EIS 208

AA055981

Environmental impact statement on proposal to dredge sand from the Colo River fronting Portion 37 (Parish of Meehan, Shire of Colo) : prepared for Jejida Pty. Ltd.

ENVIRONMENTAL IMPACT STATEMENT

ON

PROPOSAL TO DREDGE SAND FROM THE COLO RIVER FRONTING PORTION 37

(PARISH OF MEEHAN, SHIRE OF COLO)

PREPARED

FOR

JEJIDA PTY. LTD.
20 Loftus St., Sydney

APRIL, 1983
(Amended)

Original by: I. D. BROWN, B. A. (Earth Sciences)
Amended by: LAURIE, MONTGOMERIE & PETTIT PTY. LTD.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

The assistance of the following N.S.W. Government Departments, individuals and other bodies in the preparation of this report is gratefully acknowledged:

Department of Mines
Department of Lands
Department of Public Works
Department of Fisheries
Department of Main Roads
Water Resources Commission
Metropolitan Water Sewerage & Drainage Board
Electricity Commission
State Pollution Control Commission
Maritime Services Board
Colo Shire Council
Soil Conservation Service
Monier Pty. Ltd.
Mr. J. H. Harris, Zoology Dept., University of N.S.W.
Mr. R. G. Jones, Colo River Road, Lower Portland
and the local residents named in this report.

1. INTRODUCTION

This Environmental Impact Statement assesses the environmental impact of the proposal by the company of Jejida Pty. Ltd. to dredge sand for commercial purposes from the bed of part of the Colo River near Sydney, New South Wales. The proposed site of the operation is within and adjacent to Portion 37, Parish of Meehan in the Shire of Colo. The grid reference on the Lower Portland 1:25,000 map (Central Mapping Authority, 1978) is 010983, being the south west corner of Portion 37.

The proposal, if approved, will involve the dredging of sand from the bed of the Colo River adjacent to Portion 37, processing and stockpiling of the sand on the river terrace within Portion 37, and transport of the material by truck to the point of sale. Associated with the processing operation will be the use of a settlement pond for removal of fine sediment from the waste washing water, prior to its return to the river.

The operation is planned to be similar to that of Monier Pty. Ltd. on the Hawkesbury River at Windsor. That operation will be referred to where relevant in the following pages.

The character of the area surrounding the proposed site is rural. Agricultural development is confined to the main valleys, and the surrounding hills remain in a relatively natural undeveloped condition. Portion 37 and adjacent freehold lands on the valley floor, are predominantly cleared grazing lands. There is an existing sand extraction operation working the river terrace of Portion 37. This is conducted by Jejida Pty. Ltd., the present proposer.

A full assessment of the need for the proposed operation is beyond the scope of this statement, however a few points can

be made. There is at present a shortage of clean construction sand for the Sydney market. The sand resources of the Colo River are a significant proportion of the sand available close to Sydney. Several reports of the New South Wales Department of Mines have discussed the approaching shortage of sand near Sydney even if Macdonald and Colo River sand is utilised, and the importance of bringing these areas into production (Crawford, 1971, Wallace 1976, Neville 1976).

This Environmental Impact Statement addresses itself to the development as described by the proposer, although in several instances changes to the development to reduce its adverse environmental effects are recommended.

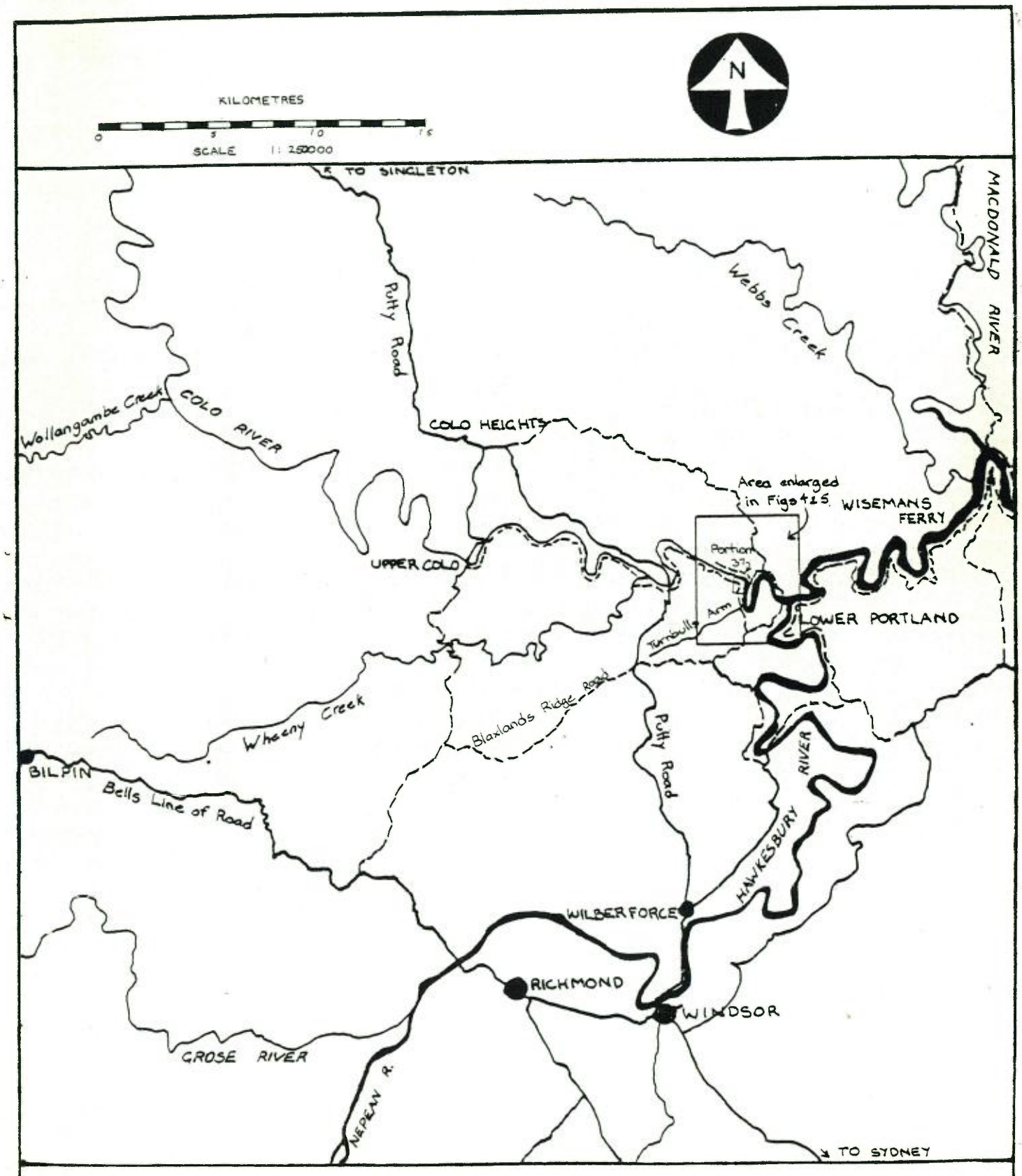


Fig. 1 LOCATION OF SITE

2. DESCRIPTION OF PROPOSAL

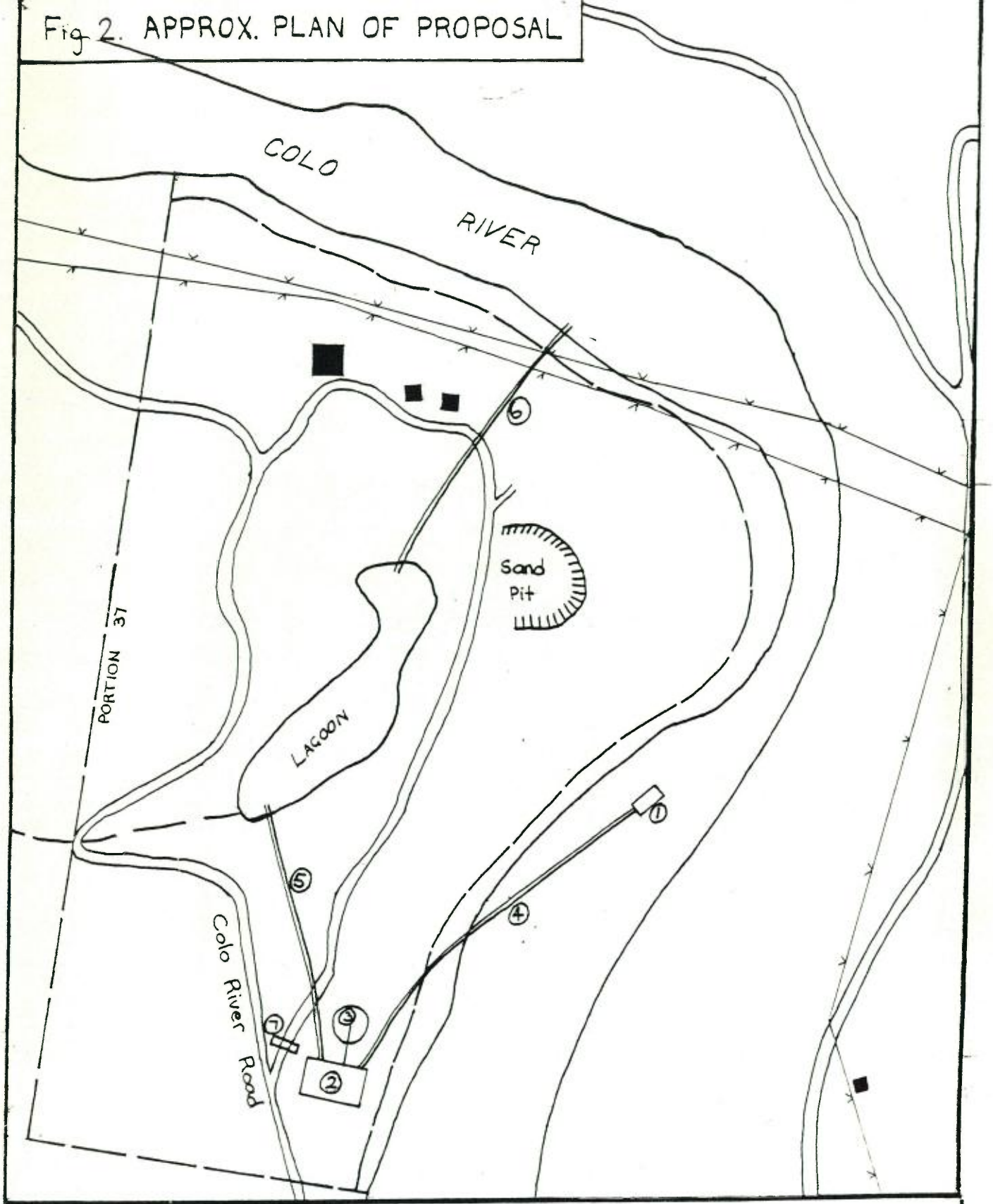
The sand will be extracted from the river bed by a floating suction cutter dredge. This will be moved about as needed on the section of river defined by the boundaries of Portion 37, and anchored to appropriate points on the banks of the river. Maximum depths of the dredging, proximity to banks and the shape of the cross-section of the river channel after dredging will be as specified by the controlling authority: the New South Wales Department of Lands.

The sand in the form of a slurry will be pumped via a floating and surface pipeline to the processing plant near the southern end of Portion 37. Processing will involve screening, washing, cycloning and stockpiling of the sand. Screening will separate the coarse fraction (larger than 6 mm. diameter) and unwanted organic material such as leaves, sticks and charcoal. This organic material will be collected and sold separately. Washing and cycloning will remove the very fine fraction and water, and these in combination will be piped to the settlement pond before return of the cleaner water to the river.

