8.0 DESCRIPTION OF PREFERRED OPTION

The preferred option is shown in detail on Drawing P13 included in Appendix B.

Option 3, the preferred option, is described in detail in Sections 5.4, □, 7.0 and key features are summarised below:

- Use recycled effluent for toilet flushing and outdoor uses – this would be via a reticulated recycled water supply system delivering recycled water to each new dwelling in Area 14. The principle aim of using recycled water is to reduce the loading on the effluent infiltration system which has demonstrated poor performance over the years since its commissioning.
- Use 3kL raintanks for all low density development and 2 kL raintanks for medium density development to supply hotwater and laundry.
- Manage stormwater quality using a stormwater treatment train documented on Drawing P13 and which is an approach that complies with both Department of Environment and Conservation and Department of Natural Resources Policies.
- The stormwater treatment train has been optimised, i.e. the cost is minimised while ensuring that Council's qualitative stormwater treatment objectives are still satisfied.
- The stormwater treatment train is at a minimum cost point when small rainwater tanks are used in combination with sand filters, bioretention systems and other water sensitive urban design techniques.
- The end of pipe stormwater treatment systems have been sized based on the assumption that rainwater tanks will be put in place. This means that end of pipe stormwater treatment devices have their land take and capital cost reduced by approximately 50% if tanks are used. If rainwater tanks are not used then the land take and life cycle costs of the stormwater treatment components would consequently nearly double.
- The proposed supermarket was assumed to provide its own water quality treatment to remove 45% of total nitrogen and total phosphorus. This was assumed because it is considered easier for the supermarket to develop a water sensitive car park design than to treat the water outside the site. Roofwater from the car park should also be captured on site and reused to supply toilets, air conditioning or for irrigation of any landscaped areas.
- The proposed caravan park will also need to construct its own stormwater treatment measures. It is considered that extensive use of grassed swales, not using kerb and gutter etc will enable the caravan park to construct a water sensitive design at no extra cost that will not require an end of pipe treatment system to be put in place. The caravan park, as a site, must demonstrate to Council's satisfaction that the measures put in place will achieve 45% retention of nutrients.
- It was assumed that commercial areas will not use rainwater tanks as there will be little demand for rainwater when a recycled water supply is available.

9.0 AREA 14 DCP

9.1. No BASIX Competing Provisions

The DCP that serves Area 14 does not contain any provisions that are overruled by BASIX. The Minister for Planning has given concurrence that the proposed works are not over-ruled by BASIX.

Refer to Appendix C which contains a letter noting the Ministers concurrence.

9.2. Compliance with this document

Development in Area 14 shall be in accordance with this document and the attached plans. Where there is a need to amend or depart from this document the intent of the plan shall be achieved even if the detail is not achieved.

To that end the exact location of treatment devices may change to suit conditions during detailed design however not to such an extent that the catchment areas change significantly.

Equally, road and lot layouts may change to suit detailed design requirements. Some remodelling of the proposal may be required to demonstrate compliance with Council's objectives if significant changes occur.

10.0 CONCLUSIONS & RECCOMENDATIONS

It is recommended that Option 3 is adopted as the preferred option and included in the DCP for Area 14.

This option is preferred due to the fact that it:

- Reduces the loading on the effluent infiltration system at the STP.
- Provides for BASIX compliance.
- Has a compliant stormwater treatment system.
- Is the least cost option that satisfies all of the above objectives.

While the preferred option involves the use of both rainwater tanks and recycled effluent the main purpose of having both rainwater tanks and recycled effluent is not to reduce the potable mains water demand. The main purpose is one of ecological sustainable development. This approach is therefore not one which will be overridden by BASIX.

Adoption and construction of this approach will depart from the more traditional approaches to watercycle management and importantly this is in line with Council's adoption of the IWCM Framework.

Adoption of Option 3 on Area 14 also gives Council an opportunity to become a leading proponent of integrated water cycle management in Australia.

