EIS 1772

AB020160

Sandy Hollow water supply augmentations : statement of environmental effects, October 2001

Muswellbrook Shire Council

SANDY HOLLOW WATER SUPPLY AUGMENTATIONS

Statement of Environmental Effects

October 2001

Document No: EKA-063/03
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1. INTRODUCTION

Sandy Hollow (population 130) is located on the Goulburn River in Muswellbrook Shire. The town water supply is sourced via a groundwater supply owned and operated by Rosemount Vineyards. The winery has priority for supply, resulting in water restrictions at Sandy Hollow in most years during peak irrigation times. The supply to Sandy Hollow is non-potable (untreated) and has excessive levels of hardness, iron and manganese. The supply is not disinfected.

In accordance with its Strategic Business Plan for Water Supply (MSC, 1999/2000), Muswellbrook Shire Council (Council) proposes to undertake the following improvements to the Sandy Hollow Water Supply:

- Stage 1 ($90,000): Improve reliability of supply. This work will comprise construction of a dedicated groundwater supply from the Goulburn River with associated storage and disinfection works. This work will proceed immediately. The Department of Land and Water Conservation (DLWC), under the NSW Government's Country Towns Water Supply, Sewerage and Drainage Program, has provided a grant of $45,000 towards the cost of the work.

- Stage 2 ($300,000): Improve water quality to meet current Drinking Water Guidelines (NHMRC, 1996). The work comprises a treatment facility to reduce hardness and meet other water quality parameters. The work will proceed as soon as funding permits.

Apart from the groundwater bores in the Goulburn River, the works will be located on Crown land (Reserve 30866 for Access and Camping) and disused public road reserve between the Goulburn River and Goulburn Drive, Sandy Hollow (refer Figure 1).

The proposed site of the works is zoned 7(L1) Environment Protection General (L1) (Alluvial Areas) under the Muswellbrook LEP 1985. Utility installations are permitted with development consent.

This Statement of Environmental Effects (SEE) has been prepared to accompany a Development Application for the Stage 1 work to be lodged with Council. Features of the Stage 2 works are described in conjunction with the Stage 1 work as the future work forms an integral part of the overall improvements.

The following sections of this report describe the proposed works, impacts on the environment and safeguards to be incorporated to minimise any impacts.

2. PURPOSE OF THE WORK

The current town water supply is sourced from the Rosemount Vineyards supply which is drawn from groundwater sources in the Goulburn River. The supply is pumped to a reservoir northwest of town and reticulated to households. Problems with the supply are:

- Council has no effective control of the supply; the vineyards have priority for water needs. Restrictions to water use in Sandy Hollow are common (typically several weeks annually) particularly during peak vineyard irrigation periods.
- The water is untreated and does not meet current Drinking Water Guidelines (NHMRC, 1996).

- The supply is not disinfected. There is a consequent increase in public health risk.

The proposed works will correct these deficiencies and meet levels of service defined in Council's Strategic Business Plan for Water Supply.

3. DESCRIPTION OF PROPOSED WORKS

3.2 Stage 1 Works: Improvements to Supply

The current average day demand is 100 kL and the peak demand 300 kL/d. The proposed works will be capable of meeting a future peak day demand of 330 kL/d.

The proposed Stage 1 works are shown in Figures 2 and 3 and comprise:

- Two (2) 150mm diameter groundwater bores within the alluvial flats in the Goulburn River and incorporating 3 kW (approx) submersible bore pumps each with capacity of 5 L/s;
- An above ground 20 kL Raw Water Tank (RWT) with integrated aeration tower to oxidise iron contaminants;
- A buried 15 kL Clear Water Tank (CWT) providing 30 minutes detention for disinfection purposes;
- Two (2) Clear Water Pumps (approx 4 kW);
- Diameter 80mm and 100mm pipelines connecting the bores and other works to existing reticulation in Goulburn Drive;
- A disinfection system comprising a sodium hypochlorite (NaOCl) storage tank (1600 L) and bunded enclosure, dosing pumps and controls.
- A temporary 20 kL earth sludge drying/storage lagoon to hold sediments settled in the RWT. A permanent storage lagoon / drying beds will be provided in Stage 2;
- Electrical switch/control-gear assembly (SCA) and associated electrical equipment;
- Siteworks including access from Goulburn Drive; power supply via Energy Australia pole in Goulburn Drive; manproof fencing.

3.2 Stage 2 Work: Improvements to Water Quality

The Stage 2 work will comprise:

- Proprietary treatment facility to reduce hardness, iron, manganese and other contaminants to meet 1996 Drinking Water Guidelines.
- Sludge storage / drying beds. The size of the storage / beds will depend on the volume of wastewater generated, but is not expected to exceed 300 m^2 in area or 100 kL in storage volume. The temporary lagoon may be replaced or incorporated into the permanent facilities.

There are several treatment technologies available to treat the raw water to meet the performance requirements eg. nanofiltration, ion exchange, conventional physical / chemical treatment. The use of energy, chemicals and other factors varies with the type of technology.

5.2 Drainage and Flooding

The highest recorded flood level at Sandy Hollow was 124.54m AHD during the 1955 flood (DLWC river gauge at Sandy Hollow). According to DLWC, in the absence of any other flood data, this is deemed to represent the 1:100 flood level.

The ground level at the site of the works is at RL 126 or higher. All facilities will be located at least 1m above the maximum recorded flood.

Existing road drains cross Goulburn Drive to the north and south of the proposed works – refer Figure 1. No surface watercourses cross the site.

5.2 Soils and Subsurface Conditions

A 4m deep borehole was drilled at the site of the proposed RWT / CWT structures as part of geotechnical investigations undertaken by consultants PPK Environment and Infrastructure in June, 2001. A copy of the borelog is included in Appendix B.

The soil profile showed low plasticity silty sandy clay to 1.7m overlying silty clayey sand to the 4m limit. Clay consistency was firm to stiff to 0.5m and very stiff from 0.5m to 1.5m. The sands were medium dense.

The soil profile was slightly moist to moist; no free groundwater was encountered.

Field screening of soils was also undertaken for actual and potential acid sulfate soils (ASS). The results showed no ASS at the site and that no special precautions would be required for proposed site development.

5.3 Flora and Fauna

The site of the proposed works comprises part disused road and a small part of public reserve used for camping and grazing. The site has been cleared except for a small number of trees located near the proposed works – refer Photos.

6. AUTHORITY CONSULTATIONS

A number of authorities have been consulted regarding the proposed works (in conjunction with proposed works on the Denman Water Supply Scheme). A summary of responses relevant to Sandy Hollow is as follows (copies of correspondence are in Appendix C).

a) Department of Land and Water Conservation:

- Acquisition of Crown Land: Acquisition action is proceeding.
- Soil conservation issues: addressed in this SEE (refer Section 7).
- Native vegetation: not applicable for this site.
- Water Licences: A licence under Part 2 of the Water Act is required; the licence for Sandy Hollow is being processed by DLWC.
- Water Treatment Works (Stage 2 work): Approval under Section 60 of the Local Government Act is required. This will need to be obtained once treatment details and designs are available.

b) Department of Urban Affairs and Planning: No regional issues are involved.

c) Environment Protection Authority: The proposed work is not a scheduled activity under Schedule 1 of the POEO Act 1997 and therefore no licence is required from EPA. The EPA recommends relevant DLWC guidelines be followed regarding soil and water management practices during construction.

d) Department of Health (Hunter Public Health Unit): No formal response received. However, in discussions the Area Manager recommended chlorination of the supply in Stage 1 to minimise public health risks.

e) National Parks and Wildlife Service: The Service provided its standard guidelines for impact assessment. A subsequent search of the NPWS Aboriginal sites register identified no sites within 500m of the proposed works. Under NPWS guidelines, Aboriginal heritage assessment is not considered necessary as the site has been previously disturbed (by road construction and clearing).

f) NSW Waterways: no issues raised.

g) NSW Fisheries: no response received.

