Development of a primary school at Larsen Road,Byford

The Ministry of Education

Report and recommendations
of the Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 628
May 1992

THE PURPOSE OF THIS REPORT

This report contains the Environmental Protection Authority's environmental assessment and recommendations to the Minister for the Environment on the environmental acceptability of the proposal.

Immediately following the release of the report there is a 14-day period when anyone may appeal to the Minister against the Environmental Protection Authority's recommendations.

After the appeal period, and determination of any appeals, the Minister consults with the other relevant ministers and agencies and then issues his decision about whether the proposal may or may not proceed. The Minister also announces the legally binding environmental conditions which might apply to any approval.

APPEALS

If you disagree with any of the assessment report recommendations you may appeal in writing to the Minister for the Environment outlining the environmental reasons for your concern and enclosing the appeal fee of $10.

It is important that you clearly indicate the part of the report you disagree with and the reasons for your concern so that the grounds of your appeal can be properly considered by the Minister for the Environment.

ADDRESS

Hon Minister for the Environment
18th Floor, Allendale Square
77 St George's Terrace
PERTH WA 6000

CLOSING DATE

Your appeal (with the $10 fee) must reach the Minister's office no later than 5.00 pm on 22 May 1992.

ISBN 0 7309 4748 3
ISSN 1030 - 0120
Assessment No 583

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1. Location and existing environment

The Environmental Protection Authority has assessed a proposal by the Ministry of Education to build a primary school at Larsen Road, Byford, in the Shire of Serpentine-Jarrahdale. The proposed school will be located about 35km south-east of Perth and is intended to accommodate about 250 students.

The proposal was referred to the Environmental protection Authority in 1991 and assessed at the level of Consultative Environmental Review (CER). The site is located within the Peel-Harvey catchment area and over the Serpentine groundwater area.

The site lies at the base of the foothills. It is currently privately-owned land and used for grazing cattle. The ground on which the school is to be located contains a considerable amount of clay, which, because of its impermeable nature gives rise to substantial run-off during the winter months. A significant amount of water leaving the site in winter originates from the higher ground to the east and flows through the site. As the proposed site is within the Peel-Harvey catchment area any such run-off leaving the site, along with any nutrients will eventually find its way to the Peel-Harvey Estuary.

2. Proposal

The Ministry of Education proposes to build a primary school to cater for approximately 250 children and 20 staff on a 4ha site. Two sites are being considered — lot 2 and lot 3 Larsen Road. The environmental issues arising from the construction of a school are similar for both sites. The proposed school will provide the community of Byford with a readily accessible primary school. It is hoped by the proponent that the school will be ready for the beginning of the 1993 school year.

3. Submissions

As part of the CER process comments were received from the Shire of Serpentine-Jarrahdale, two government departments, the Health Department of Western Australia and the water Authority of Western Australia.

The issues raised in the submissions were concerned with effluent disposal and storm water drainage. The Health Department of Western Australia expressed concern that an inappropriate method of effluent disposal could risk public health and the Water Authority of Western Australia considered the proposed school would require its own storm water retention provisions.

The submission from the Shire of Serpentine-Jarrahdale raised similar environmental issues as those presented by the two government departments as well as several planning issues.

4. Environmental impacts and management

4.1 The Peel-Harvey Estuary

Nutrients arising from the proposed school have the potential to contaminate the Peel-Harvey Estuary and groundwater beneath the school.