The State Pollution Control Commission will control the quality of the water returned to the river, and ensure river turbidity is not increased from this quarter, by setting an appropriate standard. Thus the standing time of the water and the possible use of a flocculant will depend on the requirements for conforming to this standard. An existing lagoon on the floodplain will be used as the settlement pond.

The sand will be directed via a cyclone to a stockpile adjacent to the plant. The stockpile will be of the order of 500 to 600 tonnes, and will occupy a cone of about 30 metres diameter and 10 metres in height. Figure 2 shows a plan of the operation.

Fig 2. APPROX. PLAN OF PROPOSAL



LEGEND

Road

Building

Power Line

Operation: ①.....Dredge (mobile along Portion 37)

②.....Processing Plant

③.....Stockpile

④.....Pipeline: dredge to processing plant (mobile)

⑤.....Pipeline: processing plant to settlement pond

⑥.....Pipeline: settlement pond to river

N

METRES

0 50 100 150 200 250

The sand will be loaded into 20-tonne trucks by front-end loader. These trucks will travel the same route as the trucks of the current operation: south along the Colo River Road to Turnbulls Hill, then south and west on Blaxlands Ridge Road to the Putty Road, and on through Windsor to the point of sale. A weighbridge will be installed where the road from the plant joins the Colo River Road. Part of the trucking route is shown in Fig. 4.

The maximum rate of extraction will be approximately 500 tonnes per day, involving about 25 truck movements in each direction. The existing operation involves removal of about 300 tonnes per day, and 16 truck movements each way. Both operations will proceed concurrently.

Both the scale and nature of the operation, including equipment to be used, will be very similar to the Monier Pty. Ltd. operation on the Hawkesbury River at Windsor. It is intended that sand extraction will continue indefinitely. This relies on the replenishment of the sand mass, along the section of river described, by floods. This is how the Monier plant operates, and all evidence indicates this will also occur, perhaps to a greater extent, on this river.

The operation will be restricted to five days a week, avoiding weekends.

3. DESCRIPTION OF SITE

3.1 Geology and Geomorphology

3.1.1 Area

The physiography of this part of the Colo River area is that of a dissected sedimentary plateau through which the Colo River and its tributaries have cut narrow valleys. These valleys are the result of rejuvenation of the streams when the plateau was uplifted as part of the Blue Mountains uplift. Local relief is about 200 metres. Geologically, this plateau is part of the Sydney Basin, with the local dominating rock type being Hawkesbury Sandstone: a medium- to coarse-grained quartzose sandstone with minor grey shale lenses, of Triassic age. Other rock types which occur elsewhere in the Colo catchment are the Wianamatta Group and the Narrabeen Group of the Sydney Basin, some Palaeozoics and some Tertiary Volcanics.

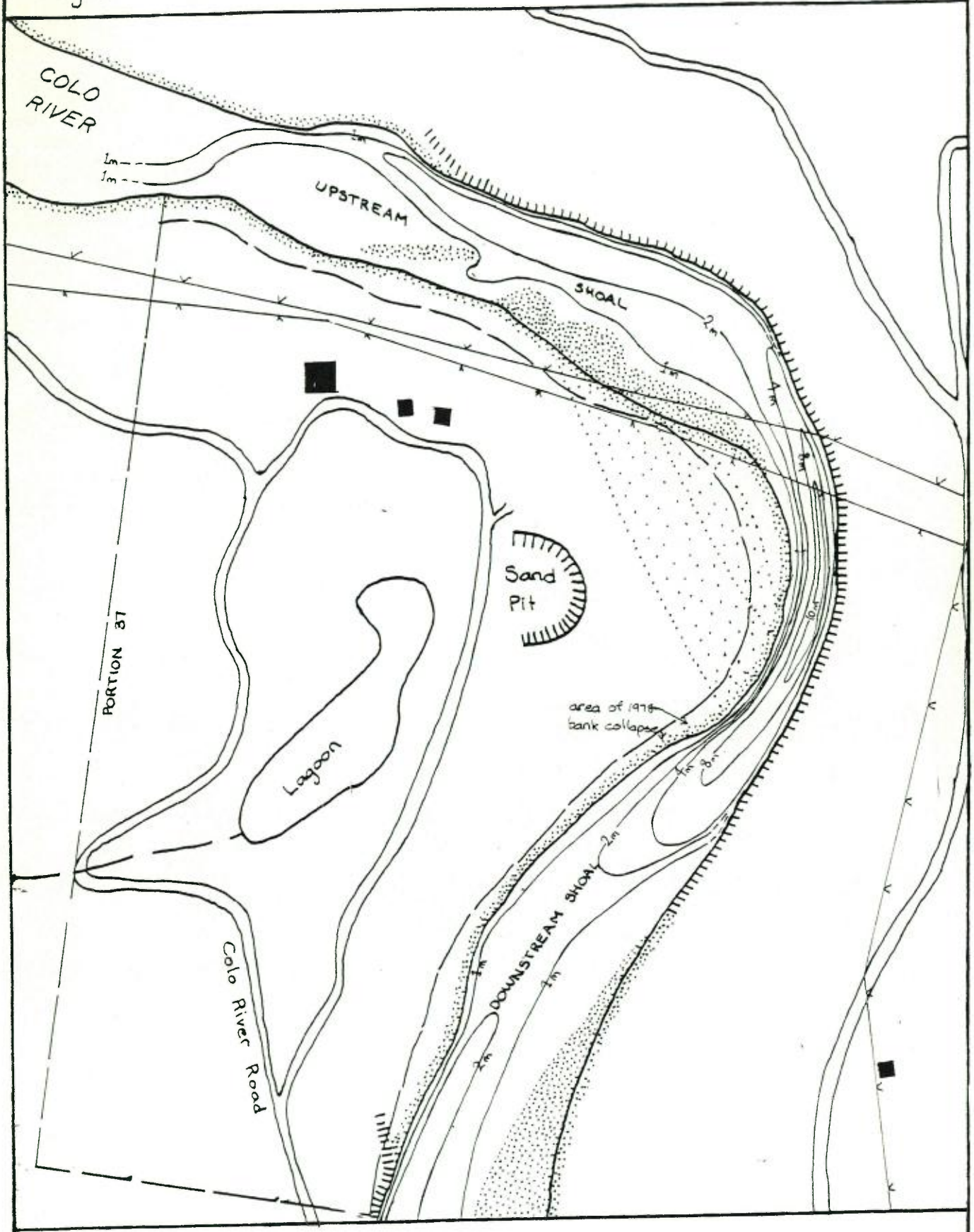
Recent unconsolidated alluvium occurs as valley fill in the lower reaches of the major streams, including the Colo River. This has been, and is still being, deposited as a result of the rise in sea level associated with the conclusion of the last Ice Age.

3.1.2 Site

Consequently, the Colo River valley in the vicinity of the dredging site presents a profile of steep bedrock valley sides with a relatively flat floor (sediment fill) comprised of the river channel and associated terraces, point bars, floodplains and secondary channels.

The proposed dredging will operate from the alluvial

Fig. 3 DETAILS OF SITE



LEGEND

Road

Power or telephone line

River bank - rock, sand

Contour of river beath and value (at low tide) —2m—

Sand exposed at low tide

Flood channel (bare sand)

N

METRES

0 50 100 150 200 250

terrace of Portion 37. This terrace has been constructed as a point-bar deposit on the inside of a sharp bend of the Colo River. It is of undulating topography, but generally rises away from the river. The section in question rises to about 10 metres above high water mark, and is dissected in part by old and recent flood channels, and the drainage line of the non-perennial watercourse which runs through the lagoon. The lagoon is of elongated shape, oriented roughly northeast-southwest, about 250 metres long by 50 metres maximum width. Its maximum depth at the time of inspection was one metre. This would vary with season, as would its area.

The topography of the terrace is at present being altered by the extraction of sand, creating an open pit of about 5 metres depth.

Since the terrace is constructed of flood deposits from the river, soils are principally undeveloped sand with a minor content of clay, charcoal and other vegetative matter, and an organically-enriched A horizon of up to 40 centimetres depth. The lagoon is floored with fine, organically-rich mud.

Most of the river bank on the true right side of the river, along the section subject to dredging, is of sand. Conversely, on the true left side where the river performs an erosive role, the bank is predominantly sandstone bedrock. Above this rises the steep rocky hillslope. Figure 3 shows this, as well as other geomorphological features of the site.

The river adjacent to Portion 37 varies in depth as shown

on Figure 3. Some river channel cross-sections have been surveyed by the Department of Public Works, but were unavailable in time to be included in this report. The river is predominantly sand, except for the area on the outside of the bend as shown (Figure 3), which is probably rock talus derived from the slope above. No diving was carried out to ascertain the exact extent of this talus.

The submarine topography of the river bed is a direct reflection of the behaviour of the river in flood. Thus, proceeding downstream: the floodwater encounters the sharp bend after the long upstream straight, is slowed and banked up to drop sediment to form the major sand body just above the bend. The water rounds the bend, scouring the true left side of the channel to form the deeper portions and aggrading the inside of the bend to form the slope up to the point-bar. A large eddy forms just downstream of the bend in very high water and sometimes scours the sandy right bank. A large section was scoured out in the 1978 flood, and this is still in evidence. Further downstream, the lower major sand deposit is dropped as the river slows to round the next bend.

Neville (1976) describes the bed sediment of the Colo River in the vicinity of the proposed site as follows: "Sediments here consisted of coarse sand and fine-grained gravel (granule-size),.....The sands and gravels are composed predominantly of quartz, with less than 1% feldspar and rock fragments. Sand grains are angular to subangular in shape and have low to high sphericity, while gravel clasts are commonly well-rounded. Colo River sands are very coarse-grained and are poorly sorted.

Gravel content (granule size) is up to 70% in some extremely coarse layers. Charcoal content varies from a trace to 20%, the average being about 2%. The largest concentrations of charcoal are found in the upper 3 m. of sediment." (Neville, 1976, p.13).

The river at the site is tidal, but not fully. The limit of tidal action on the Colo River is approximately 10 kilometres above Portion 37. The water can be brackish, depending on tide and river flow. The water at times of normal flow shows little or no visible turbidity. At flood times turbidity increases dramatically.

3.2 Vegetation

3.2.1 Area

Natural vegetation throughout the immediate area of the Colo River is predominantly dry sclerophyll forest dominated by species of Eucalyptus and Angophora. There are also pockets of wet sclerophyll forest and rainforest species in sheltered gullies, and some heath areas. This original vegetation has been cleared over large areas, particularly the valley floors, to allow for agricultural, residential and other development.

3.2.2 Site

The original vegetation of the flatter areas of Portion 37 has been largely removed for grazing purposes. This occurred prior to 1900. Most of this area is well covered with grass species, except where bare sand persists from the 1978 flood. There are some scattered treed areas, principally close to the river. These are remnants of the original forest cover. The major species are

Sydney Blue Gum Eucalyptus saligna, River Peppermint E. elata, River Oak Casuarina cunninghamiana, turpentine Syncarpia glomulifera, Water Gum Tristania neriifolia (on river banks) and some exotic pines. There is also some scattered scrub growth, usually associated with the treed areas. This is dominated by Bracken Pteridium esculentum, Blackberry Rubus vulgaris (introduced), Tea-tree Melaleuca and Wattle Acacia species.

On the opposite side of the river, the true left bank, vegetation on the minor cleared areas is similar to those areas on Portion 37, as described. The major area, the steep rocky slope, is clothed in dry sclerophyll forest dominated by Rough-barked Apple Angophora floribunda and Yellow Bloodwood Eucalyptus eximia. There is a typical, fairly dense understorey dominated by Xanthorrhoea, Acacia and Hakea species.

