



**REPORT AND RECOMMENDATIONS
BY THE
ENVIRONMENTAL PROTECTION AUTHORITY**

PROPOSED READYMIX QUARRY DEVELOPMENT, GOSNELLS



**Department of Conservation & Environment
Western Australia**

BULLETIN 120

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ENVIRONMENTAL PROTECTION AUTHORITY

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HON MINISTER FOR CONSERVATION
AND THE ENVIRONMENT

Your Ref.

Our Ref. 120/75

My Dear Minister

The Environmental Review and Management Programme prepared by The Readymix Group (WA) for its proposed Gosnells Quarry development has been considered by the Environmental Protection Authority following submissions by the public and Government departments.

Please find attached the Authority's report and recommendations.

This development was referred to the Authority by the Hon Minister for Urban Development and Town Planning and also the Metropolitan Region Planning Authority under Sections 55 and 56 of the Environmental Protection Act respectively.

I would appreciate it if you would refer the report to the Hon Minister for Urban Development and Town Planning. I also seek your concurrence for publication of the report as Department of Conservation and Environment Bulletin No 120.

Yours sincerely


R MAIN
CHAIRMAN

11 October 1982

Att

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1. BACKGROUND

Traditionally quarries and sandpits have been developed on the fringes of urban communities. This is because that community consumes the major part of the produce and the cost of transporting what is basically a low cost product is very high and makes up a significant portion of the final product cost.

Availability of resource and suitable land also contribute to the distribution pattern of extractive industries. In the past there were few restraints on the location of quarries and so the closest suitable rock source was used. As the urban community expanded it moved closer to the extractive industry sites or has displaced the extractive industry as has happened with clay and sand pits. At the same time government at State and local levels has put increasing effort into land-use planning and town plans have been developed. In the case of Perth, a Metropolitan Region Scheme has been implemented which allows land-use zonings to be applied. This has limited the amount of land available for extractive industry.

Hard rock resources in the Perth region are restricted to areas east of the Darling Scarp. As a result of this, and ease of access to the resource, quarries were first developed on the scarp face. However, these quarries have come under increasing pressure as land closer to the scarp has been developed for urban living. At the same time the community has become far more aware of the importance of the Darling Range as regional open space and a natural bushland recreation area.

The Government has been aware of these pressures for some time and in 1977 the then Minister of Urban Development and Town Planning approved the formation and terms of reference of a committee to investigate aggregate resources in the Darling Escarpment. This committee was known as the Darling Escarpment Aggregate Resources (DEAR) Committee, and was given the additional brief from the Minister to report on the future options available for the Readymix operations at Gosnells. The Readymix Group's (Readymix) future plans had come into conflict with the Metropolitan Region Scheme. This resulted in statutory appeals to the Minister and the possibility of further appeals. The Company's plans were also in conflict with the City of Gosnells Town Planning Scheme No 1. The DEAR Committee reported to the Minister for Urban Development and Town Planning in April 1981 on the options available to resolve the future planning conflicts at the Gosnells quarry location. It recommended a course of action available to the City of Gosnells, the Metropolitan Region Planning Authority (MRPA), the Readymix Group (WA) and the State Government. It was this recommended course of action that became known as Option 4, involving an exchange of land between Readymix and the Crown.

The preferred option was considered by the MRPA and its

Basic Raw Materials Sub-committee and received endorsement as being worthy of further detailed study and consideration. As part of this process the matter was referred to the EPA by the MRPA under Section 56 of the Environmental Protection Act for advice. The EPA recommended that an Environmental Review and Management Programme (ERMP) should be prepared by Readymix for public review and formal EPA consideration of the proposal.

The Minister for Urban Development and Town Planning subsequently referred the Option 4 proposal to the EPA under Section 55 of the Environmental Protection Act for advice.

The ERMP prepared by Readymix, resulted in some refinement of the preferred option and was published on the 4th of June 1982. The public review period closed on July 30 1982.

The EPA is aware that in considering this proposal there are a number of other bodies who have statutory responsibilities in any eventual approval of the proposal and in its future management, should it proceed. These bodies include the MRPA, the City of Gosnells, the Mines Department and the Lands Department. While the EPA has sought comment from these bodies on the ERMP, it does not wish its comments to in any way inhibit future actions they may wish to take in regard to the proposal. The EPA has endeavoured to consider the broad environmental issues involved with the proposal at a conceptual level and to avoid where possible those areas where other bodies have statutory responsibilities.

The proposal involves the change of a Class A Reserve to freehold and this action will require the approval of the Parliament of Western Australia through a Reserves Bill.

2. THE PROPOSAL

The proposal outlined in the ERMP involves an exchange of land between Readymix and the Crown, whereby the existing operating quarry (No 1) could be extended back into the scarp into what is now Crown Reserve 11681 (see Fig 1 for details of land involved). In return Readymix would cede to the Crown a major part of its land holdings north of quarry No 1. This would include important scarp face land, the scenic Sixty Foot Falls and the now abandoned quarries Nos 2 and 3.

The basic objective is that Readymix will gain an amount of rock resource equal to that that it will be giving up. Because of topographic features and fewer pit development restraints the company will require considerably less Crown land to achieve this.