The Sandy Hollow works do not lie in a proclaimed Mine Subsidence District and Mine Subsidence Board approval is therefore not required.

7. ENVIRONMENTAL IMPACTS & SAFEGUARDS

7.1 Context and Setting

The Sandy Hollow Water Supply is an essential community service. The proposed improvements will upgrade the supply to increase reliability (remove the need for regular restrictions) and treat the supply to potable standard.

The works are proposed to be located on public lands at the southwest corner of the town, between Goulburn Drive and the Goulburn River. The groundwater bores will be located in the Goulburn River.

7.2 Access

Access to the site is from Goulburn Drive. Goulburn Drive is a low traffic local road.

7.3 Surface and Groundwater

The site of the works is above the deemed 1:100 year flood level. Existing drainage from Goulburn Drive is directed to drainage paths east and west of the site. The proposed works will have no impact on existing drainage systems.

Site drainage will comprise local landscaping that will direct surface waters around structures.

No groundwater is expected in excavations based on geotechnical investigations.

The clay lining of the temporary sludge lagoon / drying bed will seal the storage and prevent percolation into subsoils. The internal geotextile lining will assist with washing sediments to the sump and emptying the storage. This lining will provide additional security to the retention of sediments.

7.4 Soils

The majority of excavations will be shallow (less than 1m depth) except for the 3 m diameter Clear Water Tank which will require excavation to approximately 2m. Excavated material will be used for backfilling and topsoils for restoration and general landscaping.

Minor quantities of imported material will be required where suitable material from excavations is not available eg. sand for pipe bedding; road base for access roads and road restoration.

Minimal stockpiling will be required of excavated and imported material due to the small quantities involved. Excavations will be backfilled as soon as installations have been completed. No pipeline excavation will be left open overnight and no excavations will be undertaken in wet weather.

7.5 Visual Impact

The nearest residences to the proposed works are located on the northern (opposite) side of Goulburn Drive to the proposed works. The closest is approximately 40m distant.

The works will be sited at ground level RL 126m to 126.5m (approximately 2m below ground level at Goulburn Drive) and amongst existing trees that will provide a visual backdrop.

Above ground works comprise:

- RWT, including aeration tower;
- Electrical control kiosk;
- Disinfectant storage (approx 1600 L);
- Miscellaneous minor equipment such as pumps and pipework;
- Manproof fencing.

The CWT and the embankments of the sludge lagoon / drying bed will be approximately 0.5m above existing ground level.

Of the Stage 1 work, the RWT will be the most exposed structure. The concrete tank will be coloured (green) to reduce its visual impact.

Stage 2 (treatment plant) is likely to comprise various components and equipment either exposed or located in a small shed-type building.

Suitable screening and colourings will be specified to minimise visual impact. Vegetated landscape screening will be provided within the site along Goulburn Drive to minimise any visual impacts.

7.6 Flora and Fauna

The proposed works will have no flora/fauna impacts. The works have been sited to ensure existing trees will not be affected.

7.7 Heritage

No known heritage sites are located in the vicinity of the works.

7.8 Construction Impacts

a) Noise: construction activities (excavations, material deliveries) will be restricted to normal working hours. No work will be permitted on Sundays or public holidays. Equipment to be used will include a backhoe/loader (excavations, backfilling and other minor earthworks) and associated smaller plant and equipment. A crane will be used to unload and install the water tanks.

   Noise levels from construction equipment will comply with regulatory requirements.

b) Traffic: Materials - including the water tanks, pumps, pipework, fabricated steelwork, fencing posts/wire, road base, and other minor equipment - will be delivered by trucks/vans. The number of deliveries is estimated to average 2 or 3 per week.

   Consequently the works will have negligible impact on traffic in Goulburn Drive.

c) Stockpiling: Minimal stockpiling will be required as most excavated material will be used for backfilling; imported sand and road base will be delivered and used as needed. Topsoil may require temporary stockpiling for use in site landscaping after the water tanks have been installed and the sludge lagoon excavated and shaped.

d) Dust: When necessary, water spray (tanker or hosing via existing water supply) will be used to manage any potential dust generation.

e) Erosion and sediment control: A silt barrier will be located downstream of the construction area (ie. below the RWT and sludge lagoon) to contain any sediments in site runoff.

f) Waste management: Only minor waste material is expected to be generated by the proposed works, limited to packaging materials, off-cuts and similar material. These will be lawfully disposed/recycled off-site. Excavated material will be used for backfilling and any surplus for site landscaping.

7.9 Operational Impacts

a) Waste Disposal

   Contaminants in the raw water removed by treatment units both in Stage 1 (sediments form the aeration tower and RWT) and Stage 2 (water quality improvements) will be temporarily stored and partially dried on-site in shallow lagoons or beds. The concentrated contaminants (sediments, brine etc) will be periodically removed by a licensed contractor and tankered to a suitable treatment/receival station for further treatment and disposal.

b) Noise and vibration

   The only operating equipment will be the bore, clear water and disinfectant dosing pumps. No noise or vibration impacts beyond the site boundaries are expected. Similar requirements will apply to the Stage 2 treatment facilities.

c) Chemicals

Disinfectant (sodium hypochlorite) deliveries, storage and use will be in accordance with safety and public health regulations. Any chemicals required for water treatment in Stage 2 will similarly comply with safety and public health regulations.

d) Energy

The works will have low electrical power requirement. Stage 1 will draw approximately 7 kW when all pumps and equipment are operating. Stage 2 can be expected to double this demand.

e) Traffic

In Stage 1 vehicle movements to and from the site will comprise weekly inspection, monthly disinfectant deliveries, occasional (2 to 3 monthly) removal of retained sediments in the sludge storage / drying bed and periodic maintenance activities.

In Stage 2, additional chemical deliveries (typically monthly to 3-monthly, depending on particular technology requirements) will be required. Waste material removal is expected to increase slightly (1 to 2 monthly).

Consequently, traffic impacts are considered to be minimal.

7.10 Cumulative Impacts

The cumulative impacts of the proposed Stage 1 and 2 works are considered to be minimal. The features and safeguards to be incorporated in the works will minimise any potential adverse effects.

8. CONCLUSION

The proposed improvements to community water supply will increase public amenity and reduce health risks.