Vegetative growth within the river is restricted to a dense growth of Strapweed Valasneria sp. close to the banks, and some small algae. No growth was apparent in the central part of the river, probably due to the unstable and shifting nature of the sandy bed there.

The floor of the lagoon is clothed in algae, and several clumps of Water-lily Brasenia schreberi occur on the surface. Trampling by cattle has prevented development of vegetation near the bank.

3.3 Fauna

Birds commonly observed on Portion 37 at the time of study (August 1979) were as follows:

Kookaburra Dacelo gigas
Pied Currawong Strepera graculina
Crow Corvus sp.
Striated Pardalote Pardalotus ornatus
Noisy Miner Manorina melanocephala
Superb Blue Wren Malurus cyaneus
Eastern Whipbird Psophodes divaceus
Welcome Swallow Hirundo neoxena

and on or about the river adjacent:

Black Duck Anas superciliosa
Spur-Winged Plover Vanellus miles novaehollandiae
Restless Flycatcher Myiagra inquieta
Cormorant Phalacrocorax sp.

The following were observed using and feeding in the lagoon:

Black Duck Anas superciliosa - group of ten
Australian Little Grebe Pidiceps novaehollandiae - a pair
Yellow-billed Spoonbill Platalea flavipes - single bird
White Egret Egretta alba - single bird

Welcome swallows were observed to be feeding on airborne insects over the lagoon. The owner, Mr. R. G. Jones, has also seen Pelicans Pelicanus conspicillatus on the lagoon.

There was no evidence for existing or recent past nesting of waterbirds in or about the lagoon. However, Mr. Jones has observed Australian Little Grebes to nest there occasionally, but not in recent years. It is considered unlikely that any birds would use the lagoon for breeding in its present state, as there is no bank vegetation or reed growth.

There were quite large numbers of small fish in the lagoon.

These would provide food for some water-birds.

No macropods have been observed by Mr. Jones on the cleared terrace of Portion 37. It is assumed they stay away due to the almost constant human activity, and obstruction by fences. It is possible that a few Brush-tailed Possums Trichosurus vulpecula may live in some of the trees on the terrace. The presence of the introduced Brown Rat Rattus rattus and House Mouse Mus musculus can almost certainly be assumed. Native water rats Hydromys spp. may be present close to the river. The presence of any other mammals in the immediate vicinity of the site is unlikely, due to the extensive modification of the environment.

The range of native reptiles present is unknown, but at least several species could be expected.

Mr. J. H. Harris of the Zoology Department, University of New South Wales, provided information on biology of the river, including the following species list of fishes:

Australian Bass Macquaria novemaculata
Estuary Perch Macquaria colonorum
Firetail Gudgeon Hypseleotis gallii
Empire Gudgeon Hypseleotis compressus
Gudgeon Gobiomorphus australis
Gudgeon Gobiomorphus coxii
Flatheaded Gudgeon Philypnodon grandiceps
Freshwater Mullet Trachystoma petardi
Freshwater Catfish Tandanus tandanus
Freshwater Herring Potamalosa richmondia
Galaxid Galaxias maculatus
Bullrout Notesthes robusta
Eel Anguilla australis
Eel Anguilla reinhardtii

Brown Trout Salmo frutta (introduced)
European Carp Cyprinis carpio (introduced)
Mosquito Fish Gambusia affinus (introduced)

Tailor Pomatomus pedica
Bream Acanthopagrus sps.
Flathead Neoplatycephalus sp.
Blackfish Girella tricuspidata
Bea Mullet Mugil cephalus
Smelt Petropinna semoni

The last group of 6 species are marine fish, these would generally be represented in the area by juveniles.

All of these fish depend heavily on the weed-beds for shelter and food.

3.4 Cultural Characteristics

3.4.1 Land Use

3.4.1.1 Area

The area is basically of a quiet, rural nature. Development in the area is mostly restricted to the flats along the Colo River. Parts of the plateau are also developed, but this is not significant in the vicinity of the area in question, except for some roads and fire trails. Agricultural pursuits are the dominant land use, with some timber-getting and tourism, in the form of caravan parks. Most properties along the nearby section of river are involved in cattle grazing and orcharding. In addition there are a number of weekend-type residences.

3.4.1.2 Site

Apart from Mr. Jones' holdings, which include Portion 37, there are nine properties close to the site which may be

directly affected by the dredging proposal. Their locations are shown on Figure 4. They are:

Mr. G. Ellis	upstream, right bank
Mrs. F. M. McDougal	upstream, left bank
Mr. W. McKay - "Noonameena"	downstream, right bank
Mr. S. Cooper - "Bimbimbi"	downstream, right bank
Mr. C. Jones	downstream, right bank
Dr. McGarrity	opposite, left bank
Mr. G. Hincks	downstream, left bank

The locations refer to the position relative to Portion 37.

Parts of Mr. Jones' property, involving sections of Portions 66 and 38 are leased by Mr. A. Dukes for the purpose of greyhound kennels. Portion 37 itself is used for winter grazing of cattle. The most obvious activity on the site at present is the sand extraction from the river terrace being conducted by Jejida Pty. Ltd. The sand is removed by front-end loader from an open pit face and loaded directly onto 20-tonne trucks for transport. This follows the Colo River Road and Blaxland Ridge Road to the Putty Road, thence to Windsor and on to the point of sale. Sand is being removed at the rate of approximately 300 tonnes per day. This involves 16 truck movements in each direction. The maximum noise level of this operation is approximately 60 decibels. The extraction of sand from Portion 37 began in 1956 on a small scale, and since 1970 on the present scale.

3.4.2 Recreation

The Colo River is an area primarily used for passive recreation, in contrast to the more hectic activity on the Hawkesbury River where water-skiing is very popular. The Cola River has a speed limit of 8 knots, imposed

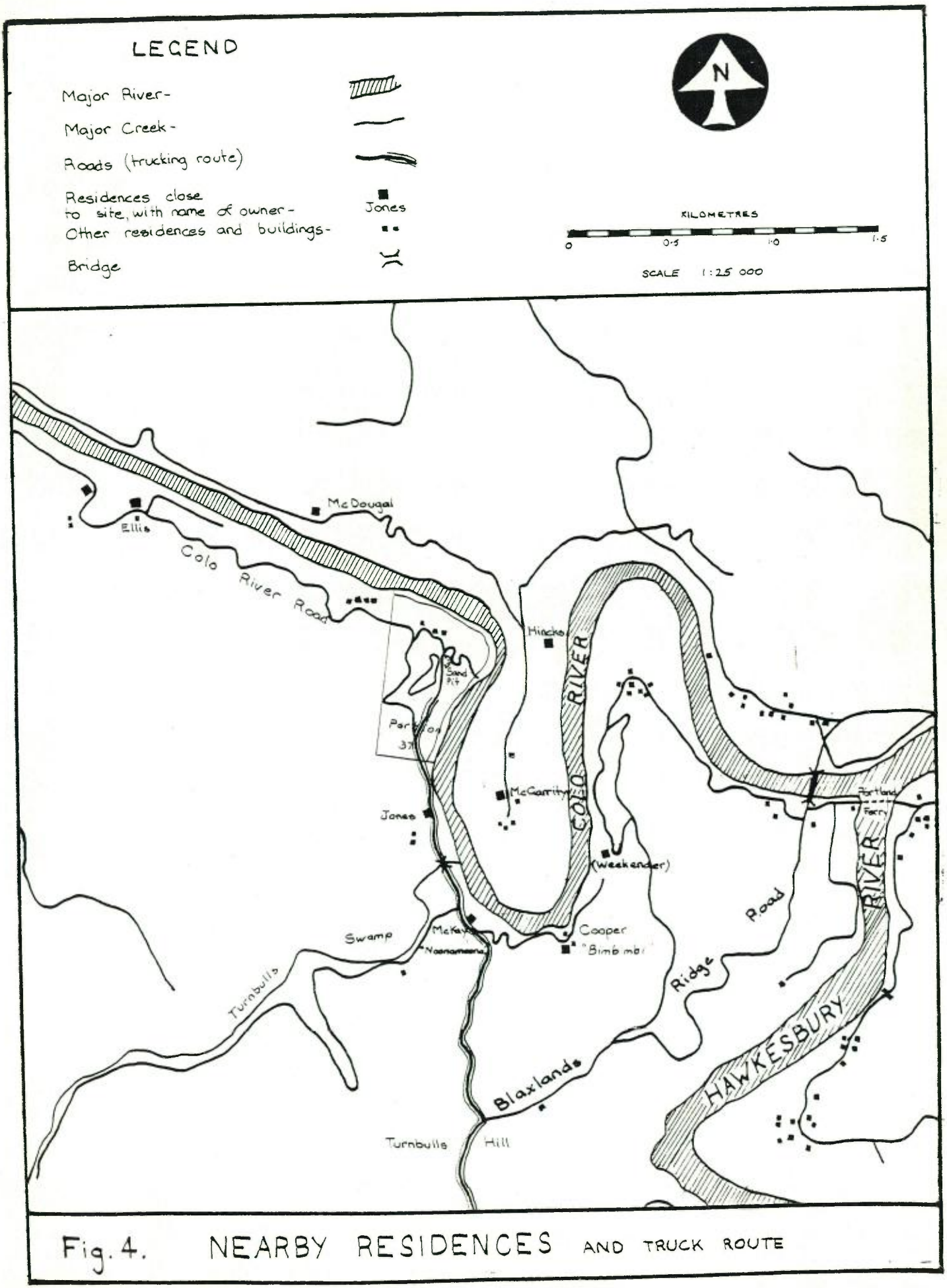


Fig. 4. NEARBY RESIDENCES AND TRUCK ROUTE

by the Maritime Services Board to preserve the tranquillity of the river as a buffer to the Hawkesbury, and specifically to disallow water-skiing. Consequently, boating in general on the Colo River is less popular than on the Hawkesbury. The traffic is dominated by the categories of cruiser, houseboat, runabout and canoe (Soros-Longworth, 1977), reflecting the more peaceful nature of this river. Most of this activity occurs near the Hawkesbury junction.

Recreation is concentrated into weekends, with picnicking, scenic driving, fishing and canoeing being the major enjoyments beyond the lowest reaches. In the immediate vicinity of the proposed dredging site, scenic driving and picnicking are only very minor activities. However, this portion of the river is quite popular for canoeing. During one fine warm Sunday in August, a total of eight canoeists paddled past Portion 37.

Mr. Jones has observed that fishing and canoeing in the vicinity was more popular a few years ago, but this has decreased in recent years. He attributes this to the increased shoaling in the river. Motor boats can proceed upstream of Portion 37 only on high tide.

3.4.3 Planning Controls and Existing Rights

The planning controls relevant to extractive industry within the Colo Shire are embodied in the Local Government (Town and Country Planning) Amendment Act, 1962, and Interim Development Order No. 3 (2 May, 1975) - Shire of Colo. These provide that extractive industries may be carried out only with the consent of the Colo Shire Council.

Under the Colo Shire Council Planning Scheme, this section

of the river on the south bank is zoned as Non-Urban 1b(1). This essentially means it is zoned for rural uses, and imposes restrictions on subdivision and other developments. No particular constraints are imposed on extractive industry, beyond those described above.

The Colo River is classified under the Clean Waters Act 1970 as Class P: Protected Waters. Regulation No. 8 describes the restrictions imposed on the discharge of wastes into waters, so classified.

Jejida Pty. Ltd. has an existing right to extract from Portion 37 which has been tested before the Equity Court of New South Wales before Mr. Justice Needham in February 1979, who held that extraction had commenced prior to the Colo Shire Planning Scheme. He then ruled that extraction being carried out on Portion 37 was a continuing use and therefore not subject to Colo Shire Council approval.