In addition Readymix has developed a conceptual quarry development plan which it is claimed will lessen the visual impact of the quarry operation on the scarp face viewed from the coastal plain in the medium to long term (30 to 100 years). In return Readymix will gain access to a rock resource which will last in excess of 100 years at projected extraction rates, in a single location close to the urban area.

The ERMP suggests that the lessening of visual impact will be achieved through a combination of physical factors and management practices. The basic concept is to turn the exposed quarry faces from their present North-South alignment to an East-West orientation. This will prevent direct lighting by the afternoon sun which contributes substantially to the present visibility. It will also reduce the area of face visible from much of the coastal plain because the line of sight will be along the faces rather than directly at them.

A number of large bunds will be constructed at strategic locations and then re-vegetated to further shield the quarry faces from view. These bunds will also act as overburden and waste rock disposal areas. As a further measure quarry faces which will still be visible over the bunds or natural landscape will be 'camouflaged' by a yet to be defined process probably involving vegetation cover of some form.

The proposal will be implemented in a series of stages over a period of approximately 100 years. Initially visual impacts will increase as the faces move eastward into higher ground and are turned to the south. It will be in the order of 10 to 15 years before any marked improvement occurs, with the 'camouflaging' of the upper exposed faces. The next stage will be to develop the quarry behind these treated faces (stage 2 in the ERMP) and by then the southern bund should be at least in part complete so that the quarry can then develop largely out of view on what is now the Crown reserve.

The ERMP indicates that final stage will involve the removal of the 'camouflaged' faces from behind and the establishment of the east-west benches. Exposed faces at the Eastern end of the quarry will have already been 'camouflaged' and so there will be little if any exposed faces visible from the Perth area.

No proposals or discussion of the final land use for the worked-out quarry have been made by the company in the ERMP. This matter is discussed under the Environmental Issues section.

3. THE OPTIONS

The ERMP does not contain any consideration of alternative options for the quarry development at Gosnells but instead only refers to the 6 options examined by the DEAR Committee. In discussing various aspects of the proposal in the ERMP the Company has made comparisons with the alternative development of its present land holdings to the north of Quarry 1, on the basis that Readymix could develop all of this land for quarry purposes. No attempt has been made to present a concept plan for this alternative.

The DEAR Committee examined 6 representative options, ranging from taking no action except clearing the legal issues arising from non-conforming use rights, through various scales and locations for quarry development to complete quarrying of the whole Readymix holding. The options considered were:

1. Resolve legal issues
2. No action beyond present problems
3. Limited land exchange and MRPA purchase of Quarry 3 area
4. Land exchange with All681 and 7415
5. Land exchange with vacant Crown land
6. Allow quarrying over entire Readymix holding

The evaluation by the Committee was carried out on the following criteria:

- (i) extent to which a long-term solution was available
- (ii) impact on escarpment
- (iii) impact on valleys
- (iv) economic resource value
- (v) extent to which legal uncertainties would be removed
- (vi) degree of improvement to visual impact of existing Quarry No 1
- (vii) impact on concept of continuous linear park along escarpment

This evaluation showed that Option 4 offered the best opportunity for an acceptable solution in terms of the Committee's brief.

The Minister for Urban Development and Town Planning has made copies of the DEAR Committee Report available to the EPA to assist it in consideration of the proposal

but has requested that it remain confidential. Without the DEAR Committee report the EPA would not have been able to fully examine the current proposal nor place it in an overall context.

The EPA accepts the DEAR Committee's evaluation of the environmental factors for each of the options examined. The legal and planning issues have not been considered by the Authority. Readymix has agreed to only two alternatives, those of quarrying its entire holding (Option 6) and the current proposal (Option 4), which was proposed by Readymix to the DEAR Committee. The alternative of quarrying north along the scarp is not acceptable to the EPA and it is not considered valid to compare it with the proposed Option 4. If quarrying were to proceed northwards it would need to be carefully planned, strictly controlled, and limited to suitable areas. Existing land zoning, System 6 recommendations and other statutory constraints would need to be considered. Thus only a small portion of the holding would in reality be available for quarrying purposes. This point should be considered in any future discussions on the extent of permissible rock extraction from the proposed exchange land.

Four of the submissions received by the EPA commented on the ERMP's failure to examine alternatives in any detail. Another five submissions complained about the lack of any explanation of the MRPA options referred to in the figures. In fact the figures differ from the DEAR Committee report by omitting some wording. One additional submission complained that without access to the DEAR Committee report it was impossible to properly assess the ERMP.

4. THE ENVIRONMENTAL ISSUES

It is unlikely that, given current community attitudes toward landscape protection and environmental issues, a new quarry on the scarp-face would obtain the necessary approvals.

This proposal offers the possibility of a medium to long term improvement by lessening the visual impact of the quarry. For this to be successful there will need to be much more detailed planning, good site management, and adequate government (both State and local) supervision. While visual impact is probably one of the most important issues in assessing the proposal, it is not the only concern. In fact, very few submissions received mentioned the visual impact directly at all. To those living near the quarry, and those who are concerned with preserving the escarpment the overall effects of the proposal on the environment were much more important. It is possible that for those who view the quarry from afar, such as city office workers or visitors to King's Park, the visual impact is the major consideration.

As part of its evaluation of this proposal the Authority commissioned some computer generated perspective drawings to be prepared in order that it could better appreciate the aesthetic implications of the ultimate quarry development. The results are presented in Figure 2.