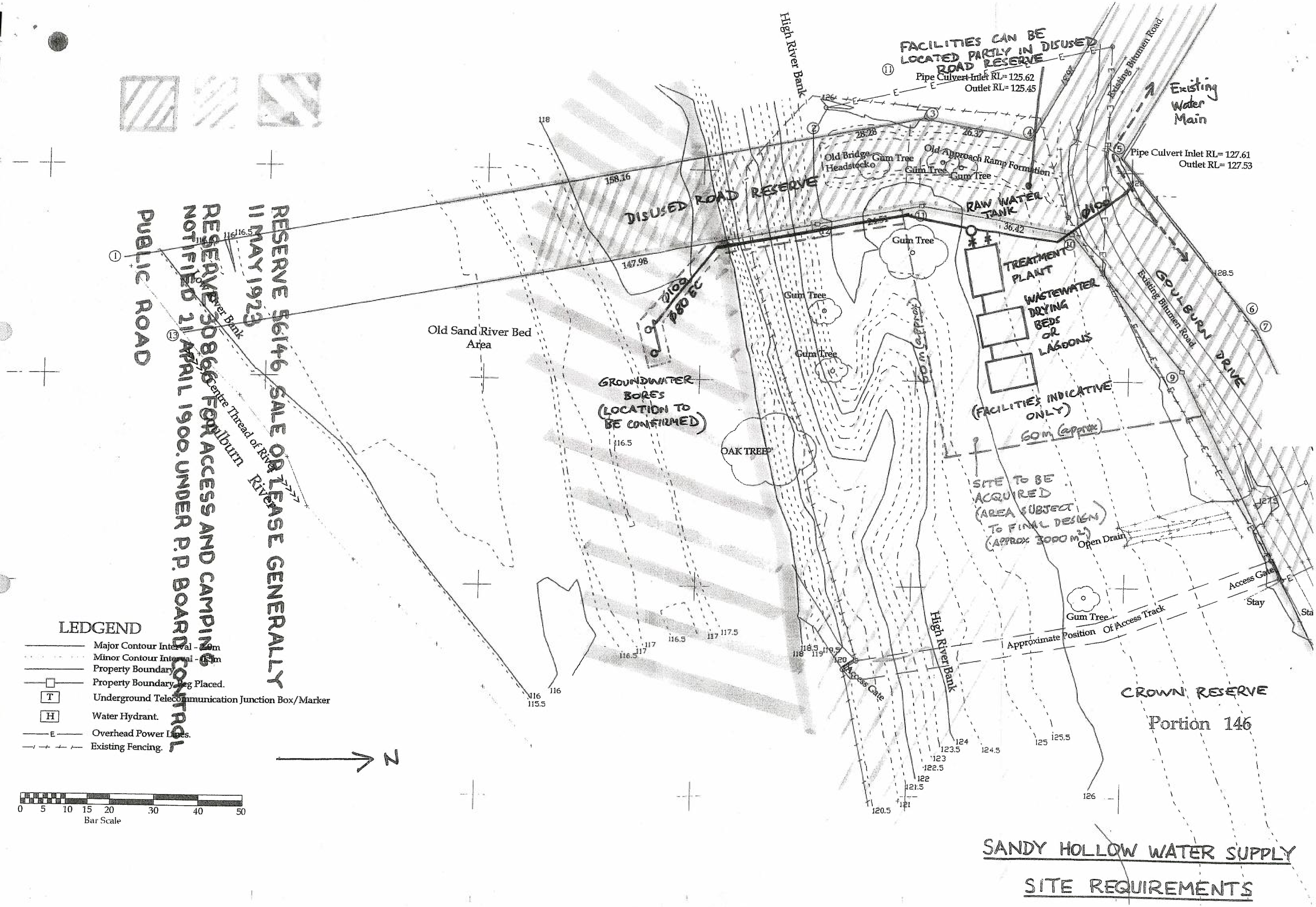
The proposed Stage 1 development to improve the reliability of supply comprises two groundwater bores, two domestic size water tanks (one at ground level; the other buried), a proprietary disinfection facility (NaOCl storage, bunding, dosing equipment), and associated pipework and minor equipment.

The Stage 2 (future) work will comprise a small treatment facility (capacity 330 kL/d) to produce potable quality water meeting current Drinking Water Guidelines. The technology to be used is not known at this time.

Minimal environmental impacts are associated with the proposed works. The safeguards to be incorporated into the proposed Stage 1 works will minimise any potential adverse impacts. Requirements and safeguards to be incorporated into Stage 2 will be addressed during detail investigations / designs for that work, including comparative assessment of the various technologies available.

APPENDIX B

Geotechnical Investigations: Borelog


FACILITIES CAN BE LOCATED PARTLY IN DISUSED ROAD RESERVE
Pipe Culvert Inlet RL= 125.62
Outlet RL= 125.45
Existing Water Main
Existing Bitumen Road.
Pipe Culvert Inlet RL= 127.61
Outlet RL= 127.53
High River Bank
Old Bridge Headstocks
Gum Tree
Old Approach Ramp Formation
28.28
26.37
158.16
147.98
24.51
36.42
DISUSED ROAD RESERVE
RAW WATER TANK
Ø100
Ø100
Ø80 EC
TREATMENT PLANT
WASTEWATER DRYING BEDS OR LAGOONS
(FACILITIES INDICATIVE ONLY)
60m (approx)
SITE TO BE ACQUIRED (AREA SUBJECT TO FINAL DESIGN) (APPROX 3000 m²)
GOULBURN DRIVE
Existing Bitumen Road
128.5
127.5
Open Drain
Access Gate
Stay
Approximate Position Of Access Track
GROUNDWATER BORES (LOCATION TO BE CONFIRMED)
Old Sand River Bed Area
OAK TREE
Low River Bank
Centre Thread of River
Goulburn River
RESERVE 56146 SALE OR LEASE GENERALLY 11 MAY 1923
RESERVE 30866 FOR ACCESS AND CAMPING NOTIFIED 21 APRIL 1900. UNDER P.P. BOARD CONTROL
PUBLIC ROAD
CROWN RESERVE
Portion 146
LEDGEND
Major Contour Interval - 2.0m
Minor Contour Interval - 0.5m
Property Boundary
Property Boundary Peg Placed.
T Underground Telecommunication Junction Box/Marker
H Water Hydrant.
E Overhead Power Lines.
Existing Fencing.
N
0 5 10 15 20 30 40 50
Bar Scale
SANDY HOLLOW WATER SUPPLY
SITE REQUIREMENTS

Our reference: MD01H130
Your reference:

LAND & WATER CONSERVATION

Ellis Karm & Associates Pty Ltd
PO Box 671
EPPING NSW 2121

Attention: Enn Karm

PROPOSED ACQUISITION OF CROWN LAND FOR AUGMENTATION TO THE SANDY HOLLOW WATER SUPPLY AT SANDY HOLLOW

Thank you for your letter of 23 May 2001. I apologise for the delay in responding.

The proposal appears unobjectionable as far as Land NSW is concerned.

The Minister for Land and Water Conservation will offer no objection to the Crown land site edged yellow on the diagram attached to your letter being acquired in accordance with the provisions of the Land Acquisition (Just Terms Compensation) Act 1991.

Compensation in respect of the Crown land being acquired is to be determined by the State Valuation Office.

Also there is no objection to Council entering upon the Crown land site prior to acquisition for survey and site investigation purposes. Council shall ensure the Crown is suitably indemnified against any action suit or claim that may arise as a result of work undertaken by Council or Council's agents.

Administration fee of $487.70 applies to the providing of this consent. Tax invoice requesting payment will issue separately to Muswellbrook Shire Council.

Please request Council to forward copy of gazette notice and compensation advices when available.

Yours sincerely

4/10/01

~~Chris Adamson~~
For District Manager
LAND NSW
Maitland

G:\LAN\SLA\RESOPS\CLACQNS\MD01H130EllisKarm.doc

Copy sent J Bourke / S Adam. Hm 16/10/01

Cnr Newcastle Road & Banks Street East Maitland NSW 2323 PO Box 6 East Maitland NSW 2323 DX 21620 Maitland
Telephone (02) 4934 2280 Facsimile (02) 4934 2252
ABN 72 726 325 787

APPENDIX B

Geotechnical Investigations: Borelog

PPK
Environment&Infrastructure

BOREHOLE No.:
BH3

sheet 1 of 1

BOREHOLE - ENGINEERING LOG

Client :	Ellis Karm & Associates Pty Ltd	hole commenced : 13/06/2001	job number : 63P042A
Project :	Geotechnical Investigation	hole completed : 13/06/2001	
Location :	Sandy Hollow	supervised by : JR	
Date :	13/06/2001	log checked by : RIK	
Slope deg:	Vertical Position: See Site Plan	Drill Model : Truck Mounted Hydra Power Scout	
Bearing deg:	Surface RL: m	Hole Diameter : 125mm	

drilling information					sampling data				profile description													
method	support	water	R.L.	depth metres	type	sample lost	disturbed	blows per 0.3 metres	graphic log core loss	material soil type : colour, structure, (origin), (USC)	consistency/ rel. density VS	Fb	S	VL	F	L	St	M	VSt	D	H	VD	moist. D	M	W	Sat	hand pen. 100 kPa	200 kPa	300 kPa	400 kPa	500 kPa	structure and additional observations
TC		NFGWE	0.5	0.5	SPT			N = 19		Silty sandy CLAY, dark brown, fine sand, low plasticity, FMC<PL (Alluvial) (CL)																				SPT @ 0.5m 6, 10, 9 (PP > 500kPa)
			1.0																													
				1.25	D																											
			1.5							Trace gravel @ 1.5m, light brown																						
			2.0	2.0	SPT			N = 21		Silty clayey SAND, brown, fine sand, low plasticity fines, FMC<PL (Alluvial) (SC)																				SPT @ 2.0m 6, 10, 11
			2.5																													
				2.75	D																											
			3.0																													
			3.5	3.5	SPT			N = 27																								SPT @ 3.5m 9, 11, 16
			4.0	4.0	D					BH terminated @ 4.0m																						
			4.5																													
			5.0																													