To allow extraction from the river bed itself, Jejida Pty. Ltd. requires a Permissive Occupancy over the bed of the river fronting Portion 37.

3.4.4 Roads

The roads considered to be relevant to this report are those which will be used for transport of the extracted sand.

The road within Portion 37 which connects the existing sand pit to the Colo River Road has a surface of loose sand and silt. No damage or erosion is evident, but the passage of trucks raises considerable clouds of dust.

The Colo River Road between Portion 37 and the Blaxland Ridge Road junction at Turnbulls Hill is packed earth and gravel, narrow and winding in part. The movement of trucks on this road creates difficulty for ordinary traffic. Dust is again a problem, as evidenced by the coating on vegetation adjacent to the road. Some possible truck damage to this road is evident, in the form of potholes.

The Blaxland Ridge Road between Turnbulls Hill and its junction with the Putty Road is gravel, but wider than the Colo River Road. Dust is again a problem, but any damage which may have been evident has been disguised by recent grading and gravelling. Colo Shire Council intends to seal this road in the near future.

The Putty Road is a sealed-surface highway in the section between Blaxlands Ridge and Windsor. The truck traffic emanating from the existing (and proposed) sand extraction on Portion 37 is only a minor fraction of both overall traffic and truck traffic on this road.

It should be noted that the roads described here in the above order represent a hierarchy of increasing surface quality and traffic volume. Correspondingly, the existing (and proposed) sand truck traffic represents a decreasing proportion of total traffic, and thus decreasing effects on other traffic and road surfaces.

4. ENVIRONMENTAL IMPACTS OF PROPOSAL

The environmental effects of this proposal can be considered to be associated with one or more of the following phases of the operation: implementation/construction, dredging, processing, waste water treatment, transportation and general operation. These effects will be assessed on the following aspects of the environment: physical, water quality, air quality, biological, visual, noise, human, recreation, roads and aesthetics and character of the area. Note that most of the environmental effects within these aspects are bound up in a complex web of inter-relationships with one another, and such a division is merely a tool to aid discussion.

Because the proposed development is intended to proceed continuously (except for weekends) and indefinitely, these effects will also occur for an indefinite period, except where otherwise indicated. It should be pointed out that many of the environmental effects of the proposal are reduced due to the presence of the existing extraction.

4.1 Physical Environment

4.1.1 Shape of River Bed

The primary effect of dredging will be to remove sand from the river bed and thus deepen the river channel. It may be deepened by up to 10 metres, depending on restrictions. This will affect the behaviour of the flooded river in the vicinity. The amount of deepening will be controlled by two factors: the dredging depth limit imposed by the authorities, and the depth capability of the dredge itself. The depth limit imposed on Monier Pty. Ltd. at Windsor is 9.1 metres at 51.8 metres from high water mark on the bank. In view of the narrower width of the Colo River, the depth limit will probably be shallower. The dredge has an effective limit to

working depth at about 10 metres.

Therefore, the deeper portions of the river about the main bend will almost certainly not be dredged. The talus deposits present would also affect the viability of extraction. This is just as well, as deepening on that corner could cause an increased eddy effect in flood, leading to further erosion of the true right bank.

So the main deepening will occur upstream and downstream of the main bend, where extensive shoaling exists. The upstream shoal is on a fairly straight portion of river, and deepening here will have little effect on flood dynamics other than to slow the flow before it would normally be slowed by the bend. This will cause sediment deposition, and perhaps will reduce the eddy effect just downstream of the bend. This is because the velocity of the flow as it enters the bend will be reduced. This may reduce the potential for erosion of the true right bank.

The situation resulting from deepening of the downstream shoal will be similar but less pronounced. This is because velocity is lower, and the bend below is much less acute.

4.1.2 Flooding

The cross-sectional area of the river channel will be increased along the length dredged. This will reduce flooding of terraces in the immediate vicinity, and thus also reduce deposition on those terraces. This can be regarded as a beneficial effect, but quite a limited one. There will be no effect on flooding upstream or downstream of the site.

4.1.3 Stability of Banks

Deepening of the channel increases the angle of sediment sloping to the banks, which if steep enough may precipitate bank collapse. This mainly concerns unconsolidated banks, such as the true right bank of this site, which is part of a point bar alluvial deposit. A major reason for restrictions on dredging depth and distance from banks is to avoid this possibility. Therefore it is the responsibility of the controlling body to assess the situation and impose appropriate limits. If this is done there is little possibility of bank stability being affected by dredging.

If a settlement pond is too close to the river bank, this may also promote bank collapse through waterlogging and piping. It is not a problem in this case as the lagoon is well back from the bank, and has been an existing natural feature since well beyond the beginning of this century.

4.1.4 Sediment Regime

To completely assess the effect of dredging on the sediment regime of the river, it is necessary to understand the existing situation. Unfortunately there is a paucity of scientific study and data on this topic, and there is some uncertainty as to the true nature of the situation.

The view is widely held that the Colo River, along with the nearby Macdonald River, is actively sanding up. Some local residents hold this opinion, but others are of the view that although changes occur in the river,

there is no long-term overall aggradation occurring.

Probert (1966) attributed aggradation in these rivers to increased erosion in the catchments as a result of human activities, and regarded it as a continuing process. However, Henry (1977) points out that the major aggradation in the Macdonald occurred over a 6-year period (1949-1955) in a series of catastrophic floods, and suggests that channel widening may have been a major source of sediment. He further states that these floods had less of an effect on the Colo: "There was heavy deposition of sand in the tidal zone, but the bed seems to have aggraded by only about a metre above Central Colo, and according to local farmers the bridge at Upper Colo stands nearly as high above the bed as when built 40 years ago." (Henry, 1977, p.7). Nevertheless he does not discount aggradation in the Colo, and his main arguments against Probert (1966) concern the manner of aggradation and the source of the sediment.

Two matters are clear however: that the Colo River is actively moving sand downstream, and that it is the major floods which are the dominating force. The effects of the big 1978 flood are still evident. At that time Mr. Jones says that 1.5 metres of sand was deposited on top of the point bar near the river on Portion 37 (see Plate 2), and a 15 metre wide section of terrace downstream of the main bend was removed (see Plate 12). One can see in the structure of the shoals, particularly the one upstream of the bend, that significant downstream movement has taken place. The upstream shoal displays distinct lobes of sediment, with a steep downstream slipface. Thus this deposit can be regarded as having many characteristics of a deltaic deposit, formed as the floodwaters

back up at the main bend. Some bedload can even be observed to move at ebb tide.

Fence-posts have been recovered from a depth of over 4 metres in the operating extraction pit on the terrace. Mr. Jones believes their burial to have occurred in the 1867 flood, the highest in settled times.

Although all the facts related to the sediment regime of the river cannot be stated with certainty, or whether the regime is "natural" or man-induced, the effect of dredging can still be assessed to some extent. The basic effect is to remove sediment from the system. Scholer (1974) indicates that the theoretical result of this would be to reduce the slope of the river bed. The river will react with an increase in meandering and/or increase in river bed scouring. However, he is considering the Hawkesbury River and the combined effects of a huge loss of catchment and sediment (Warragamba Dam) and extensive river dredging. The proposal under consideration here would remove a very small fraction of the total sediment within the river system, so the above effect would be minimal or non-existent.

It is expected that the sediment removed via dredging will be replenished from upstream at times of high flood. The rationale behind the proposal relies on this process. This has occurred at the Monier Pty. Ltd. site at Windsor, where dredging can proceed along a length of about 1000 metres of river, but full utilisation of this length has not yet proved necessary. They approached full utilisation during a period of 4 years without replenishment by flood. Even discounting the possibility of unnatural erosion rates in the catchment, the Colo River probably

carries a higher sand sediment load than the Hawkesbury at present, due to sediment loss in Warragamba Dam. Therefore continued replenishment of this deposit can be expected.

So dredging of the Colo River on the scale proposed is unlikely to have detrimental effects on the sediment regime of the river. However, many aspects are uncertain, and perhaps further study is required.

4.1.5 Lagoon

The lagoon as used as a settlement pond will gradually fill up with sediment, and this will have to be removed to allow its continued use for this purpose. So the integrity of the lagoon as a natural landform will be lost. This has already been affected to some extent by the present extraction activities. Other than this, there will be no changes to the terrestrial landform of the area.

4.1.6 Conclusion: The physical effects of the proposal will be major in that the geomorphology of part of the river will be changed. These effects are not necessarily detrimental in any other sense. There may be some localised positive benefits. Provided that suitable restrictions are placed upon the range of dredging, and that these restrictions are properly enforced, no damage to the river's physical environment is foreseen.

4.2 Water Quality

The danger to the quality of water in the river lies in possible increases in turbidity. This can occur from two quarters: the stirring up of fine sediment directly by the dredging operation, and the return of turbid waste water to the river. Increased

turbidity could seriously affect the biology of the river by lowering productivity of weed-beds and invertebrates.

The proportion of fine sediment in the Colo River bed deposits is very low (Neville, 1976). In addition, the suction cutter dredge tends to suck up most of the turbidity caused by the cutter. So dredging is not likely to increase turbidity significantly, but this needs to be monitored.

The State Pollution Control Commission will control the amount of non-filtrable residue in the waste water returned to the river from the settlement pond. Provided an appropriate standard is imposed and adhered to, river turbidity should not be affected from this quarter.

Conclusion: Water quality will not be reduced provided appropriate standards are set and the situation is monitored.

4.3 Air Quality

Air quality near the site and along roads may be significantly affected by dust raised by the sand trucks. This may in turn affect recreational amenity, the visual environment, residents and vegetation, through coating of leaves. At a total rate of 82 truck passages each working day, one truck will pass any point on the route on an average of approximately every 7 minutes.

The only solution to the dust problem is the sealing and/or wetting down of the dirt roads. The problem roads are the Colo River Road, and that within Portion 37. Otherwise a degradation in the local air quality will be an inherent effect of the proposal.

4.4 Biological Environment

4.4.1 River

The major threat to the biology of the river lies in destruction

of weed-beds. These beds are extremely important to the trophic structure of the river's ecology, in fact they are its foundation. They are the principal habitat and primary food source of most animal specie in the river, as the more extensive areas of unstable sand provide virtually no productivity or habitat. The weed-beds at the proposed site are apparently restricted to the stable, near-shore environment. In view of the dredging proximity restrictions likely to be imposed in order to protect bank stability, it is likely that these weed-beds will remain intact. If this is not the case, then the restrictions should consider the safety of the weed-beds, and ensure that they are protected.

Increased turbidity in this relatively clean river would affect its ecology by decreasing light penetration and thus reducing vegetative productivity. This will in turn affect the food supply to all higher trophic levels, in particular, invertebrate and vertebrate fauna. See section 4.2 for comments on water quality. This should not be a problem.

4.4.2 Land

Vegetation on Portion 37 will not be physically affected by the proposal. However, dust coating may damage the vegetation, by affecting photosynthesis and transpiration, both at the site and along parts of the trucking route. See section 4.3 for comments on the dust problem.

Mammalian, bird, reptilian and insect fauna which are still present at the site must have thus far been unaffected by the existing extraction operation. It seems unlikely that the proposed operation will cause any further effect. The factor of noise has the greatest potential for affecting fauna.

4.4.3 Lagoon

The biology of the lagoon will be seriously affected by the proposal. The constant turnover of water and steady accumulation of sediment will effectively negate the lagoon as an environment for most organisms utilising it at present. Weed growth will be halted and the water fauna can be expected to be largely eliminated, along with the insect fauna associated with the lagoon. Thus the lagoon will no longer be attractive to the water-birds which now feed there. Biologically speaking, the lagoon will be virtually removed from the environment, though physically it remains. There will be some resultant amenity loss in terms of the opportunity to see water-birds at the lagoon.