The Peel-Harvey Estuary shows signs of severe eutrophication characterised by build-ups of algae which greatly reduce the recreational and environmental value of the waterbody. The cause of the eutrophication is an inflow of nutrients from the coastal catchment area into the

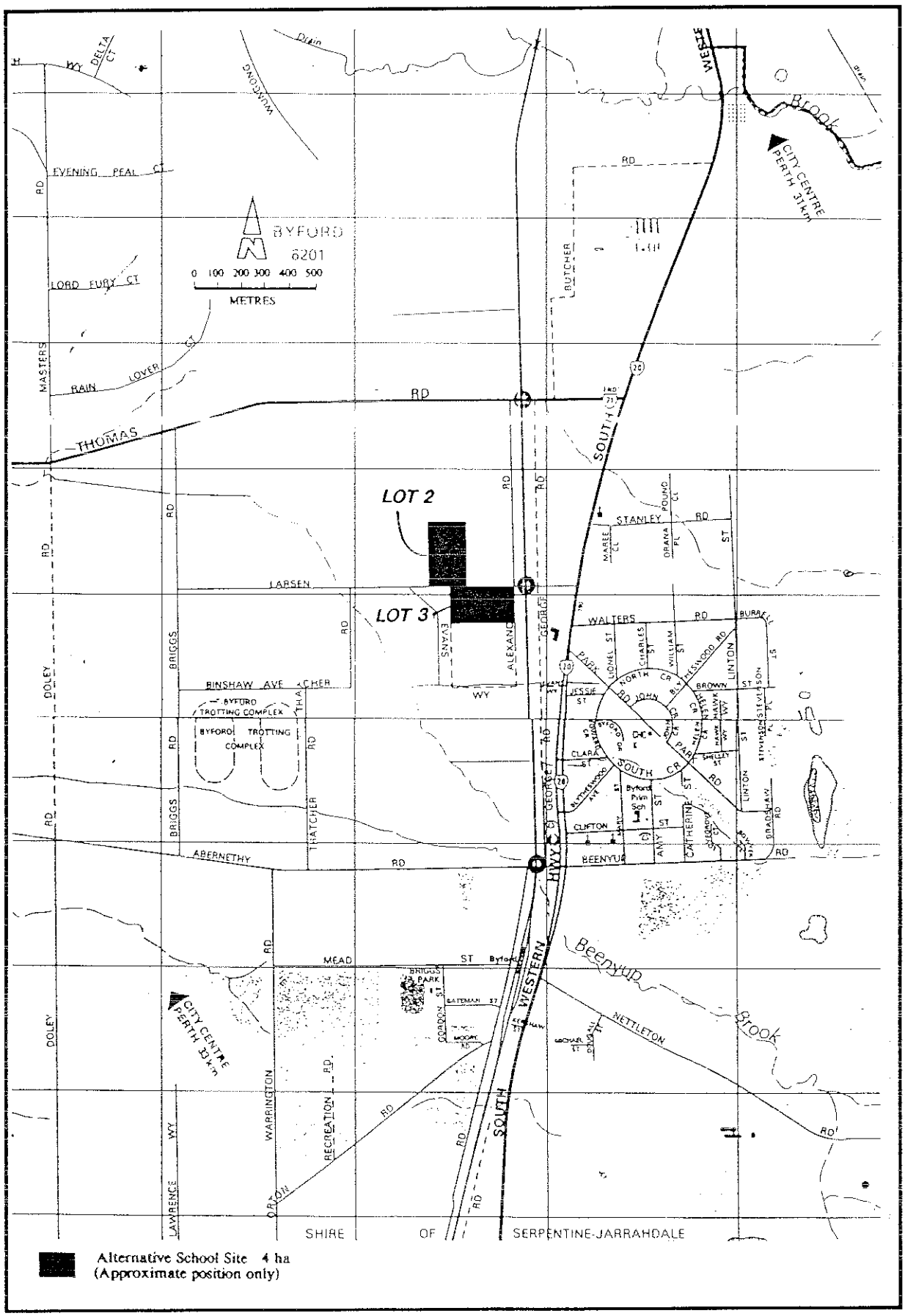

Figure 1. Location of proposed sites

Estuary. The input of nutrients into the Estuary is currently far in excess of what the Estuary is able to assimilate.

A management strategy for the Peel-Harvey Estuary has been implemented to reverse the eutrophication process by several means including the imposition of constraints on developments within the catchment. The constraints were introduced with the objective of reducing the flow of nutrients into the Estuary to about half the present level.