Key

Method

- auger with V-bit
- TC auger with TC-bit
- R roller/tricone
- V washbore
- M mud drilling

Water

water level date or time shown

..../..../....

water inflow
partial drilling water loss
complete drilling water loss

NFGWE no free groundwater encountered

Sampling Data

- U50 undisturbed sample 50mm diameter
- D disturbed sample
- SPT standard penetration test
- NC cone penetrometer

Moisture

- D dry
- M moist
- W wet
- S saturated

Support

- C casing
- M mud

Consistency/Relative Density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
M	medium dense
D	dense
VD	very dense

PPK Environment & Infrastructure Pty Ltd
Suite 1 3rd Floor, 55 Bolton Street, Newcastle

BBORE

APPENDIX C

Authority Correspondence

your ref:
our ref: ER 2706

LAND & WATER CONSERVATION

ELLIS KARM & ASSOCIATES PTY LTD
PO BOX 671
EPPING NSW 2121

ATTENTION: Enn Karm

Monday, 2 July 2001

Dear Sir

DEPARTMENTAL REQUIREMENTS FOR THE DENMAN AND SANDY HOLLOW WATER SUPPLY AUGMENTATIONS

I refer to your letter dated 22 May 01 requesting the department's comments in regard to the above proposal. The department has now reviewed the matter and provides the following information on the principal issues.

CROWN LAND ISSUES

Acquisition of Crown Land

The EIA needs to address the status and interest in land and any proposed use of Crown land. That is, should any part of the proposed wastewater pumping stations include Crown land, as defined under the Crown Lands Act, 1989 acquisition of the land is required under the provisions of the Land Acquisition (Just Terms Compensation) Act, 1991.

In the event the proposas includes other Crown land (excluding Crown public roads) for the purpose of transportation of sewage there maybe a requirement for the public authority to acquire an easement over the Crown land in accordance with the provisions of the Land Acquisition (Just Terms Compensation) Act, 1991.

An acquiring authority has a responsibility to address the issue of any native title rights or interest that may exist in the affected Crown land pursuant to the Native Title (Commonwealth) Act, 1993.

There is also a need to liaise and address the interests of the Rural Lands Protection Board in relation to the Travelling Stock Reserve (Lot 146 DP 750963) at Sandy Hollow.

SOIL CONSERVATION - EIS Issues

The Department advises that the Environmental Impact Statement (EIS) should address at least, but not be limited to the following issues: -

- topography and landform
- soil type and soil erodibility
- effect on habitat and endangered species
- cumulative impact of habitat destruction within and adjacent to the area
- likely size and slope of road batters resulting from the works
- Protected Land ,if applicable
- drainage works and erosion and sediment control strategies

revegetation strategy, including, the comment on possibility of endemic seed or vegetative material collection and the final site rehabilitation

NATIVE VEGETATION

The Native Vegetation Conservation Act 1997 (NVCA) (amongst other things) provides for the conservation and management of native vegetation on a regional basis; encourages and promotes native vegetation

5/7/01

Suite 6 464 King Street Newcastle West NSW 2302 PO Box 2213 Dangar NSW 2309 DX 4335 Newcastle West
Telephone (02) 4929 4346 Facsimile (02) 4929 6364 Email www.dlwc.nsw.gov.au

management in the social, economic and environmental interests of the State; protects native vegetation of high conservation value; and prevents the inappropriate clearing of vegetation.

The clearing of native vegetation and the clearing of all trees on State protected land requires consent under Part 2 of the Act unless the clearing is excluded or exempt from the Act.

If the proposed development can be carried out without clearing native vegetation (or any tree on State protected land) beyond the exclusions or exemptions, no consent under NVCA would be required. However, if the proposed works entail clearing of native vegetation within twenty metres of the bank of a prescribed stream, no exemptions apply. In this case, the proposed works are located adjacent the Hunter River at both Denman and Sandy Hollow. The Hunter River is a prescribed stream.

In circumstances where a 3A permit is issued by DLWC under the Rivers and Foreshores Improvement Act for earthworks, the clearing of native vegetation is excluded from the operation of the NVCA. For further information and assistance regarding the need to lodge a clearing application the proponent should contact: Warren O'Brien, Natural Resources Project Officer, Muswellbrook on (02) 6542 1222

WATER QUALITY

Concerns have been raised with the department over the extent of contamination of the Hunter River for town water supply. A town water supply to Denman, in particular, must be designed to effectively bring water to relevant standard for potable use. The relevant issues to be addressed in general terms include:

* sedimentation and turbidity in water supply
* mineralisation of water in the river system and effects on supply trunklines and domestic water service systems
* occurrences of blue green algal outbreaks in Glenbawn Dam and potential contamination of water supply
* microbiological contamination of the river and the impact on water supply

The disposal of treatment chemicals, any organic contamination of wastes to be transferred to the sewer and overall impact of disposal of filtered/treated products should be addressed as part of the Review of Environmental Factors for the proposal.

GROUNDWATER

Bores proposed as intake wells for water supply are located within alluvial aquifer of the Golburn River. Due to the high connectivity of groundwater to the river, extraction of water from these bores requires a licence under Part 2 of the Water Act.

CAPITAL WORKS

Approval under Section 60 of the Local Government Act 1993 will be required from the Department of Land and Water Conservation for the water treatment components of works associated with both scheme augmentations. (DLWC Local Government Programs Unit, Hunter Region. Contact person: John Bourke, Tel: 02 4929 9835).

Trade waste approval will be required from the Department of Land and Water Conservation for the proposed backwash water discharge to sewer at Denman. (DLWC Water Industry Reform and Planning Section, Parramatta. Contact person: Keith Bancroft, Tel: 02 9895 5983).

Treatment plant upgrading at the Denman Wastewater Treatment Works, or changes to effluent management systems, necessary as a result of backwash water discharge to the Denman sewerage system will require approval under Section 60 of the Local Government Act 1993.

Denman - the supply works will be subject to a Part 2 licence. The embargo under Section 20Y of the Water Act, 1912 does not apply to town water supply, and therefore a licence may be applied for by the proponent. The site would require an inspection and assessment of environmental factors before works are carried out. Ponded waters in the quarries upstream may present some potential risk of BGA toxin contamination in periods of low river flow - however the extension of the intake into the river bed will hopefully reduce any risk of significant contamination.

Sandy Hollow - again a Part 2 licence is required. An embargo under Section 22Ba of the Water Act applies to the Goulburn River catchment, with an exemption ofr town water supply. Therefore an application may be made for a licence for the works. The location/security of treatment ponds and/or drying beds is of concern because of possible potential risk of contamination of surface/groundwaters.

I trust the above information is of assistance in regard to your consideration of this proposal. Should there be any further enquiry in this matter, please contact the, Environmental Review Coordinator, at our Newcastle Office on 02 49299847.

Yours Faithfully

L.A. Watt

Lance Watt
Environmental Review Co-ordinator

Department of
Urban Affairs and Planning

Mr E Karm
Project Manager
Ellis Karm and Associates Pty Ltd
PO Box 671
EPPING NSW 2121

Contact: G Oakey
Our reference: N90/598
GO:AM
Your reference:

Hunter and Central Coast Region
Level 4, 251 Wharf Road
NEWCASTLE NSW 2300
PO Box 623
NEWCASTLE NSW 2300

Telephone: 02 4926 2566
Facsimile: 02 4926 1529
Email:
duaphunter@duap.nsw.gov.au

Dear Mr Karm

RE: DENMAN & SANDY HOLLOW WATER SUPPLY AUGMENTATIONS - STAKEHOLDER CONSULTATION

I refer to your letter of 21 May, 2001 concerning the proposed augmentations for the Denman and Sandy Hollow Water Supply Schemes.