However, the lagoon is not of major biological importance. It is an environment repeated on a larger scale at many nearby locations. Relatively few birds use it, in terms of both specie and number. Its demise will certainly be a loss to the overall environment of the area, but not a major one. It can also be considered as a small step in the steady attrition of wetland habitat in this State.

4.4.4 Conclusion: Provided that strict care is taken (or imposed) the proposal should have minimal effect on the biology of the river, through either weed-bed destruction or increased turbidity. Terrestrial effects will be very minor. The proposal will have a major effect on the biology of the lagoon, but the importance of this on a regional scale is relatively minor. The alternative is to excavate a completely separate settlement pond from the terrace.

4.5 Visual Environment

Both the dredge and the processing plant will represent a permanent

and continuous visual impact. This may affect residents and the recreational amenity of the area. Figure 5 shows the limits of visual effects.

The dredge, depending on its location at any time, may be visible for some distance upstream and downstream, both from the river or from land. It is not a large structure, with a height profile of about 4 metres. The associated pipeline would have a lesser impact. The processing plant, with a maximum height of about 13 metres and a maximum horizontal extent of about 40 metres, will be a substantial structure. In combination with the adjacent sand stockpile, about 10 metres high and of 30 metres diameter, this will create a more significant visual impact than the dredge, and will be visible for some distance, mainly downstream.

Several of the closest neighbouring residents would be within visual range of the structures. However, the visual effect naturally decreases quickly with distance, and it is unlikely that any residents are close enough for the structures to be visually significant, especially against the background of existing structures nearby. The factor of pre-existing buildings and structures, and the factor of proximity being necessary before visual impact is significant, will together act to reduce the overall visual impact of the proposal.

The major impacts will be the following:

a) the processing plant seen from passing vehicles close by on the Colo River Road,
b) the processing plant seen from passing craft on the river,
c) the dredge seen from passing craft on the river.

Conclusion: Overall, the impact of the proposal on the visual environment is considered to be significant but minor. This is

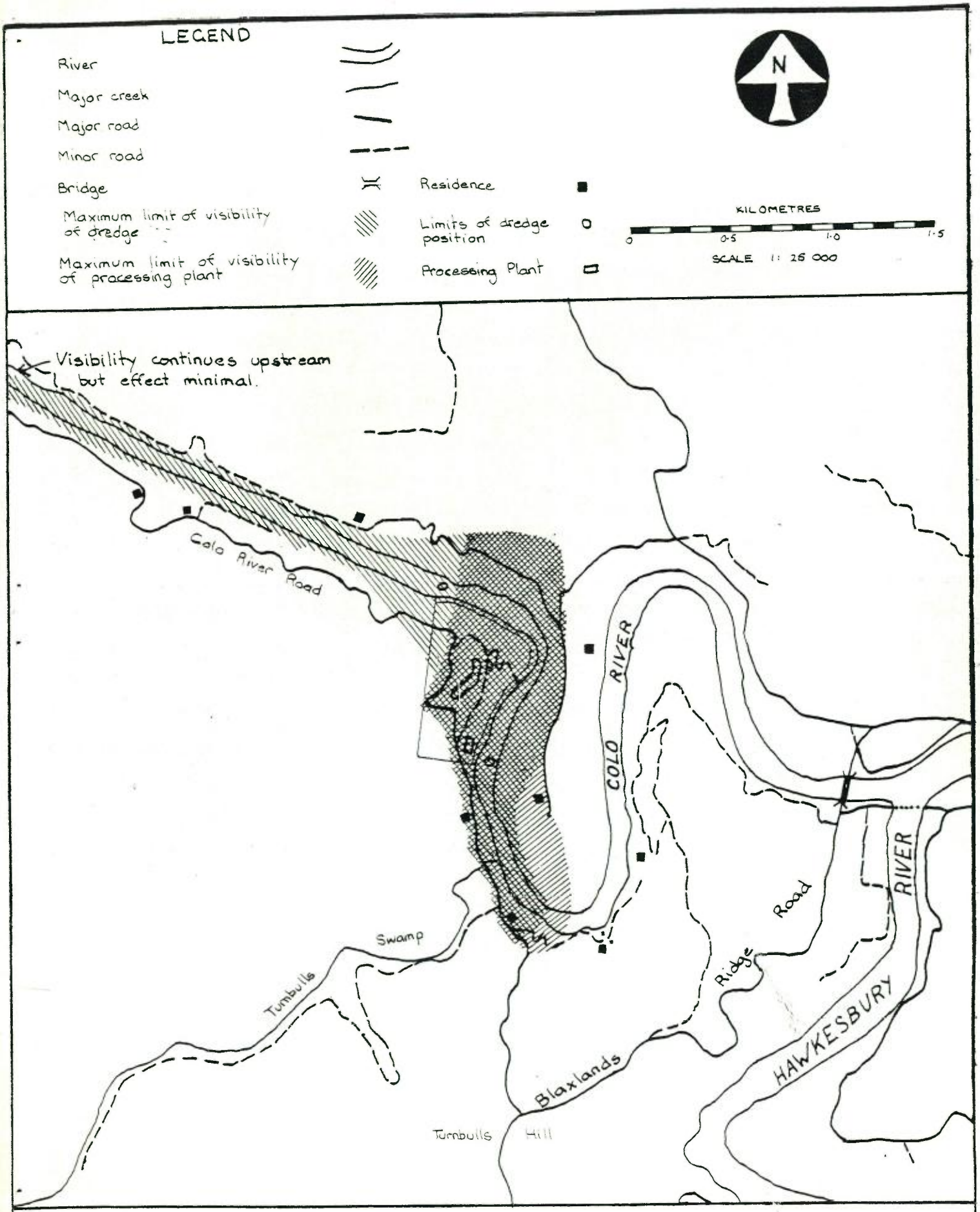


Fig. 5 VISUAL EFFECTS

of course assuming the structures are coloured to harmonise with the scenery, and this should be an essential component of environmental planning for the proposal. The possibility of screening the processing plant with trees should also be considered, although susceptibility of the site to flooding may complicate this.

4.6 Noise

The maximum noise level of the operation will be about 60 decibels. Both the dredge and the front-end loader will reach these levels. In the case of the dredge, a muffling system will be used to keep it within this level. The processing machinery (washing, screening, etc.) will operate at a considerably lower noise level.

The effect of this noise must be assessed in comparison to the existing background noise at the site. This would normally be quite low, but for the existing sand extraction operation. The maximum noise thus is produced by the front-end loader, and is of a similar level to that of the proposed operation. Obviously the volume of noise at this level will increase over that existing, perhaps threefold.

The noise to be produced would have its major potential effect on humans in the area: residents and recreationists. Since the machinery will not operate on weekends, the effect on recreationists would be largely eliminated. The noise of the existing front-end loader can be heard from most of the residences near the site. However, distance is quite substantial, and the residents approached showed little or no objection to the existing noise.

Noise will also be generated along the road system by the truck transport. This will only be significant on the Colo River Road, due to low levels of other traffic, proximity to residences, and its bumpy character which makes for noisy passage of empty trucks downhill. Sealing would greatly alleviate the latter. Mr. G. McKay

of "Noonameena" and the Coopers of "Bimbimbi" would be most affected. Mr. McKay is only in residence on weekends, and was not concerned. Mr. Cooper was quite concerned at the prospect of increased truck noise.

Conclusion: The noise generated by the on-site operation will be major, but will have little environmental effect provided it is strictly confined to Monday to Friday. This is partly due to the noise level of the pre-existing extraction operation. Truck traffic will have a major noise effect on the two residences nearby. It would be a good thing to keep all noise at as low levels as possible.

Indeed!

4.7 Human Environment

In this section will be considered the views of the nearby residents on the proposal. These are important irrespective of any outside assessment of environmental factors. The effect on non-residents is considered mainly in the next section, on recreation. The views were sought of all residents within range of any effects of the proposal. Mr. Ellis was unable to be contacted during the period of preparation of this Review, and Mr. Hincks only made brief comments, indicating further comments would be forthcoming, but they have not. The views of Mr. Dukes, Mr. McKay, Mr. Cooper, Mr. Hincks, Dr. McGarrity and Mrs. McDougal are included here.

Residents in general were not concerned about the effect of the proposal on the biological and physical environment. One person was worried about the possibility of bank collapse, and one was concerned that controlling bodies often didn't force extractors to make consideration for the environment. Residents were not unduly bothered by noise from the site operation.

The greatest concern all round was the effect of increased truck traffic, in terms of traffic hazard, dust, road damage and noise.

Several felt very strongly about this. Both the Colo River Road and the Blaxlands Ridge Road were sources of concern.

Conclusion: The major effect of the proposal on nearby residents will occur through increased truck traffic on the roads.

4.8 Recreation

Recreation in the area is primarily based on two features: the river, and the peaceful rural scenery. Thus any development which affects or changes these will affect recreational amenity. The Colo River area acts as a valuable recreational retreat from the more popular and hectic waters and surrounds of the Hawkesbury River. The biggest overall effect of the proposal on recreation would be its effect on the aesthetic appeal and character of the river. This is considered in section 4.10 below.

The detrimental effects on the small number of car-borne sightseers would be mainly visual and auditory. The noise factor is largely eliminated by non-operation on weekends. The visual effect from the road will be minor (see section 4.5). Likewise, noise effects on pleasure craft in the river would be minor. However, the sight of the dredge in the river, and to a lesser degree the processing plant, will be unavoidable. It would be reasonable to expect a proportion of canoeists and the like to find this intrusion distasteful. Such distaste would be unlikely to reach the point of preventing use of the area, but the quality of the experience would be reduced.

Dredging will deepen the river at the site, and this may improve access for larger craft. This would only be over a limited distance.

Conclusion: The effect of the proposed operation on recreation in the vicinity would be significant, mainly visual and aesthetic. However the effect is diminished by the low volume of recreation.

4.9 Roads

The Putty Road will not be significantly affected. Traffic was of the order of 1000-3000 vehicles per day in 1973 (Camilleri et. al. 1973), much of this trucks. An extra 50 truck passages per day is only a minor increase, especially with traffic increases since 1973.

Once the Blaxlands Ridge Road is sealed there will be little problem with it. It should be sealed prior to the commencement of the proposed operation.

The main area of concern is the Colo River Road. As described above (section 3.4.4), it is narrow, unsealed and winding. It is not suitable for heavy truck traffic, and it can be expected that further damage will be caused to the surface by the 50 or so extra trucks per day generated by the proposed operation. Also, there may be an increased possibility of accident, as a result of the extra traffic. Dust problems will also increase (see section 4.3). It must be recommended that this road be upgraded if the proposal is approved.

The road within Portion 37 is very dusty, and this needs to be controlled, perhaps through gravelling.

Conclusion: The effect of extra truck traffic on the roads will be major. Upgrading of some roads is necessary.

4.10 Aesthetics and Character of Area

Aesthetics is a difficult subject to discuss objectively. However, an attempt must be made, even though based to some degree on value judgements, else one of the most significant environmental impacts of the proposal be over-looked.

If it is accepted that the aesthetics of an area stem from its characteristics, then it is possible to relate a change in characteristics to a change in its aesthetic value. In this case it will be necessary to make the reasonable assumption that the existing character of the Colo River area as a rural, non-industrialised region of quiet and peaceful aspect, is valued considerably by residents and visitors alike. It exists as such an area in juxtaposition with the nearby heavily built-up and industrialised environment of the Sydney metropolitan area.

If this basis is accepted, then any development which tends to alter the nature of the area in the direction of industrial development must be deemed to have a negative effect on the general character and aesthetics of the area. Such is the case with this proposal. The operation will not be large or overly significant in terms of the Colo River area generally, but its impact lies in it being a major departure from current land use in the area. Other than the existing extraction operation on Portion 37, a much smaller operation, the proposed scheme will be the only extraction site on the Colo River.