Three perspective views were generated, one being taken from an angle of 45° and the other two from ground level. All represent the final quarry profile taken from a distance of approximately 5 kilometres from the centre of the excavation. The side view is from Kelmscott railway station while the other ground level perspective shows a view from Maddington.

The side view indicates that, with appropriate location and design of the southern and northern bunds, almost all of the quarry operations can be effectively screened. However, the south-eastern view looks straight into the quarry and suggests that a large portion of the eastern face will be visible. By rotating the view to the west, it can be shown that this comment could also apply to portions of the northern face. Clearly the management commitment by Readymix to reduce the visual intrusion of these faces needs to be based on comprehensive studies of this type.

Of the nine non-government submissions, six were opposed to any additional quarry development in the escarpment or on areas of native vegetation. Some of these submissions proposed that the existing quarry should be closed and moved to a more distant site on previously cleared land. While the EPA can understand these sentiments it is not in the position to recommend closure or restriction of the existing operation or its re-location to a new site. Such action would involve complex legal disputes, possible large compensation payments, increased product costs and would leave the existing quarry in its present highly visible state.

Two submissions supported the proposal as a good concept worthy of additional refinement; both these submissions were critical of certain aspects of the proposal.

The EPA noted that the ERMP was lacking in biological survey data, and that the description of the Crown land was not without bias. As one of the central issues involves a comparison of the overall biological and aesthetic values of the two areas proposed to be exchanged, this omission is important. The Crown land is in better condition than much of the Readymix land. It is less degraded by off-road vehicle use and has had no previous quarrying activities. All the Darling Escarpment has been subject to past logging and excessive burning and much of it is still poorly managed. Exotic weeds have invaded many areas of native vegetation. In this particular case the weed problem is worse on the Readymix land than on the Crown land because of ready accessibility and past quarrying activity. Both areas contain a similar range of habitats and vegetation types and although there will be differences in the relative abundance of habitats on each area they can be considered to be similar in an overall comparison. The Readymix land is clearly more important visually than the Crown land, because of its scarp front position and larger, more prominent, valley forms.

Six submissions commented on the lack of a biological survey of the subject land in the ERMP, while two submissions pointed out the lack of an adequate description of the Readymix land. In addition, four submissions claimed that the ERMP did not accurately describe the Crown land involved and went on to demonstrate that it was more important and in better condition than claimed by Readymix. The Authority regards it as extremely important that the Readymix land come under State control so that the overall visual effect of the Darling Escarpment as a backdrop to the Perth region can be maintained. The area is also important to the implementation of the System Six recommendation M-80. This recommendation calls for consideration of a regional park over the scarp-face, the identification of management objectives for the area and for quarry operators to outline options for the use of the quarry when extraction is completed.

With proper management and some rehabilitation work the Readymix land could be restored to an acceptable state for regional park usage in the future. If the proposal is to proceed, the future vesting and use of this land will need to be considered. As the regional park concept of the System Six study has yet to be considered by the EPA, the Authority considers that the land should in the interim become a Class "B" reserve, in the control of the City of Gosnells. The MRPA should assist the City of Gosnells in the preparation of a management plan for the area. (*Recommendations 1 & 2*).

Two submissions considered these issues and argued that the ERMP failed to discuss the future use of the Readymix land

and one pointed out the need for Readymix to carry out rehabilitation works on its land before it is exchanged with the Crown.

The issue of the Readymix Group's responsibilities to rehabilitate their land prior to or as part of the land exchange is more complex. The company has certain responsibilities under the Mines Act Regulations to render the abandoned quarries 2 and 3 safe. This would involve some remedial blasting down of existing faces to limit their height and slope angles as well as the provision of fences and warning signs at certain locations.

There is, however, considerably more work required to bring the land to regional park standard or for that matter to a standard similar to the Crown land. There are large amounts of rubbish left over from the previous quarry operations which will have to be removed. The old stock-pile areas, waste dumps and some disturbed areas need to be re-contoured and re-vegetated. Erosion control works will be required in a number of locations. Some of the above work could be used to develop public amenities out of the disturbed areas so that existing access roads could be re-used, parking and picnic areas developed on the old stock-pile areas and small water bodies introduced as an integral part of the erosion control works. It would also be possible to develop recreation uses for the disused quarry excavations. However, all exposed sections should be revegetated. Whatever plan is adopted there will still be a considerable amount of rehabilitation work required to remove or modify the existing structures and blend them into the surrounding environment.

While it is not the EPA's role to decide upon the work that should be done it believes that there is the need for this matter to be considered as part of any overall land exchange proposal and considers that the MRPA, City of Gosnells, and Readymix should come to an agreement on the rehabilitation works to be carried out prior to or as part of the land exchange. It is important that agreement be reached on rehabilitation while the land is still under Readymix ownership. (*Recommendation 3*)

This Authority considers that all extractive industries should accept responsibility for rehabilitation of extractive land to its former or some alternative land use. Wherever possible rehabilitation should be integrated into the operation and not left until the end of the operation.

In the present proposal, Readymix has not discussed the final land use for the existing and proposed quarry area when its operations cease. The EPA considers that this is a serious omission in the company's concept plan.