11.0 REFERENCES

- ANZECC (2000). National Water Quality Management Strategy (NWQMS) *Guidelines for Sewerage System – Use of Reclaimed Water*
- Deicke Richards (2003) *Greater Lake Cathie and Bonny Hills Urban Design Master Plan*
- DPWS (1986). *Water Supply Investigation Manual.*
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- Fletcher, T., Duncan, H., Poelsma, P. & Lloyd, S. (2004). *Stormwater Flow and Quality and the Effectiveness of Non-Proprietary Stormwater Treatment Measures*, Cooperative Research Centre for Catchment Hydrology (CRC)
- Hastings Council, (2003). *Development Design Specification D7 Stormwater Management.*
- Hastings Council (2003). *Development Design Specification D5 Stormwater Drainage Design.*
- Hastings Council (2001). *Development Servicing Plan for the Hastings District, Comboyne, Telegraph Point & Long Flat Water Supply Schemes*
- Hunter Water Australia (September 2003). *Hastings District Water Supply System Investigation Report and System Amplification Requirements.*
- Hunter Water Australia (June 2003). *Hastings District Water Supply Investigation – Initial Design Criteria Final Report.*
- Luke and Company (February 2005). *Draft Environmental Impact Statement for St. Vincents Foundation Land.*
- NHMRC/NRMMC (2004). *Australian Drinking Water Guidelines*
- NSW Recycled Water Coordination Committee NSW RWCC (1993). *NSW Guidelines for Urban and Residential Use of Reclaimed Water*
- NSW DEC (2003). *Environmental Guidelines: Use of Effluent by Irrigation*
- PPK (2002). *Lake Cathie/Bonny Hills STP Augmentation Concept Design Report.*
- STORM_CONSULTING (2004). *The Strategic Framework for Integrated Water Cycle Management & Sustainable Stormwater Outcomes in the Mid-North Coast Region*

APPENDIX A

Proposed Road and Lot Layouts

Drawings P01 to P08.

APPENDIX B

Options 0 to 4 and preferred option

Drawings P09 to P13.

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A		FOR COMMENT	AS	ML	18/02/08