Conclusion: The aesthetics and general character of the area will be significantly affected by the proposal, but this effect is somewhat ameliorated by the existing operation.

5. SUMMARY OF ASSESSMENT OF ENVIRONMENTAL IMPACTS

The following summary of environmental impacts is presented in the form of a table, to allow easy reference. It lists the category of impact, the impact, the cause of the impact, and assesses the impact in terms of three dimensions: its magnitude, its importance and the likelihood of its occurrence if the proposal proceeds in its present form. The magnitude refers to the significance of the impact in terms of the overall magnitude of the component of the environment affected. The importance is an assessment of the significance of the impact to the environment of the area as a whole. These two characteristics are defined on a scale of three: minor, significant and major.

The table also lists beneficial effects (positive impacts), comments, and any recommendations to reduce the impact.

SUMMARY OF ENVIRONMENTAL IMPACTS

Category of Impact	Negative Impact	Cause of Impact	Magnitude of Impact	Importance of Impact	Likelihood of occurrence	Beneficial Effects	Comments	Recommendations
Physical Environment	Shape of river channel changed	Dredging	Major	Minor	Certain	Locally reduced flooding	Bank erosion may be reduced	No dredging in deep water on main bend.
	River banks destabilised	Dredging	Major	Major	Unlikely	-		Appropriate limits on dredging depth and range.
	Removal of sediment from river	Dredging	Significant	Minor	Certain	-	Possibility of affecting river action, but unlikely	-
	Lagoon filling	Waste water settlement	Significant	Minor	Certain	-	Unavoidable unless new pond excavated	-
Water Quality	Increased turbidity	Dredging and waste water	Minor	Major	Unlikely	-		Strict control on waste water quality, surveillance of dredging effects.
Air Quality	Dust	Truck movements	Major	Major	Certain	-		Upgrading of roads.
Biological Environment	Weed bed destruction	Dredging	Minor	Major	Unlikely	-		Strict controls on dredging to prevent weed bed damage.
	Loss in river productivity	Increased turbidity	Minor	Major	Unlikely	-		See water quality above.
	Affect on vegetation	Dust from trucks	Significant	Significant	Certain	-		See air quality above.

SUMMARY OF ENVIRONMENTAL IMPACTS (cont.)

Category of Impact	Negative Impact	Cause of Impact	Magnitude of Impact	Importance of Impact	Likelihood of occurrence	Beneficial Effects	Comments	Recommendations
Biological Environment (cont.)	Affect on fauna	Noise from equipment	Minor	Minor	Unlikely	-		Keep machine noise as low as possible
	Loss of lagoon	Waste water settlement	Major	Significant	Certain	-	Unavoidable unless new pond excavated	-
Visual Environment	Sight of equipment	Dredge and processing plant	Significant	Minor	Certain	-	effect reduced by pre-existing structures	Sympathetic colouring of equipment. Screening of processing plant by trees.
Noise	Increased noise	On-site machinery and trucks	Major	Minor	Certain	-	effect reduced by presence of existing extraction	Operation only Monday to Friday. Keep noise of equipment as low as possible. Sealing of Colo River Road.
Human Environment	Affect on residents	Truck traffic	Major	Major	Certain	-		Sealing of Colo River Rd. and Blaxlands Ridge Rd. Operation only on week-days.
Recreation	Loss of amenity	Presence and sight of operation, noise	Major	Minor	Certain	-	ameliorated by low volume of recreation	Operation only on weekdays
Aesthetics and Character of Area	Change of character	Presence and sight of operation	Major	Major	Certain	-	ameliorated by presence of existing extraction	-

PHOTOGRAPHIC SUPPLEMENT

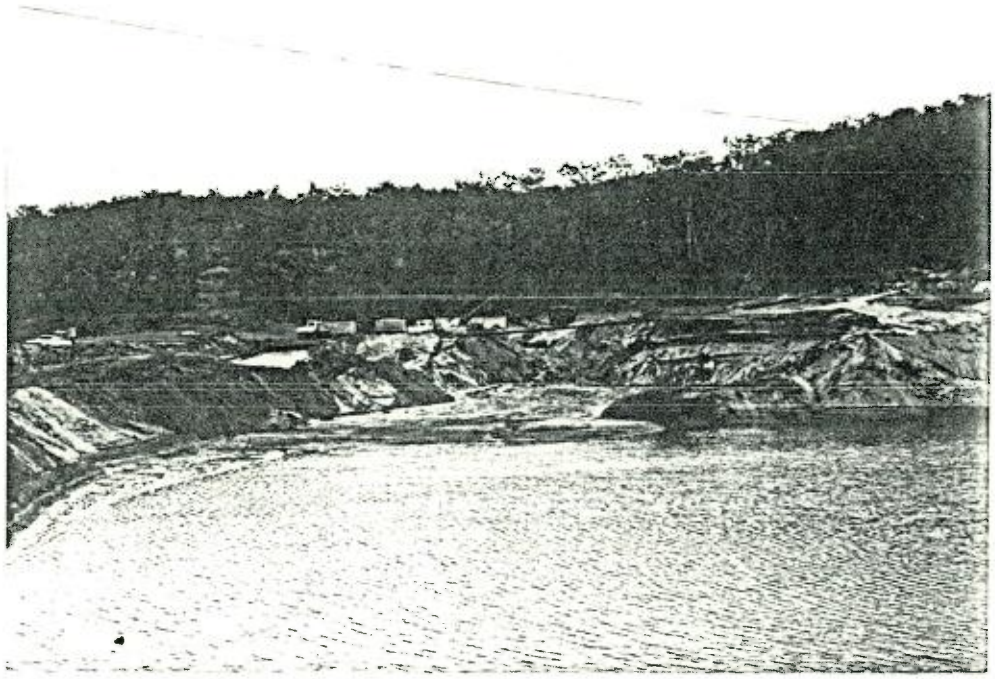


PLATE 1: General view of site from top of hill to north. Present sand pit and lagoon visible.

PLATE 2: Upstream from ridge on east side of main bend. Note recent sand deposits on terrace.

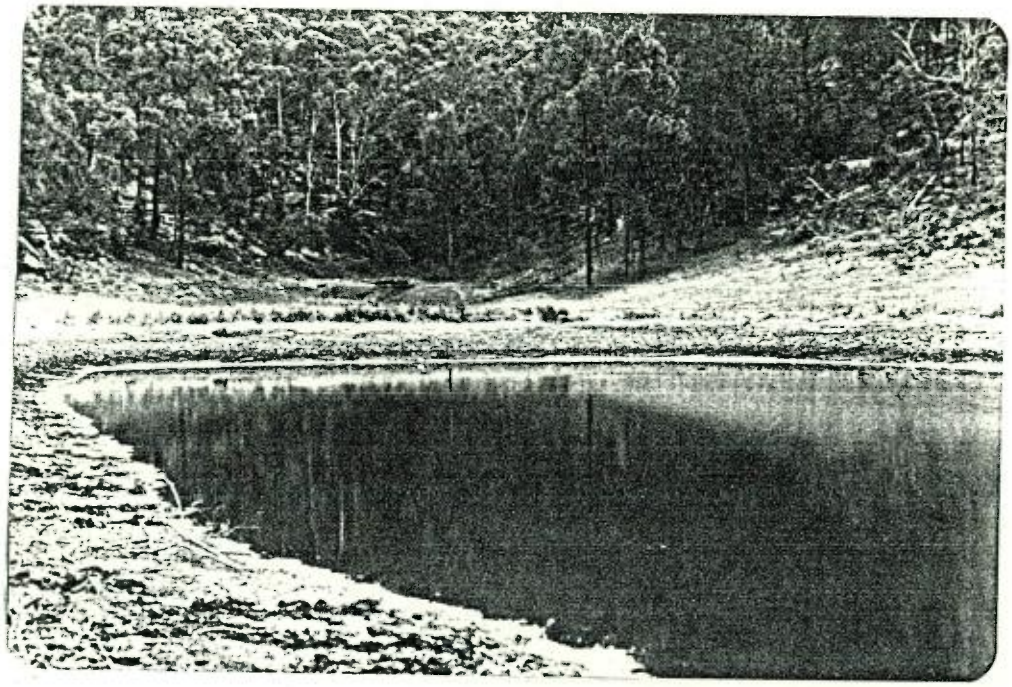


PLATE 5: Lagoon from the south, sand pit beyond. Note lack of vegetation around lagoon shore. (Plate 1 was taken from hill in background.)

PLATE 6: Northern end of lagoon, and part of sand pit.

PLATE 7: Open pit of existing sand extraction operation, looking southeast.

PLATE 8: Timbered section of terrace just north of sand pit, showing remnants of original vegetation cover: Eucalyptus elata, Casuarina cunninghamiana and shrub growth.

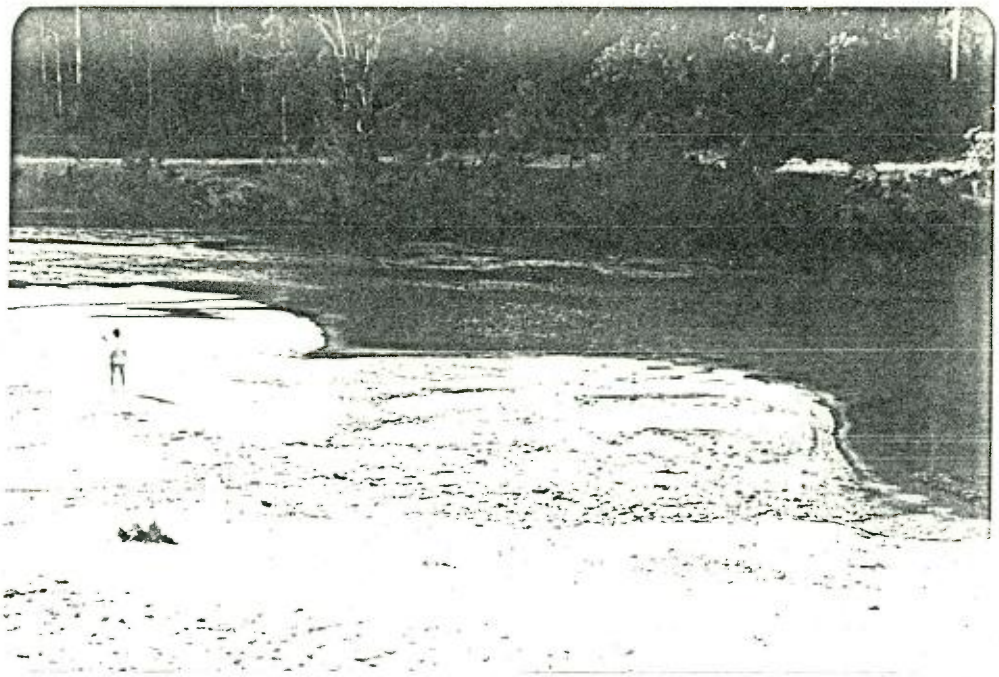


PLATE 9: Sand shoal upstream of main bend at low tide, looking north.