In discussions on this point, the Company has argued that it cannot discuss final land use because of the long period of time involved (over 100 years) before the resource is worked out. The Authority believes that the Company should consider possible alternative land use options at this early stage and rehabilitation policies necessary to achieve them.

The final excavation will be of an enormous size, with reserves in the Crown land estimated by Readymix to be 450 million tonnes. As a result, it is most unlikely that the quarry could ever be returned to anything like its present land use. It is more likely that the excavation will be used as an engineering structure such as a water storage, industrial site or waste disposal site. It is therefore essential that Government, the City of Gosnells, and the Company consider and subsequently review possible end uses for the quarry. It is possible that particular end uses would require quite specific quarry development strategies in terms of the final shape and size of the excavation. The concept of developing the quarry for maximum rock yield and then looking for an end use is not considered acceptable.

While the final end use is open to question there are some associated issues which can and should be considered at this stage. The EPA considers that Readymix should accept the principle that all exposed portions of the final quarry visible from public view (at or near ground level and city buildings) should be permanently rehabilitated to blend physically and vegetatively into the surrounding landscape. (*Recommendation 4*). This will mean that some of the upper benches may need to be much wider than normal so that more gentle slopes can be generated prior to revegetation. Special attention should be given to species selection so that plants are compatible with existing vegetation and suitable for their new modified environment.

The Company's existing rehabilitation efforts were criticised by five of the submissions received. All five commented on the claim in the ERMP that the company used 'indigenous' species when in fact only ten of fifty seven plants listed as being used in 1980 could be regarded as being truly indigenous to the Darling Range, and three of the ground covers used were not even indigenous to Australia.

Because of the importance of vegetation in screening disturbed areas, stabilising exposed soil slopes, controlling run-off, and ultimately blending the operation back into the landscape it is essential that the Company improve all aspects of its revegetation programme. Wherever possible plants indigenous to the Darling Range should be used. Attention needs to be given to establishing understorey and heath type vegetation more suited to the shallow soils and steep slopes encountered. The ability of the new vegetation to become self-propagating is important if long term soil stability is to be assured.

The advice of private industry experts, Government Departments, as well as some of the local conservation groups should be sought. A range of well monitored trials needs to be established on typical sites so that different techniques and vegetation types can be compared and long term stability assessed prior to some of the more major rehabilitation works called for in the proposal being established. (*Recommendation 5*). A botanical survey of the proposed quarry area would be extremely useful to establish a species list and indicate which vegetation types suit particular environmental conditions. This information could then be used in planning rehabilitation work.

In its submission, the City of Gosnells stressed the need for detailed management plans to be submitted to it by the company for each licencing period, and suggested that the licence period be extended from the present one to five years. Readymix have proposed in the ERMP that the quarry operation should be granted a twenty-one year extractive industries licence in order to ensure orderly extraction and systematic rehabilitation.

While the EPA is primarily concerned with the overall concept of the proposal it acknowledges that the ERMP is deficient in the area of environmental management and environment undertakings or commitments. The licencing of extractive industry and its regulation is the responsibility of the local authority and such detail as licence period and requirements for management plans are up to the City of Gosnells to decide. There are clearly advantages to both the Company and the licencing authority in having a longer licence and planning period incorporated into an overall concept plan for an operation such as this, which has a possible life in excess of 100 years.

The EPA therefore considers that Readymix should prepare a detailed five year management plan and a long term concept plan for the consideration of the City of Gosnells prior to the Council considering approval of the land exchange. The Council should consult with relevant Government Departments on technical aspects of the plan where it does not have the necessary expertise.

Dust emissions from the quarry and processing plant have been a source of public complaint in the past as have occasional blast effects, according to the City of Gosnells. Several submissions also raised these issues. Dust emissions are now the subject of regulations under the Mines Act and the quarry and plant are subject to regular inspection by Mines Inspectors. In addition dust moving off site is subject to the Clean Air Act, while dust blowing from trucks is prohibited by the Traffic Act. The Company has invested in the installation of modern dust control and suppression equipment in recent years. In the ERMP, it is claimed that the Company is an industry leader in this field. However, Readymix should have provided a firm undertaking in the ERMP to meet the requirements of the various statutory regulations on air emissions. (*Recommendation 6*).

Blast effects such as excessive noise or vibration can occur from time to time due to atmospheric conditions and unforeseen changes in rock homogeneity. However, they should be rare events in any well managed quarry and will become rarer as blasting technology improves and blast effects become more predictable. There are regulations under the Mines Act and Noise Abatement Act which cover permissible noise and vibration levels, with which the Company will have to comply.

The water management section of the ERMP is extremely superficial and lacks any firm undertakings. Certainly the bulk of runoff will be collected within the excavation and could then be used by the operation as at present. However, as the

quarry expands there will be increasing areas of bunding which will shed water away from the quarry and ultimately into surrounding creeks. This runoff could become turbid due to soil erosion on the steep bund surfaces, unless special attention is given to stabilising the slopes, especially in the years before vegetation cover is fully developed.

Another area of concern relates to two small winter creeks which presently drain the Crown land, one flowing south towards Mills Road and the other north into Ellis Brook. Careful engineering consideration will have to be given to determine how the streams will be affected when their valleys are crossed by bunds. Any effects should be minimised.

