
E - Double Weir @ CL 0.5m AHD, with 3/525 ϕ RCPs with flap gates	120,000
TOTAL	575,000

CL = crest level
SL = surface level

Note: In determining the order of cost:

- Structure designs were conceptual only
- Sizes and levels were estimates only



APPENDIX C – INDEXATION CALCULATIONS

<u>ABS IPD Reference</u>	<u>Dec 97</u>	<u>Mar-09</u>	<u>Difference</u>	<u>% increase</u>
<u>Engineering Construction A45071T</u>	<u>69.68</u>	<u>108.85</u>	<u>39.17</u>	<u>56.21%</u>

<u>Item</u>	<u>Amount</u>	<u>Total</u>
<u>Works program</u>	<u>\$2,860,824</u>	
<u>5% admin</u>	<u>\$143,041</u>	
<u>Total</u>		<u>\$3,003,865</u>
<u>Total ha</u>	<u>357</u>	
<u>Cost per ha</u>	<u>\$8,414</u>	
<u>Add IPD Indexation of 56.21%</u>	<u>\$4780</u>	
<u>Total contribution</u>		<u>\$13,144</u>