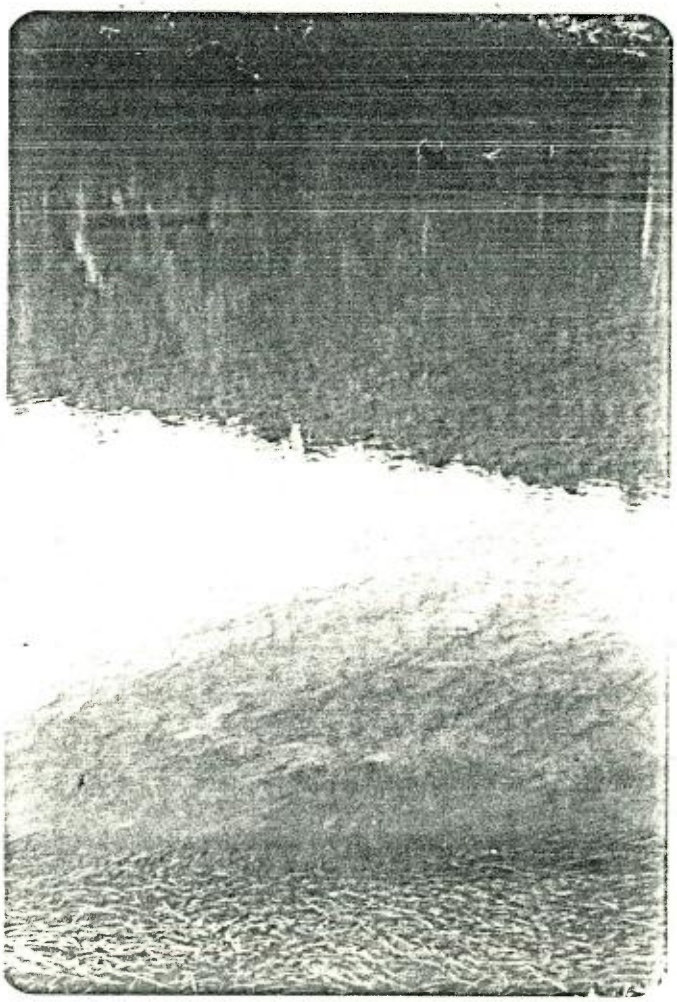


PLATE 10: Looking northeast across downstream end of upstream shoal. Note Valasneria beds in foreground and lack of growth beyond.

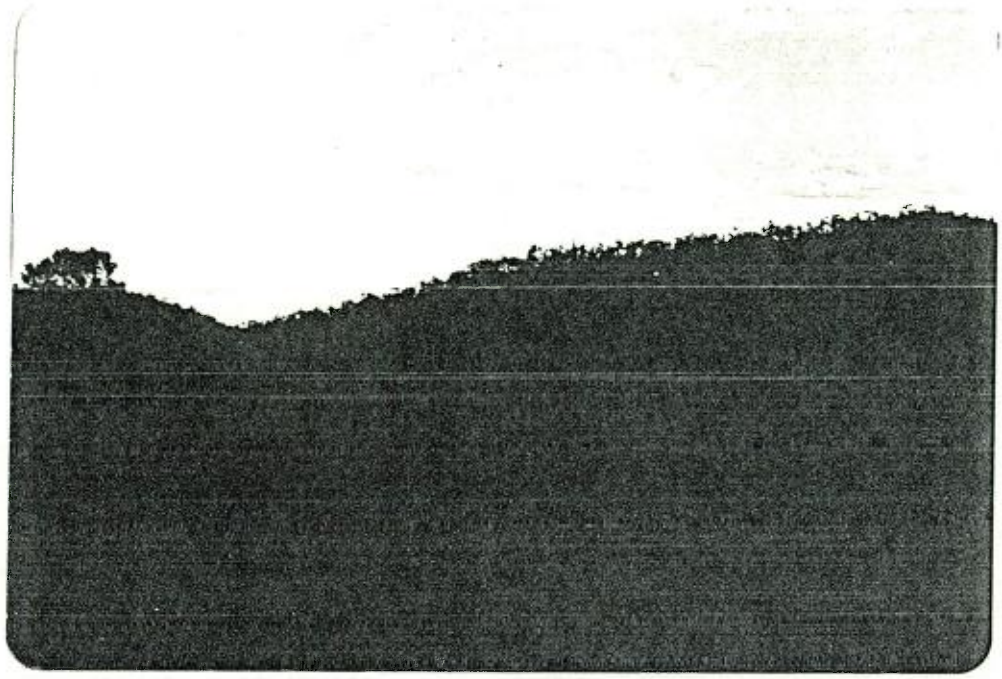


PLATE 11: Rock bank on eastern side of the main bend. Steep hillslope above vegetated with dry sclerophyll forest of Angophora floribunda and Eucalyptus eximia. Tristania neriifolia on the bank.

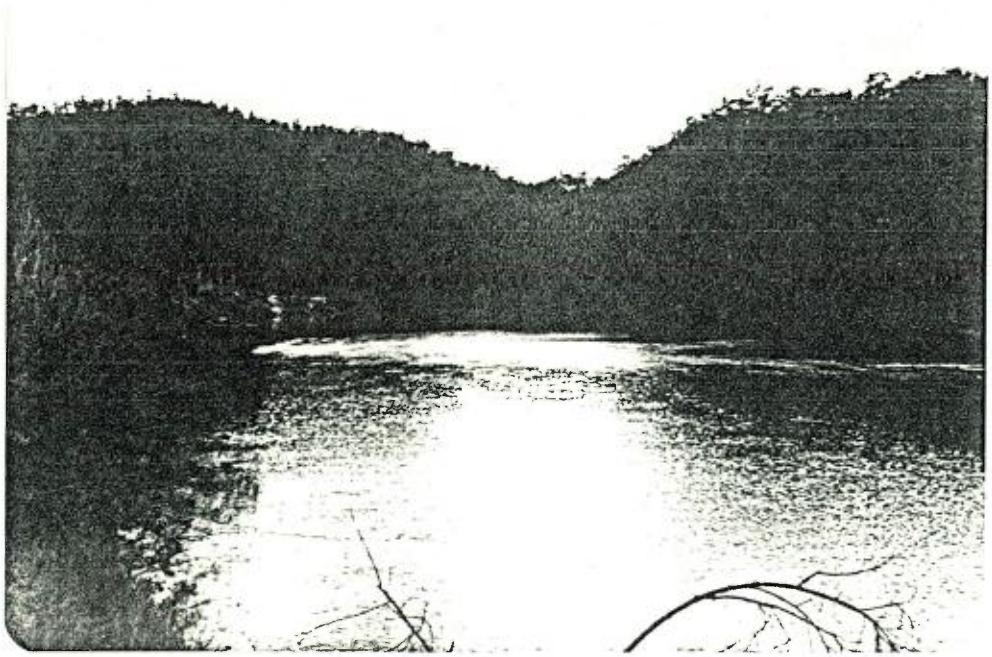


PLATE 12: Unstable banks of sand on the true right bank just downstream of main bend. Bank section on right of photo was eroded in 1978 flood.

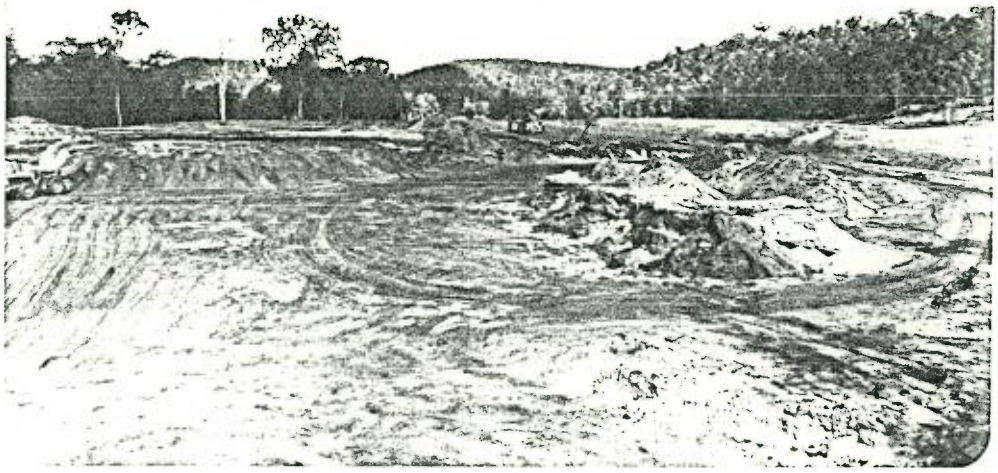


PLATE 13: Site of processing plant, looking south. Portion 37 road on right.

PLATE 14: View downstream from northeast side of main bend. Processing plant will be visible on grassed terrace in top centre distance. This represents upstream limit of visibility of processing plant from river.

PLATE 15: View upstream from south bank below "Noonameena", Jones' residence in top left. Processing plant will be visible on grassed bank in top centre. This represents downstream limit of visibility of processing plant from river.

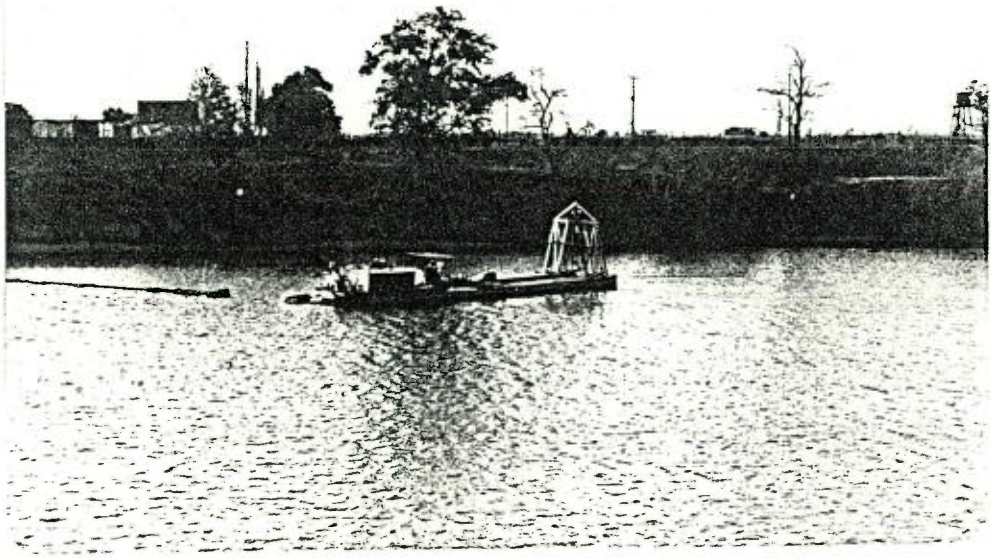


PLATE 16: Sand dredge with floating pipeline on Hawkesbury River, Windsor (Monier Pty. Ltd.).