The Company should give an undertaking to meet all obligations under the Rights in Water and Irrigation Act to protect down stream water users and the environment. In addition, it should accept as a design concept that no soil or rock will be washed off the Company's property onto adjoining land. (*Recommendation 7*).

As the pit develops and deepens the Company will encounter increasing amounts of ground water and it is possible that inflow could exceed usage. It may therefore be necessary to dispose of the excess off-site. If this should occur the company may require an effluent disposal licence from the Metropolitan Water Authority and/or the Waterways Commission.

The effect of groundwater reduction within the upper weathered material, on surrounding vegetation is unknown at this stage. This should be considered in future management programmes, especially as adverse effects may spread beyond the Readymix operational area.

The proposal includes a number of overburden bunds which will have the effect of hiding the quarry faces from view and providing disposal areas for unwanted material, such as weathered rock and sub-soil clays. The largest of the bunds will be along the southern side of the quarry and will limit visibility from Mills Road and the Southern urban areas. It will be a major structure which could exceed 70 metres in height in places and it will be built close to the proposed property boundary at a relatively steep angle. The ERMP provides little detail on how the bunds will be designed, built and revegetated. There are several problems with the bunds as shown in figure 14 of the ERMP, because they do not fit the existing topography and would be excessively high at certain locations for the width indicated. In addition, it would appear that the toes of several of the bunds may go beyond the proposed Readymix land.

One submission pointed out the need for the Company to obtain expert advice on the design and construction of the bunds to ensure their stability. The EPA agrees with this and considers that Readymix should reconsider the bund proposals and obtain expert advice on design, construction and revegetation prior to submitting details in the relevant management plans to the City of Gosnells. (*Recommendation 8*).

The EPA believes that the Company should attempt to make the bunds more compatible with the existing land forms by building the bunds so that they follow existing contours more closely and introducing variations in height, slope and direction, even though this may sterilise some rock reserves. The eastern bund shown in figure 14 in the ERMP is not required for any visual screening and is basically an overburden disposal area; it would itself be an intrusive visual element if constructed as shown. The Company should consider only building bunds for visual screening purposes and dispose of overburden in existing worked out sections of the quarry or in covering exposed upper benches prior to revegetation.

The EPA supports suggestions by the City of Gosnells that the Company consider the provision of "in-pit" processing and stockpiling when the quarry has expanded to a suitable stage and replacement of the existing plant is due. This would assist in limiting dust emissions, noise control and enable further rehabilitation and visual screening of the quarry in the area of the existing plant and stockpiles. (*Recommendation 9*)

5. THE ERMP

Of the nine public submissions received, 8 were critical of the ERMP. Many of these criticisms have been discussed in the preceding section of this report where they related to omissions and poor detail.

At a more general level, the ERMP fell well short of what the Authority considers to be ideal. The document was oriented to promoting the proposal rather than considering it in an unbiased and objective manner. Many areas received only superficial treatment. Many of the statements in the ERMP were provocative and as such received considerable criticism in the submissions, especially the claims about urban development near the quarry, the attempt to downgrade the existing "A" Class Reserve, some of the discussion and photographs in the visual and aesthetic features section, and the discussion under Section 7.4 about theoretical changes in luminance.

Most of the figures and maps lacked orientation marks and scales, making them difficult to interpret.