I understand that you discussed this proposal with Mr Paul Weiner of the Department's Development Infrastructure Assessment Branch. This advice is to inform you that the proposal raises no regional issues for the Hunter Office of the Department.

You should continue to liaise with the Council regarding Part 4 approval process and the scope of documentation managed by the Council to support the application.

Yours sincerely

for G Oakey 27/6/01
Assistant Regional Director
Hunter & Central Coast Regions

4/7/01

Our Reference : 270153A9
Contact : Richard Bath, 4926 9814

NSW EPA

Northern Regions

Enn Karm
Project Manager
Ellis Karm & Associates Pty Ltd
PO Box 671
EPPING 2121

28 JUN 2001

Dear Mr Karm

PROPOSED AUGMENTATION OF DENMAN AND SANDY HOLLOW WATER SUPPLIES

I refer to your letter of 21 May 2001, inviting the Environment Protection Authority (EPA) to comment on the above proposal regarding water supply augmentations.

The construction of water treatment facilities is not a scheduled activity under Schedule 1 of the Protection of the Environment Operations Act 1997 (POEO Act) and therefore does not require a licence from the EPA.

Although this project does not require an EPA licence, it is our expectation that construction of the proposed facilities will involve careful selection of the proposed sites and the use of best practice management in all aspects. Installation work will need to be undertaken so as to prevent water pollution particularly in areas of erodable soils and during installation of water intake structures. Some of the environmental issues that will need to be considered include separation of topsoil from subsoil when trenching; disposal of accumulated water in trenches, containment of sediment in runoff from stockpiles and trenches. Measures to prevent air and noise pollution, such as restricting hours of operation and undertaking dust suppression, may be required for these locations.

The EPA recommends that all relevant guidelines are obtained from the Department of Land and Water Conservation and work on this project is carried out in accordance with these guidelines.

If there is any matter raised in this letter that you would like to discuss, please contact me on 4926 9814.

Yours sincerely

RICHARD BATH
Acting Head, Regional Programs Unit - Hunter

Environment Protection Authority
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3/7/01

PHOTOGRAPHS

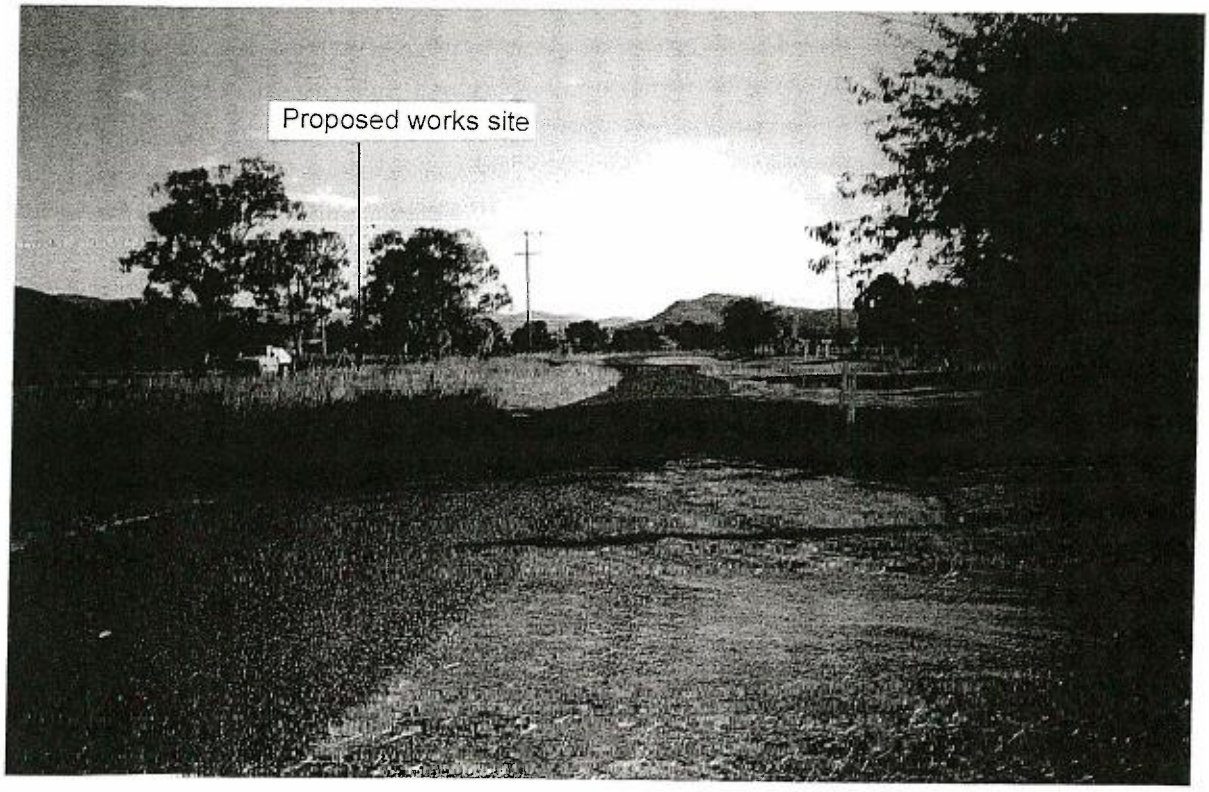


Photo 1 Goulburn Drive and Crown reserve 30865 (Access and Camping)