The Environmental Protection Authority has previously assessed development proposals within the Peel-Harvey catchment area and considers nutrient enrichment, originating from the catchment area, to be the predominant environmental issue affecting the Peel-Harvey Estuary. The proposed school is within the Peel-Harvey catchment area and the Authority has identified the control of nutrients leaving the site as the main environmental issue relating to the proposal. This applies predominantly to the management of sewerage effluent and drainage but also to surface application of nutrients, such as the use of fertiliser on sports grounds and other grassed areas.

4.1.1 Drainage management

Both proposed sites are located on soils which are fairly impervious to water and in an area where the winter groundwater table reaches the surface. These two factors give rise to a situation where considerable amounts of water leave the property as run-off during winter.

Surface run-off has the potential to transport considerable quantities of nutrients to the Peel-Harvey Estuary. Typically, the largest quantities of nutrients are transported in the run-off arising from the first heavy rains of winter. Heavy rains at this time of the year are able to pick up nutrients which have been accumulating on or near the surface of the ground since the end of the previous winter. It has been shown that a high proportion of sediment-bound nutrients contained in run-off will settle out in retention basins if there is enough time available for this to happen. As surface run-off is generally increased significantly by the hard surfaces associated with building developments it is the Authority's policy to require the developer to provide a retention basin which is capable of retaining the run-off water arising from a one in 10 year storm event for a period of three to four days.

A further potential difficulty in managing run-off is that the existing Water Authority of Western Australia drainage system in the area was designed to meet agricultural needs and according to that Authority is not appropriate for the requirements of urban development. Studies are currently in place to upgrade the drainage system to meet urban standards but these are not expected to be completed for some time and will only be implemented when urban development in the area proceeds.

The proponent has proposed a drainage system which will retain run-off water arising from a one in 10 year May storm event for at least three days. This may or may not be adequate for nutrient management. Drainage management needs to be examined further because of the inadequacies of the existing rural drainage system to deal with nutrient loads and to prevent flooding of the site in winter.

4.1.2 Effluent disposal

There are several possible ways in which effluent may be disposed of from the proposed school. The preferred option would be to have the school connect to a reticulated sewerage system and treated off-site. Reticulated sewerage is not currently available to Byford, however, and is not expected to become available for a few years. Accordingly, there is a need for effluent to be treated by alternative means in the interim.

The proponent has proposed either a conventional on-site effluent disposal system based on leach drains or an alternative on-site effluent disposal system in which the leach drains are situated in a membrane containing phosphorus retaining soils. In both instances, it was

proposed to fill the site with an additional metre of soil to gain the required separation from groundwater to enable the systems to operate during winter.

Neither of these systems is acceptable to the Health Department for health reasons or to the Environmental Protection Authority for environmental reasons. This is because the quantity of water flowing across the site and the hydrology of the site are such that winter flows are expected to saturate the one metre of fill through the hydraulic head resulting from the downhill flow of groundwater and through capillary action. The saturated soils around the leach drains will prevent the systems operating effectively in removing micro-organisms or nutrients. The Health Department has refused to approve the use of such systems

In addition, in previous assessments the Environmental Protection Authority has indicated that the maximum density of development it will consider for conventional on-site effluent disposal systems is one residence to one hectare. A school with an attendance of approximately 250 pupils is equivalent to a much higher density and would be required to be connected to deep sewerage. The Statement of Planning Policy[1] recently released by the Department of Planning and Urban Development for the Peel-Harvey catchment reflects this approach.

The Health Department has advised that there are two alternative systems which could be used to service the school until deep sewerage becomes available. The first is the use of holding tanks which would be pumped out on a regular basis. The second is the use of lined evaporative ponds. Both systems would ensure that there would be no nutrients moving into the catchment and would be acceptable to the Authority.

4.1.3 Nutrient and irrigation management programme

The possibility of nutrient run-off from ovals and other areas where fertiliser is applied can be reduced through the implementation of a nutrient arid irrigation management programme. In the CER document the proponent has made a commitment to develop such a programme in consultation with the Department of Agriculture. The Authority expects this programme to be developed and accepted by the Department of Education prior to the establishment of any gardens or grassed areas on the site.