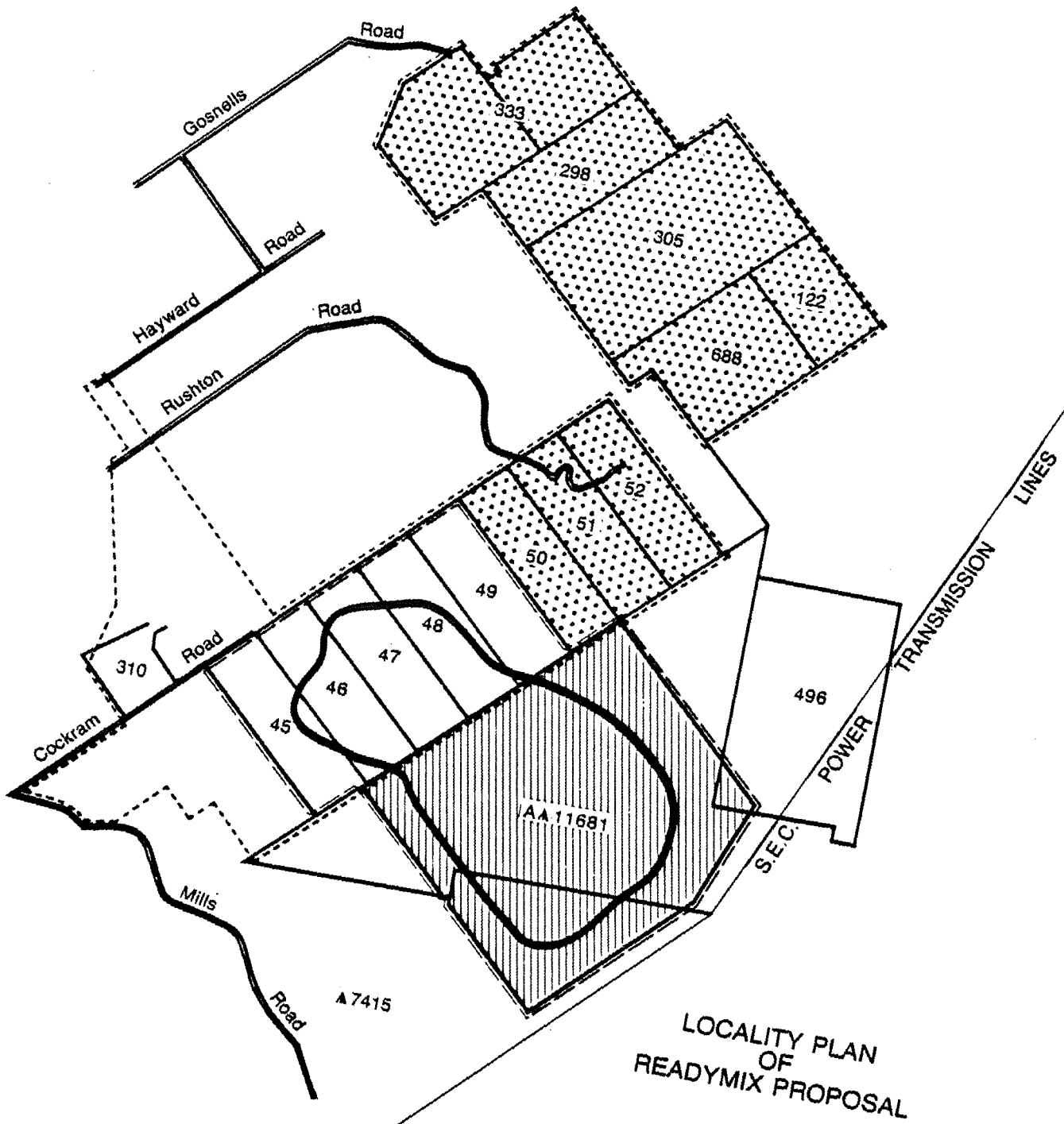
6. CONCLUSIONS

The proposal presented in the ERMP will result in a massive excavation in an environmentally important area. However, the Authority considers that the proposal for a land exchange between Readymix and the Crown to enable Readymix to extend its existing quarry into Reserve 11681, offers a number of significant potential environmental advantages over continued scarp face quarry development and therefore recommends that negotiations aimed at implementing the proposed exchange proceed between Readymix, the MRPA, City of Gosnells and Department of Lands and Surveys.

These negotiations should take the following recommendations into account in any final agreement. In addition, all authorities should be aware that, in order that this proposal might bring the potential advantages to fruition, carefully considered and strong management commitments will be required from Readymix.





7. RECOMMENDATIONS

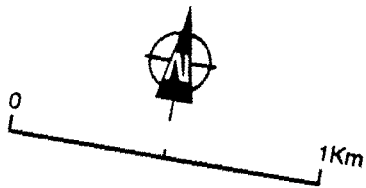
1. The Readymix holdings to be exchanged should become a "B" Class Reserve for Parks and Recreation in the control and management of the City of Gosnells until such time as the System 6 Recommendation M 80 has been finalised.
2. The MRPA should assist the City of Gosnells to prepare a Management plan for the present Readymix land.
3. The MRPA, City of Gosnells and Readymix should come to an agreement on the rehabilitation works to be carried out at Readymix cost on the present Readymix land prior to or as part of any land exchange.
4. Readymix should accept the principle that all exposed portions of the final quarry visible from public view should be permanently rehabilitated to blend physically and vegetatively into the surrounding landscape.
5. The Company should use, where possible, species indigenous to the Darling Range in rehabilitation work and make considerable efforts to improve upon its existing revegetation work to make it more compatible with the existing vegetation and self sustaining in the long term.
6. The Company undertake to meet the requirements of the Mine Act Regulations and Clean Air Act in relation to air emissions, both on and off-site.
7. The Company undertake to meet all the requirements of the Rights in Water and Irrigation Act to protect downstream water users and the environment.
8. The Company should reconsider the bund proposals and obtain expert advice on location, design, construction, and revegetation and should provide these details to the City of Gosnells, in future management plans.
9. The Company should endeavour to establish in-pit processing and stockpiling as part of future quarry development.



LOCALITY PLAN
OF
READYMIX PROPOSAL

Figure 1

-  Study Area
-  Ready Mix Landholding
-  R.M.C. Land Proposed for Exchange
-  Crown Land Proposed for Exchange