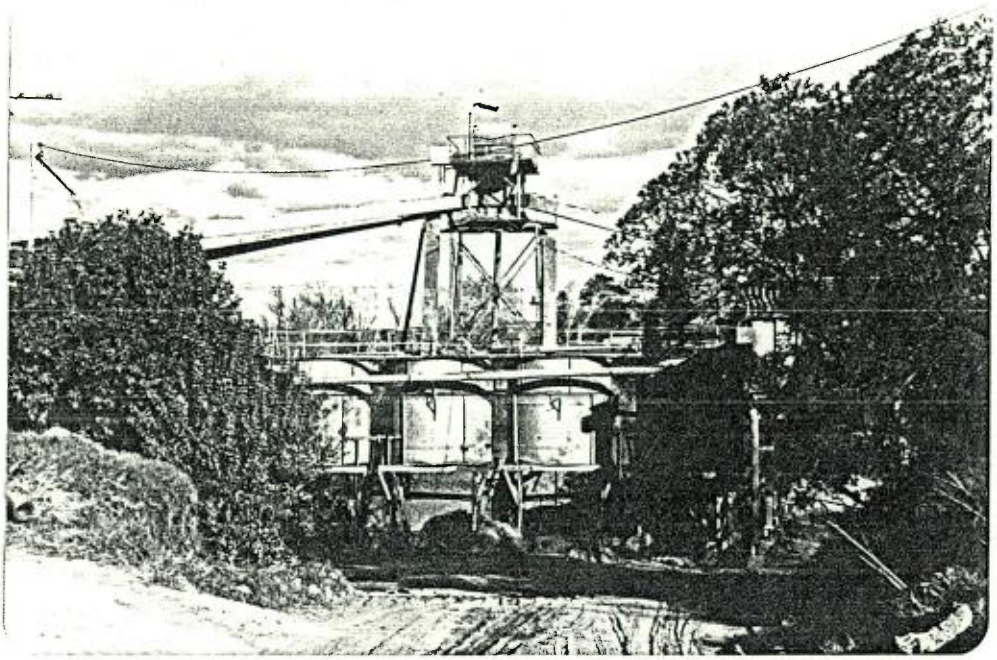
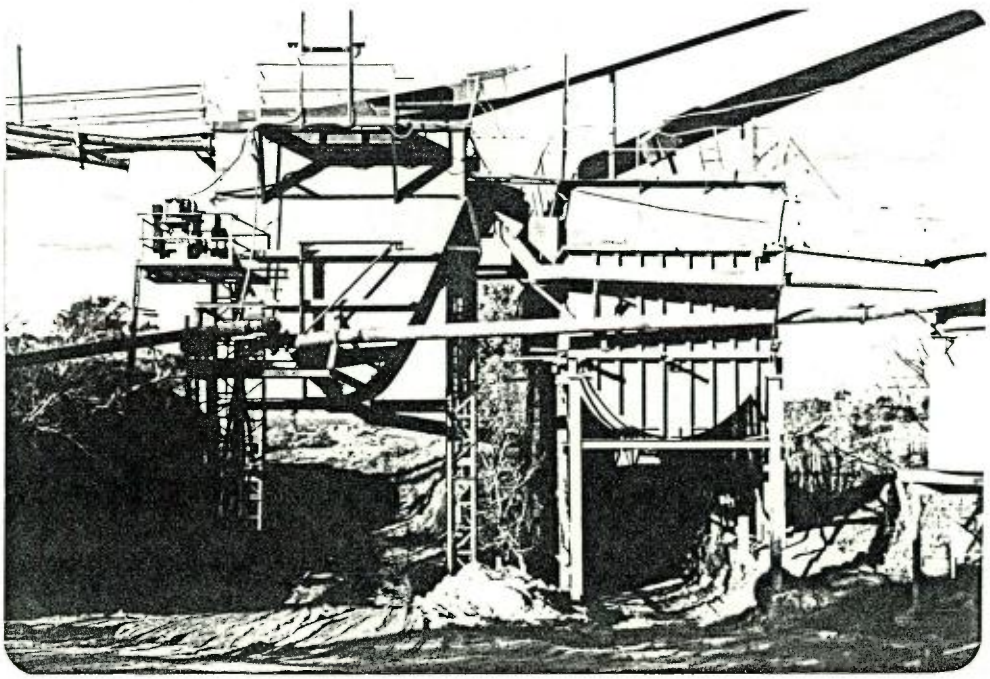


PLATE 17 & 18: Sand screening and washing plant, Monier Pty. Ltd., Windsor.



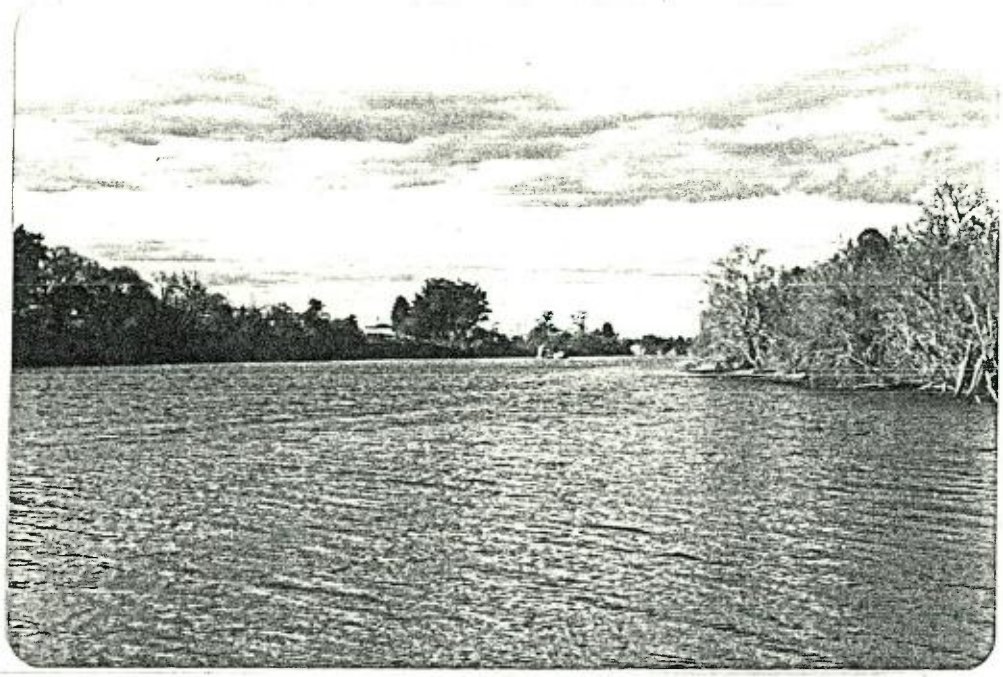


PLATE 19: Monier Pty. Ltd. dredge at Windsor, seen from Windsor Bridge. Note low visual impact at this distance.

PLATE 20: Monier Pty. Ltd. sand processing plant at Windsor, seen from opposite bank of Hawkesbury River.

BIBLIOGRAPHY

R. Camilleri et.al. (1973). The Hawkesbury River Valley Environmental Study: Background Report for Minister for Environmental Control, N.S.W.

Crawford, E.A. (1971). Survey of Construction Materials in the Shire of Colo, N.S.W. Geological Survey Report No. GS1971/473.

Dyson, J.R. (1966). Sand Deposits in the MacDonald and Colo Rivers. J. Soil Cons. 22 (158-173).

Henry, H.M. (1977). Catastrophic channel changes in the Macdonald Valley, N.S.W. Journ. Proc. Royal Soc. N.S.W. V.110 (1-16).

Laurie, Montgomie & Pettit Pty. Ltd., Consulting Engineers, Sydney. The Sand and Gravel Extraction Industry in the Nepean-Hawkesbury River Valley. Submitted to State Pollution Control Commission (May, 1974).

Murphy, B. et. al. (1975). Environmental Impact Statement Concerning the Effect of Sand-Mining in the Hawkesbury Valley. Diploma in Environmental Studies Study Group, Macquarie University.

Needham, Justice (1979). Judgement: Council of the Shire of Colo vs. Martin Bros. Soils Pty. Ltd. & Ors. Supreme Court of N.S.W., Equity Division.

Neville, M.J. (1976). Sand Resources of the Hawkesbury River System between Windsor and Brooklyn, N.S.W. Geol. Surv. Report No. GS1976/231

Paul, D.R., Pratt D.A. & Deakin R.C. (1969). Seismic refraction investigations on the Colo Shire sand deposits, N.S.W. Geol. Surv. Report No. GS1969/549.

Planning Workshop Pty. Ltd. (1973). Hawkesbury Valley Environmental Study: Land Assessment Phase II. Minister for Environmental Control.

Probert, D.H. (1970). Sand Deposits in the Macdonald and Colo River Areas, N.S.W. Geol. Surv. Report No. GS1973/703.

Roy, P.S. (1973). Comments on Sand Dredging in Upper Berowra Creek, N.S.W. Geol. Surv. Report No. GS1973/294.

Scholer, H.A. (1974). Geomorphology of N.S.W. Coastal Rivers, University of N.S.W. Water Res. Lab. Report No.139.

BIBLIOGRAPHY (cont.)

Soros-Longworth & McKenzie (1977). The Effects of Water-Borne Traffic on the Environment of the Hawkesbury River, for N.S.W. Dept. Public Works.

State Pollution Control Commission (1974). Principles and Procedures for Environmental Impact Assessment in N.S.W. Environmental Standard E1-4.

Wallace I. (1974). Geological Assessment of Construction Material Resources in the Central Coast Region of N.S.W. Paper to Inst. Quarrying (Aust.Divn.) 18th Ann. Conf. Sydney, 27 Oct.-31 Oct. 1974.

Wallace I. (1976). Extractive Resources of the Nepean-Hawkesbury River Valley between Menangle and Spencer. N.S.W. Geol. Surv. Report. No. GS1976/134.

Addendum to E.I.S. on proposal to dredge sand from the Colo River fronting Portion 37.

Laurie, Montgomerie & Pettit Pty. Ltd. were commissioned by Bate Walls Pty. Ltd. to prepare an addendum to the existing Environmental Impact Statement taking into account any possible additional adverse effects that may arise should the scale of the operation be increased from 500 tonnes per day to 1500 tonnes per day.

1. NOISE

The impact of noise on the environment is assessed by determining the noise level prior to the proposed development, and then adding to this the extra noise likely to be produced by the operation of the proposed development. The noise level is assessed at the residence most likely to be affected by the operation, both now and in the future. The noise level assessment considers both the loudness and the annoyance characteristics of noise.

The area in question has an existing dredging operation, hence it is classified as an R4 Noise Area (A.S.1055-1978 Table 1). Assuming that the development only operates between 06.00 and 18.00 hours, Monday to Friday, then the calculated background sound level at the nearest residence is 60 dB(A). Any significant incerease in this noise level due to the operation of the dredging equipment may be annoying to the residents.

The operation of the proposed development has four significant noise sources. One of them, the noise of truck movements in and out of the site, is occasional in nature and should be considered separately from the rest of the development. The other three sources are, the dredge, the screening plant and the front end loaders.

The proposed development requires the existing dredge to operate for longer periods. This change will not vary the noise perceived at the nearest residence. Likewise the existing screening plant

will operate for longer periods without varying the perceived noise level. The number of front end loaders in operation will increase from two (2) to four (4). The noise emanating from the loaders is cyclic in nature, and the increased number of loaders will shorten the period between noise peaks. The perceived noise level will increase slightly, but its shorter cycle period will be less annoying.

Overall the proposed development (excluding truck noises) will result in a slight increase in the perceived noise level at the nearest residence. If measurements showed the noise levels were annoying, then the addition of noise control equipment would result in an acceptable operation.

The truck movements will generate two types of noise. Firstly the empty trucks descending the rough access road will generate significant impulsive noise, and secondly the full trucks climbing away from the site will generate a continuous noise. The impulsive noise is much more annoying than the continuous noise, and needs to be controlled. The increased frequency of operation from 25 to 75 movements each way per day is estimated to increase the perceived noise level by 5 dB(A). The sealing of the access road will significantly reduce the perceived noise level resulting from empty truck movements. The perceived noise level from the full trucks will not increase significantly with the increased number of movements. This assessment is based on the noise from the existing operation together with the transport noise from other truck movements in the district.

Conclusion

The principal noise source, the movement of empty trucks, should be controlled by sealing the access road. The noise from the dredging operation should not increase significantly. If it is subsequently found to be annoying, then noise control equipment should be added to the plant.

2. ROADS

As previously stated the road of major concern is the Colo River Road which is a narrow, winding and unsealed road. The increase in traffic from 50 to 150 trucks would increase the rate of damage to the road and increase both the dust and noise problem.

It is recommended that the portion of the Colo River Road affected by the truck movement be upgraded and sealed if the proposal is approved.

Conclusion

The additional truck traffic on the roads will be major, however the upgrading and sealing of the portion of the Colo River Road mentioned above will help to alleviate the noise and dust problem as well as reduce the probability of an increase in accident rate.

JEJIDA PTY LTD

EIS
208

Proposal to dredge sand from the
Colo River fronting portion 37
(Parish of Meehan, Shire of Colo)