HASTINGS COUNCIL AREA 14
MODELLING OPTIONS

drawing: L424/F01
sheet: 1 OF 2
A1

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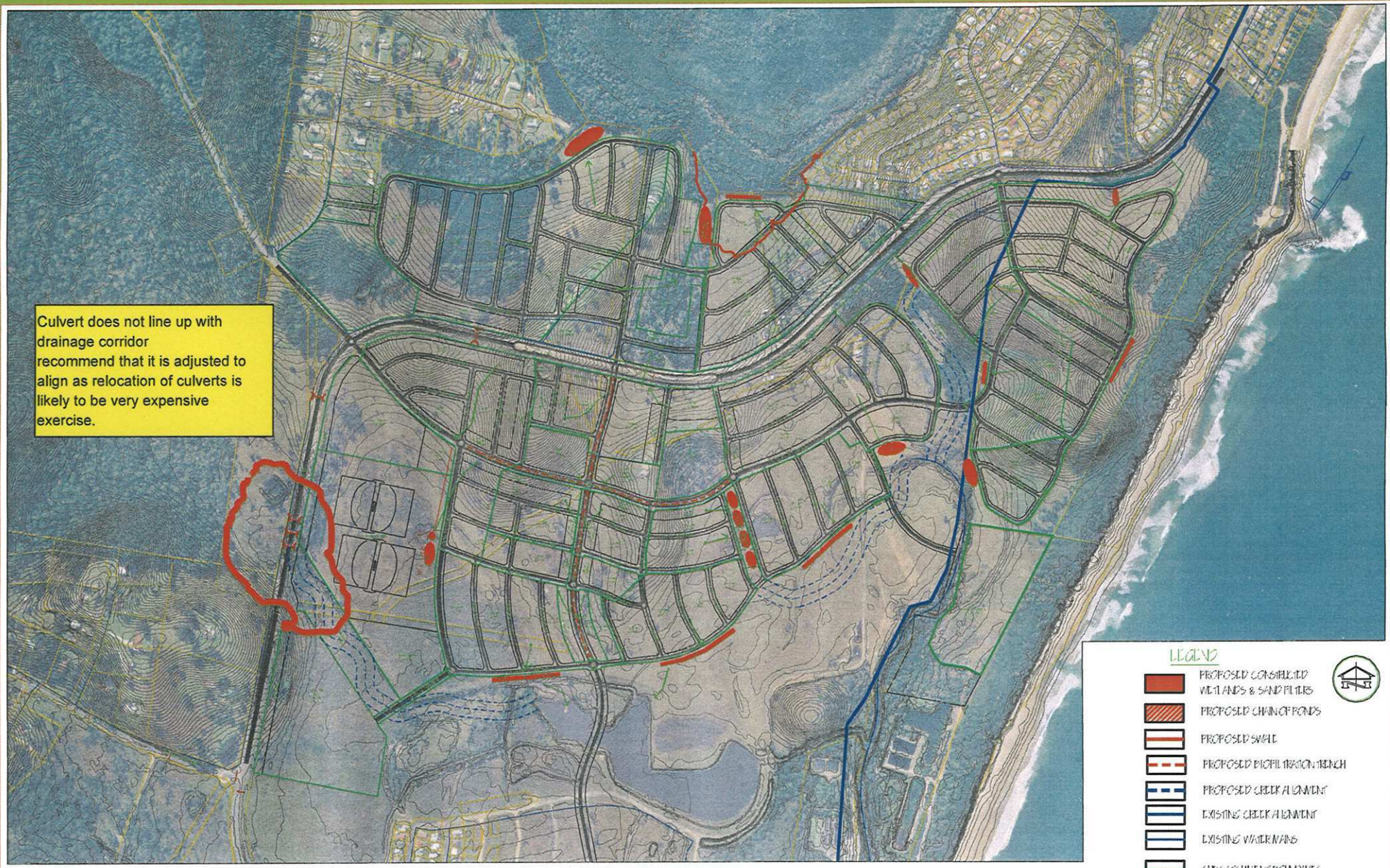

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A		FOR COMMENT	ML	ML	16/2/06