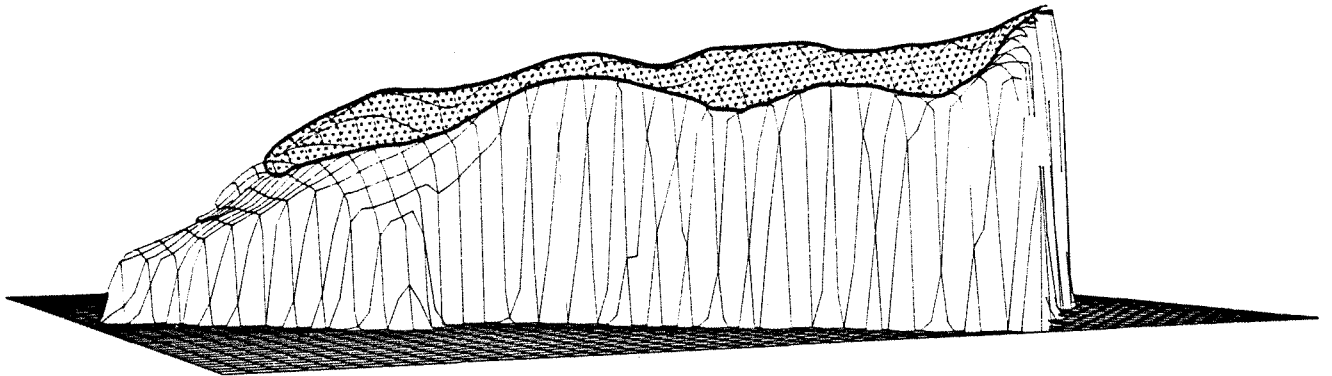


FIGURE 2A. Direction 1—View from Kelmscott Railway Station with internal slopes indicated by stipple.

Vertical exaggeration x 2

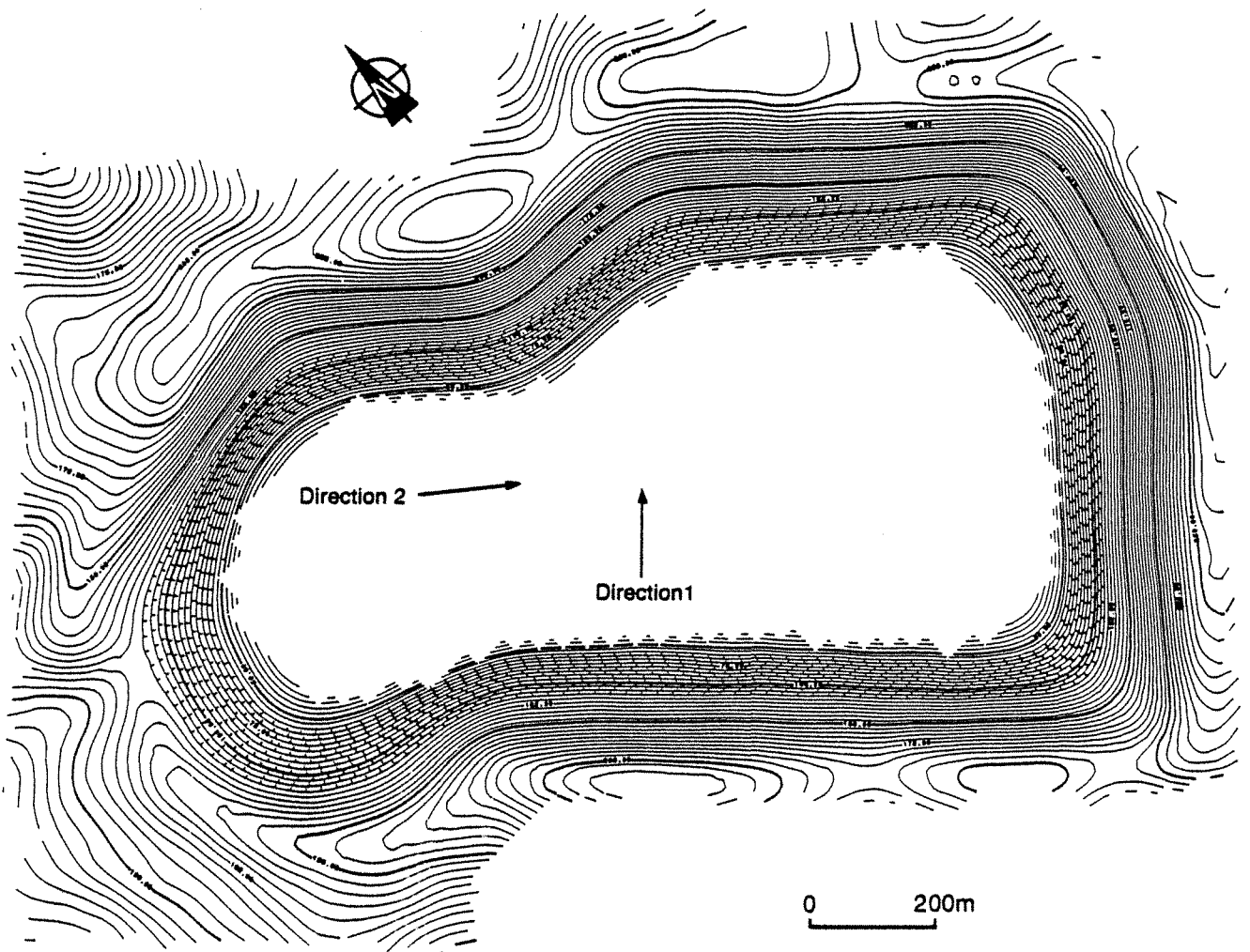


FIGURE 2B. Plan showing final development stage of the quarry. Floor not shown.