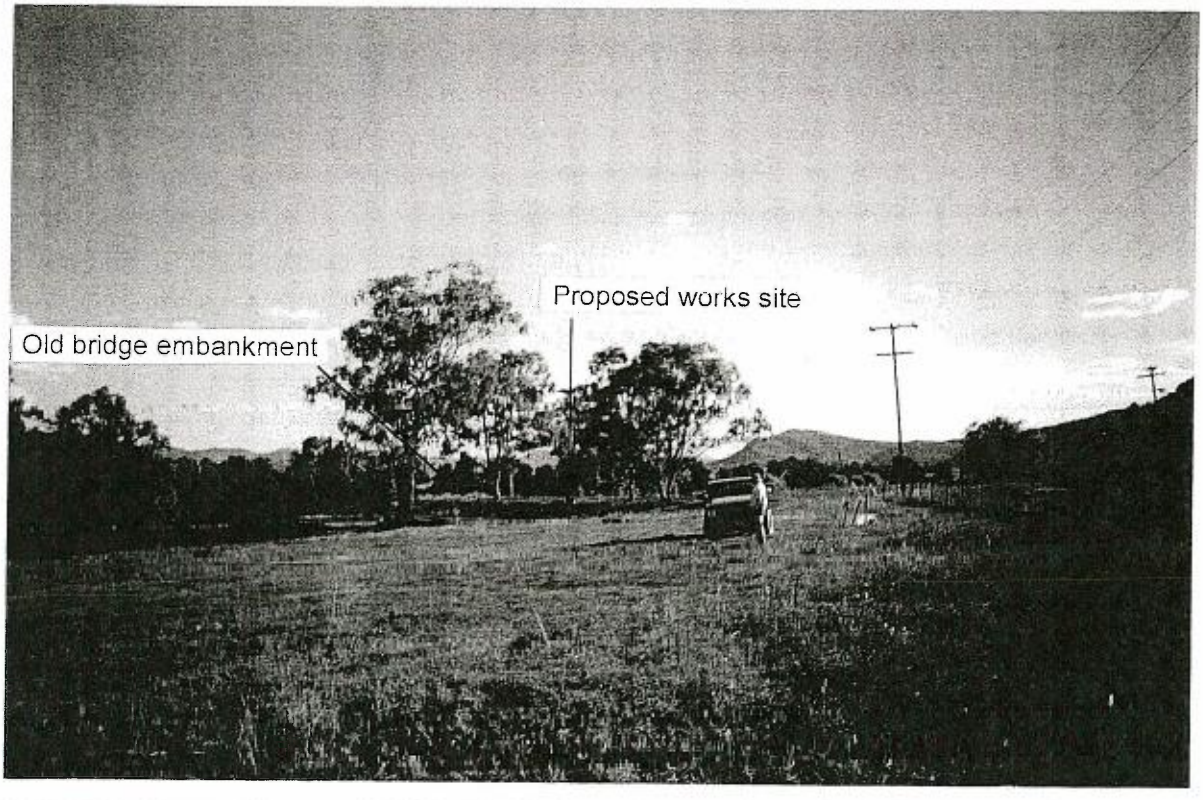


Photo 2 Crown Reserve 30866 and site for water supply works in background

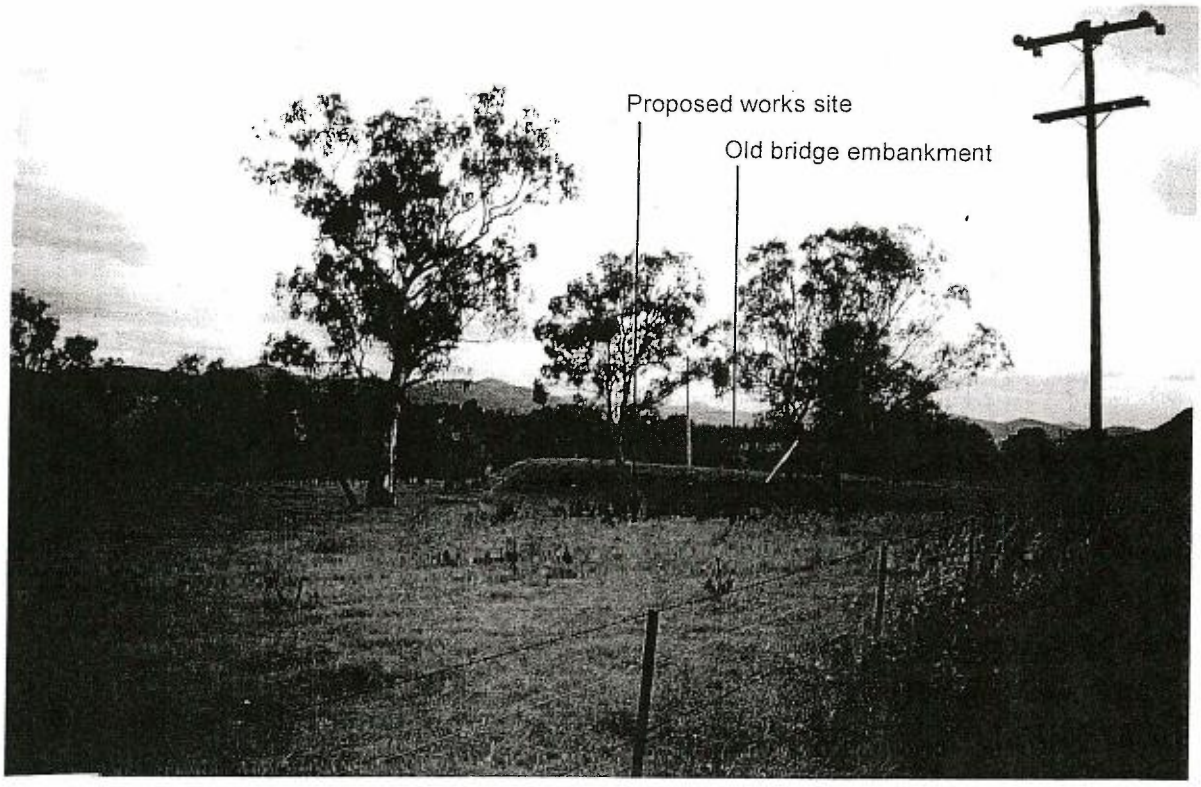


Photo 3 Proposed site for water supply works

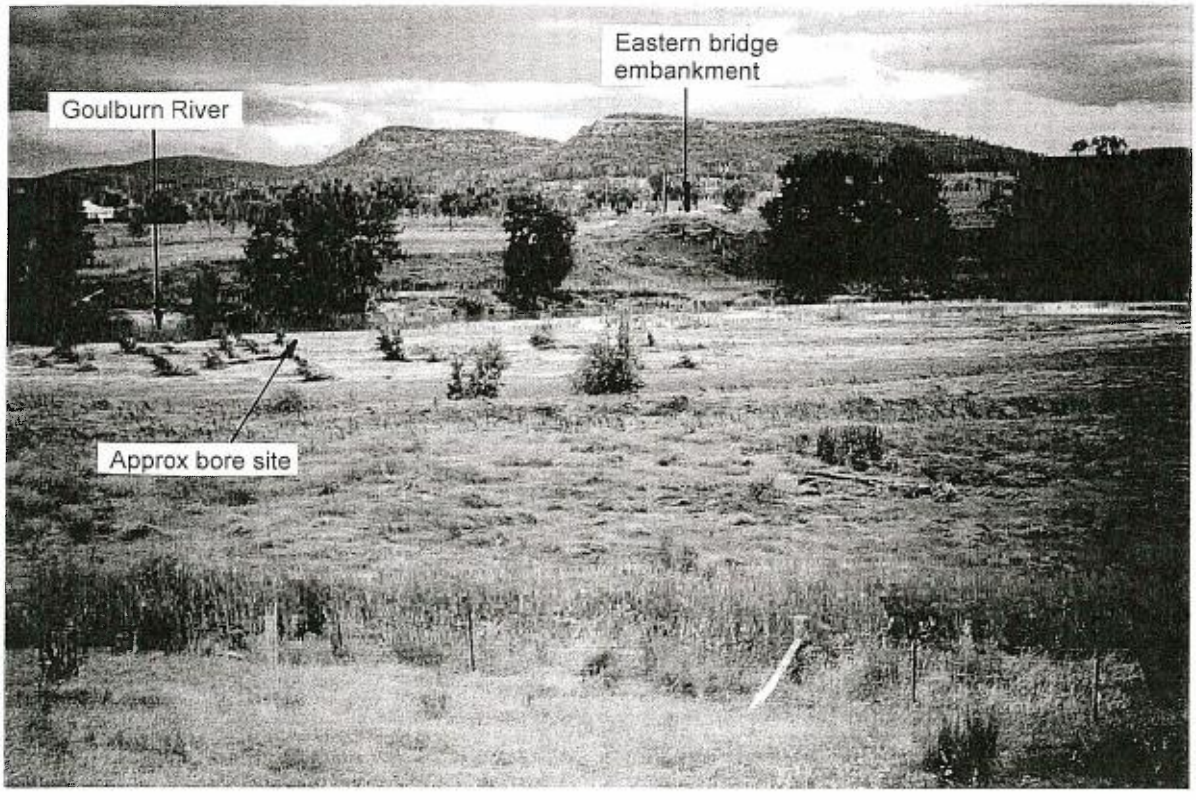


Photo 4 Goulburn River and river flats in vicinity of old road bridge

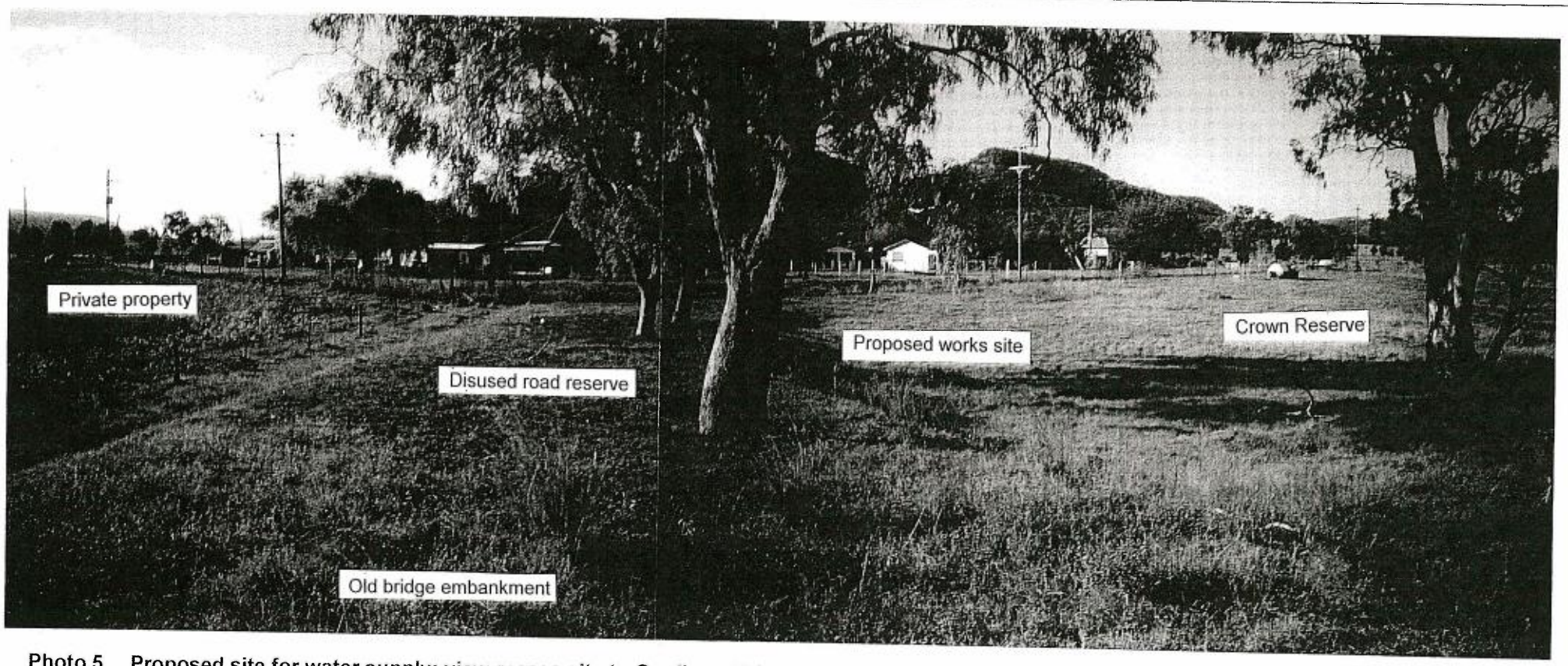
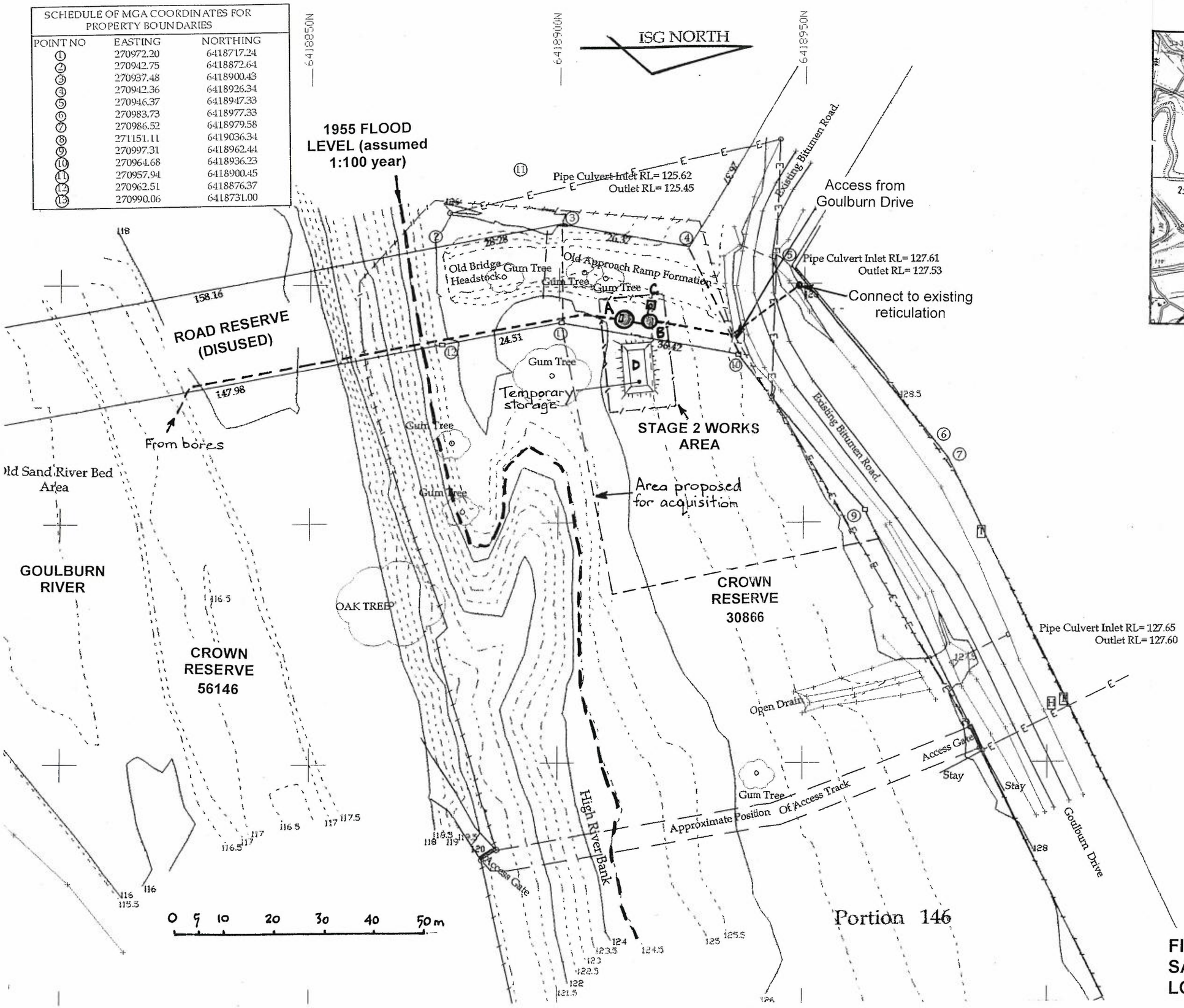
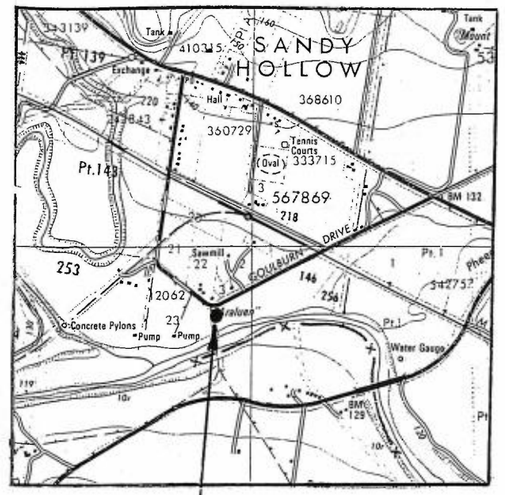


Photo 5 **Proposed site for water supply: view across site to Goulburn Drive**

FIGURES

SCHEDULE OF MGA COORDINATES FOR PROPERTY BOUNDARIES		
POINT NO	EASTING	NORTHING
①	270972.20	6418717.24
②	270942.75	6418872.64
③	270937.48	6418900.43
④	270942.36	6418926.34
⑤	270946.37	6418947.33
⑥	270983.73	6418977.33
⑦	270986.52	6418979.58
⑧	271151.11	6419036.34
⑨	270997.31	6418962.44
⑩	270964.68	6418936.23
⑪	270957.94	6418900.45
⑫	270962.51	6418876.37
⑬	270990.06	6418731.00





SITE OF PROPOSED WORKS

STAGE 1 WORK:

- A: Raw Water Tank (20 kL; 3.5m dia)
- B: Clear Water Tank (15 kL; 3m dia)
- C: Disinfectant storage, bunding, dosing
- D: Temporary sludge storage / drying bed (20 kL)