HASTINGS COUNCIL AREA 14

L424/F01

A1

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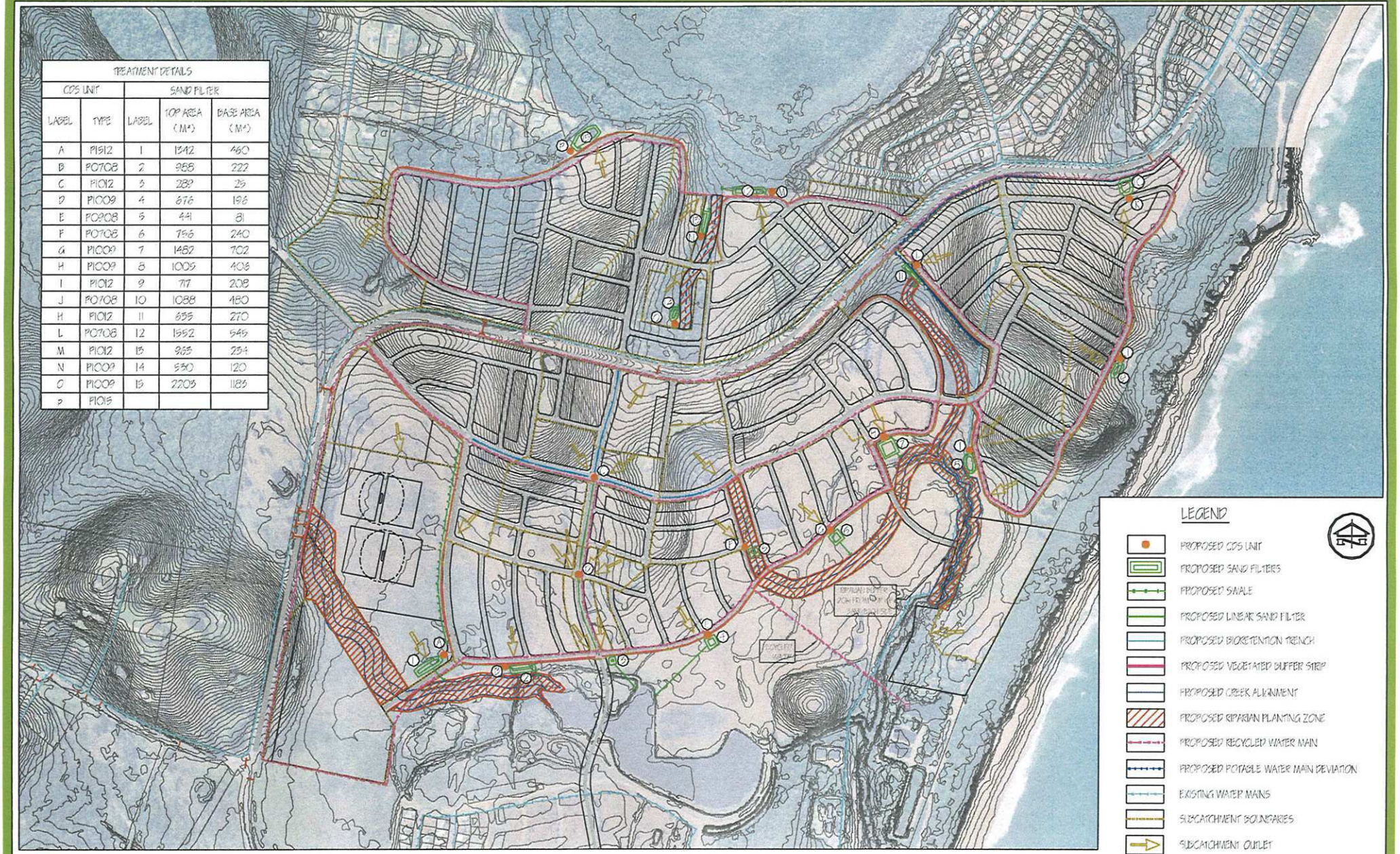

TREATMENT DETAILS				
CDS UNIT		SAND FILTER		
LABEL	TYPE	LABEL	TOP AREA (M²)	BASE AREA (M²)
A	P1512	1	1542	460
B	PO708	2	988	222
C	P1012	3	282	29
D	P1009	4	676	196
E	PO908	5	441	81
F	PO708	6	756	240
G	P1009	7	1482	702
H	P1009	8	1005	408
I	P1012	9	717	208
J	PO708	10	1088	180
K	P1012	11	655	270
L	PO708	12	1952	549
M	P1012	13	965	254
N	P1009	14	530	120
O	P1009	15	2205	1185
P	P1015			

LEGEND

- PROPOSED CDS UNIT
- PROPOSED SAND FILTERS
- PROPOSED SWALE
- PROPOSED LINEAR SAND FILTER
- PROPOSED BIORETENTION TRENCH
- PROPOSED VEGETATED BUFFER STRIP
- PROPOSED CREEK ALIGNMENT
- PROPOSED RIPARIAN PLANTING ZONE
- PROPOSED RECYCLED WATER MAIN
- PROPOSED POTABLE WATER MAIN DEVIATION
- EXISTING WATER MAINS
- SUBCATCHMENT BOUNDARIES
- SUBCATCHMENT OUTLET
- EXISTING CULVERTS

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ISSUE	ZONE	REVISION	BY	CKD	DATE
A		FOR COMMENT	BA	ML	27/04/06

COORD. ORIGIN: ISG SCALE: 1:4000
DATUM: AHD DATE: APR 2006
DRAWN: BA DESIGNED: ML CHECKED: ML

CLIENT: HASTINGS COUNCIL PO BOX 84 PORT MACQUARIE NSW 2444 PH: 02 6581 8111

PORT MACQUARIE HASTINGS COUNCIL
AREA 14 - MODELLING OPTIONS
PREFERRED OPTION

DRAWING: L424/P13
SHEET: 13 OF 13 A3