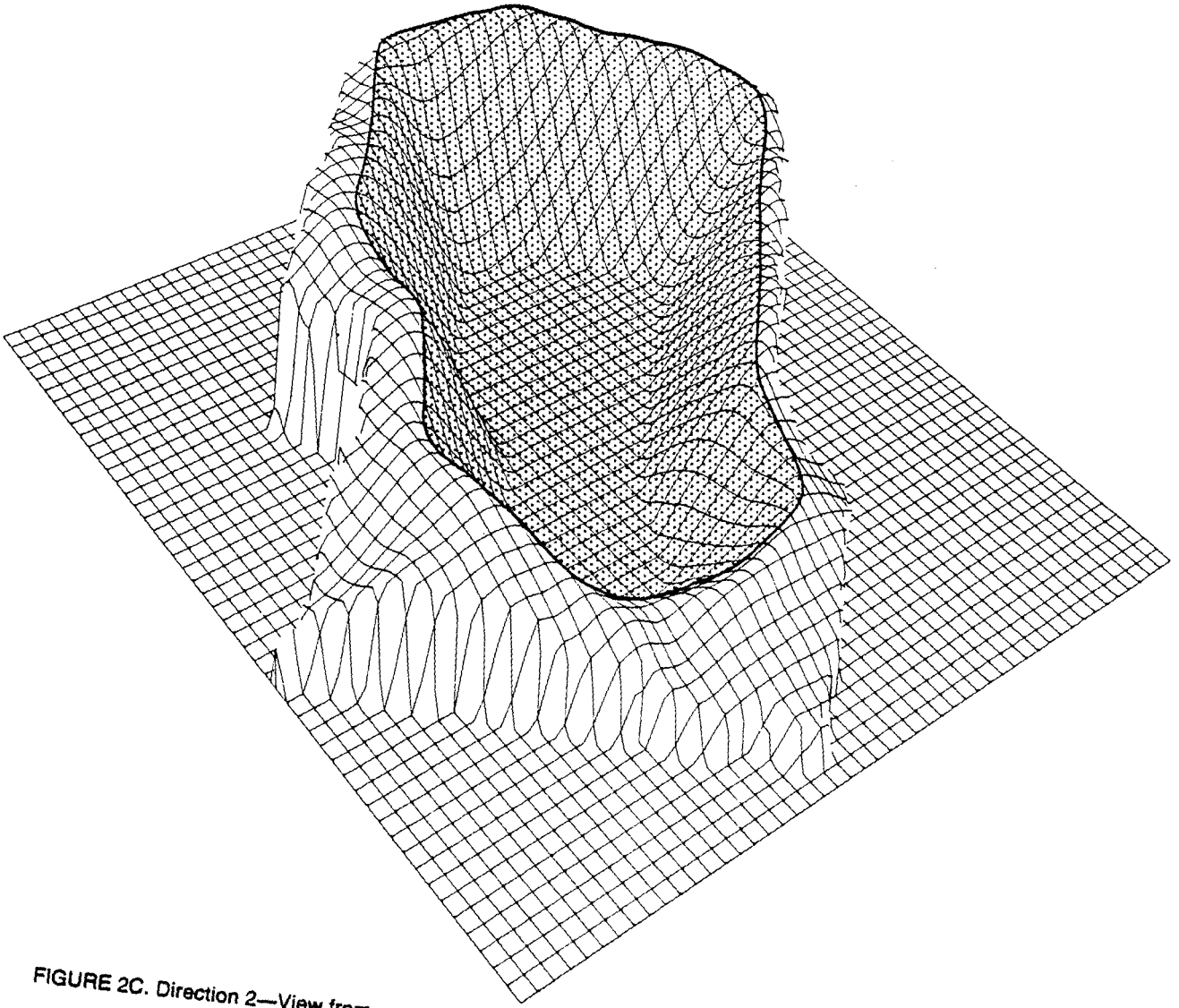


FIGURE 2C. Direction 2—View from an elevation of 45 degrees with internal slopes indicated by stipple.
Vertical exaggeration x 2

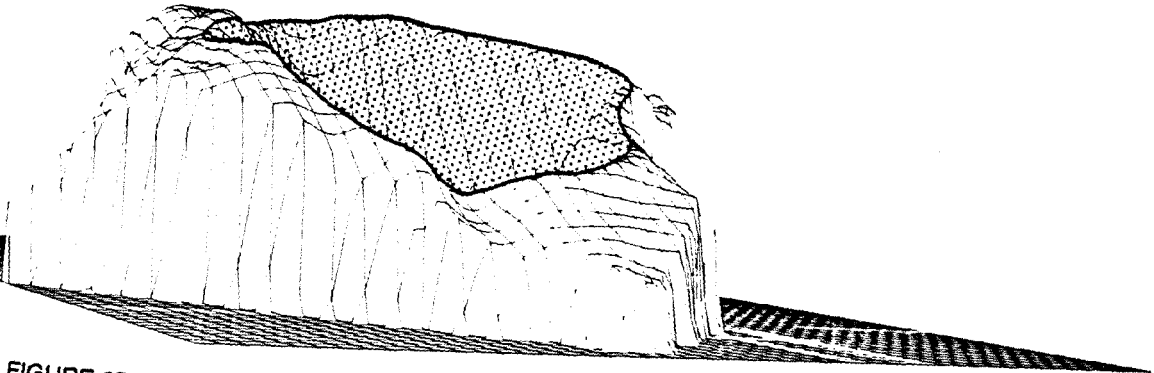


FIGURE 2D. Direction 2—View from Maddington with internal slopes indicated by stipple.
Vertical exaggeration x 2