FIGURE 1
SANDY HOLLOW WS AUGMENTATION
LOCALITY PLAN & ARRANGEMENT

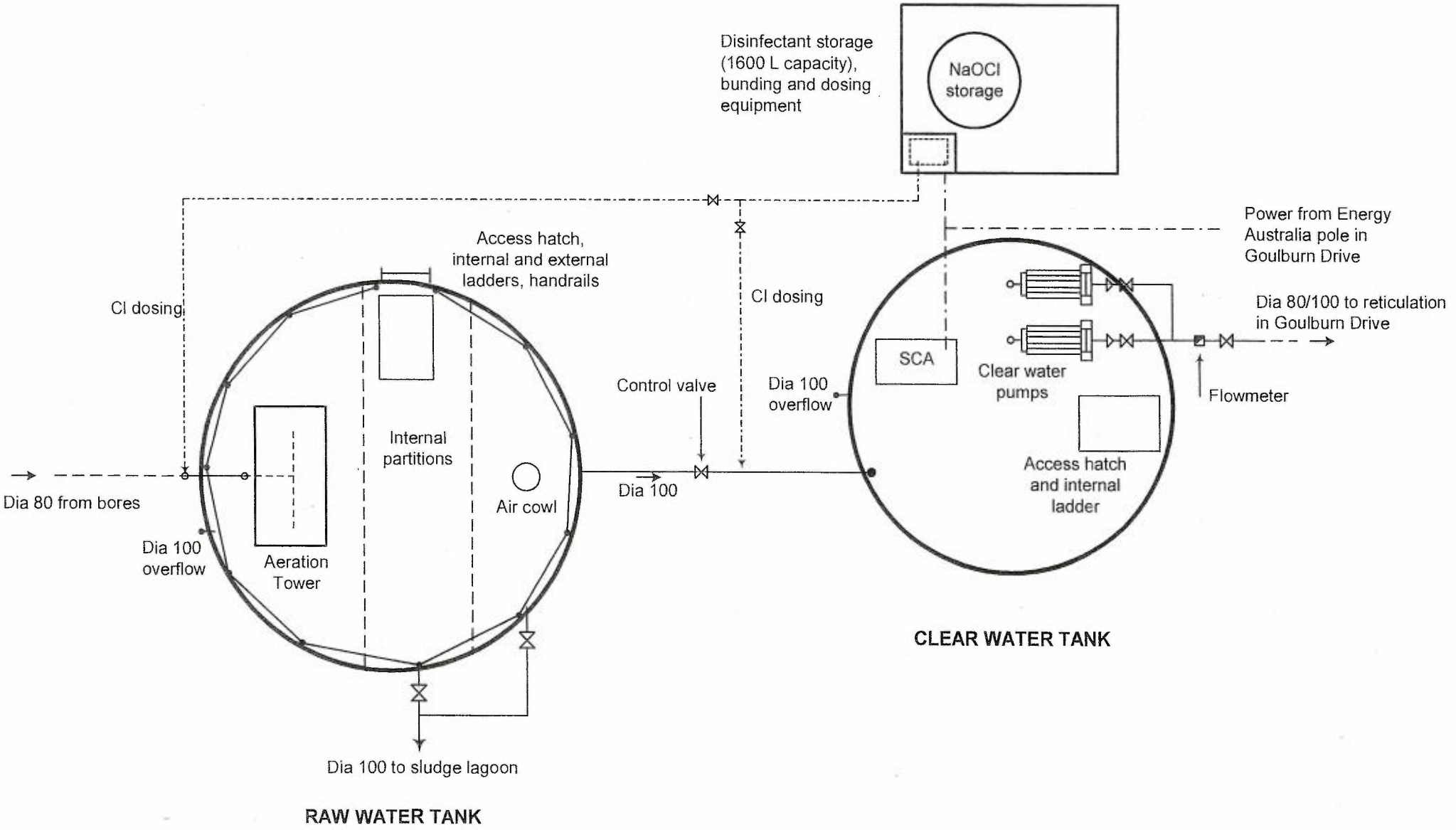


FIGURE 2
SANDY HOLLOW WS AUGMENTATION
STAGE 1: PLAN

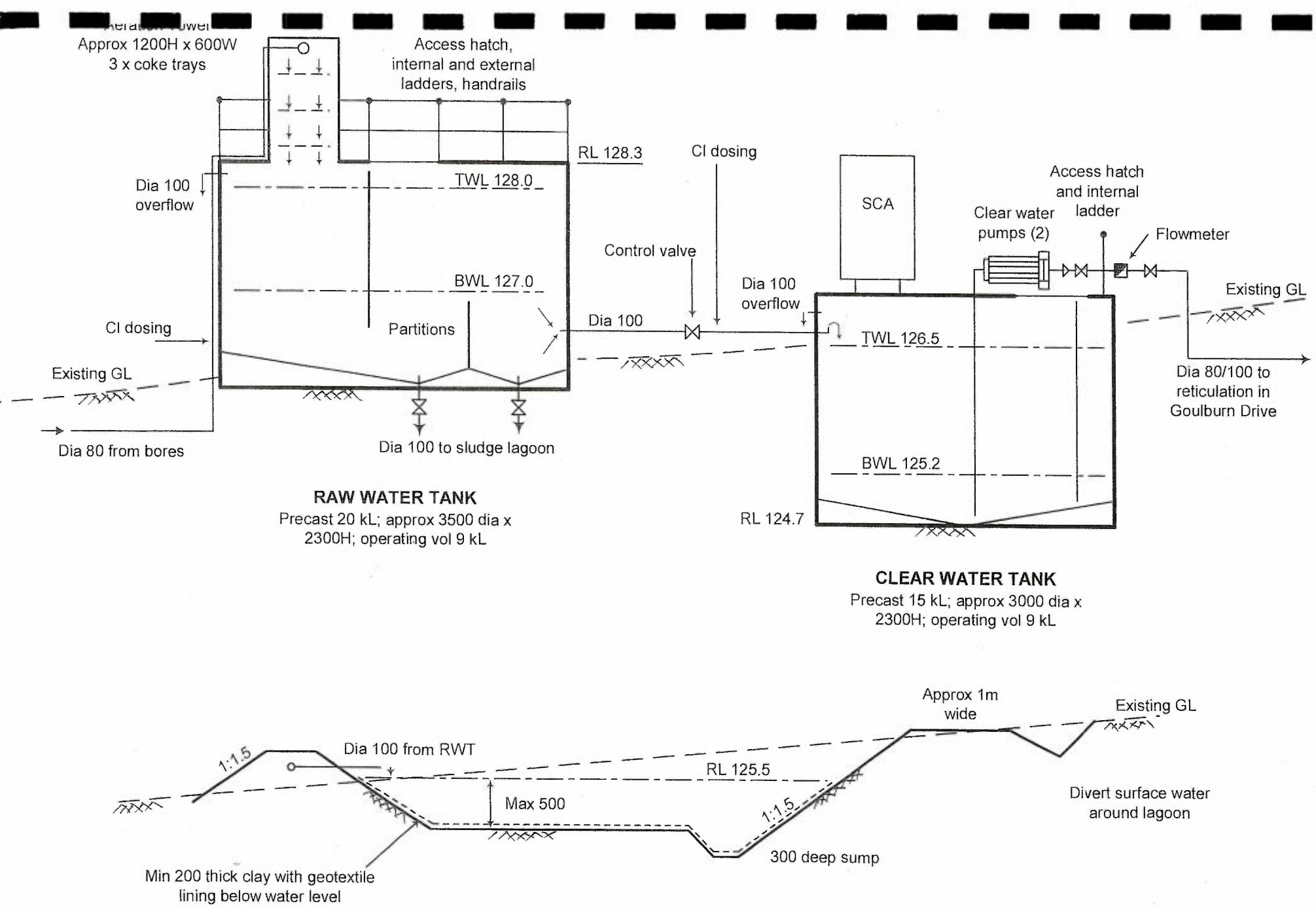


FIGURE 3
SANDY HOLLOW WS AUGMENTATION
STAGE 1: ELEVATIONS