4.2 Impact of railway noise on the school

Railway noise could have an unacceptable impact on the school population, especially if Lot 3 is used as the school site. The impact of noise from trains on the school population has not been investigated in the CER. Prior to construction of the school the proponent should demonstrate that noise limits will fall within acceptable criteria. The Authority also expects that noise impacts will conform to any occupational health and safety criteria recommended by the Department of Occupational Health and Safety.

4.3 Impact of the school's construction on residents

Dust and noise problems may be experienced by residents during the building of the school and noise generated from the school following its completion. The main problems are expected to be caused by vehicle movements and dust associated with the large amount of fill needed on the site. The Authority expects the proponent, in conjunction with the Shire of Serpentine-Jarrahdale, to manage the construction phase in a manner which creates the least amount of disturbance to nearby residents.

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[1] Town Planning and Development Act 1928. Statement of Planing Policy No 2. The Peel-Harvey Coastal Plain Catchment, 21 February 1992.

5. Conclusions and recommendations

Recommendation 1

The Environmental Protection Authority has concluded that the proposal to build a primary school at Larsen Road, Byford, as modified during the process of interaction between the proponent, the Environmental Protection Authority, the public and the government agencies that were consulted is environmentally acceptable.

In reaching its conclusion, the Environmental Protection Authority identified the main environmental factors requiring detailed consideration as:

- protection of the Peel-Harvey Estuary;
- management of drainage from the site;
- management of effluent disposal; and
- controls on nutrient management at the school to enable its on-going management to be consistent with the Peel-Harvey Management Strategy.

Accordingly, the Environmental Protection Authority recommends that the proposal could proceed subject to the Environmental Protection Authority's recommendations in this assessment report and the proponent's commitments given in the Consultative Environmental Review (Appendix 1), which are not inconsistent with the Environmental Protection Authority's recommendations in this assessment report.

Recommendation 2

Nutrient management

The Environmental Protection Authority recommends that the proponent be required to undertake the following:

2.1 The school should be connected to a reticulated sewerage system as soon as this becomes available to the locality.

2.2 In the interim, the school should be serviced by holding tanks or lined evaporative ponds to the satisfaction of the Health Department of Western Australia.

2.3 A stormwater disposal system shall be designed and constructed to minimise the discharge of nutrients from the site to the satisfaction of the Water Authority of Western Australia.

Recommendation 3

Noise and dust management

The Environmental Protection Authority recommends that the proponent be required to undertake the following:

3.1 Prior to the commencement of development, the proponent be required to conduct a noise study and to implement the management requirements to minimise the impacts of noise to the satisfaction of the Environmental Protection Authority.

3.2 During construction, the proponent should implement a dust mitigation strategy to minimise the emission of dust from the site to the satisfaction of the Environmental Protection Authority.

The Authority's experience is that it is common for details of a proposal to alter through the detailed design and construction phase. In many cases alterations are not environmentally significant or have positive effect on the environmental performance of the project. The Authority believes that such non-substantial changes, and especially those which improve environmental performance and protection, should be provided for.

The Authority believes that any approval for the proposal based on this assessment should be limited to five years. Accordingly, if the proposal has not been substantially commenced within five years of the date of this report, then such approval should lapse. After that time, further consideration of the proposal should occur only following a new referral to the Authority.

Appendix 1

Summary of proponent's commitments

6.0 SUMMARY OF COMMITMENTS

Project design and environmental management commitments given by the BMA include the following:

1. The school site will be designed and constructed to meet the Education Departments requirements, including filling the site to ensure that the grounds and play areas remain generally dry and free from the risk of periodic surface inundation.

2. The fill material to be introduced to the site will be predominantly yellow Spearwood sand or similar, having moderate phosphorus retention ability, to the satisfaction of the EPA.

3. The near surface soils of all areas to be landscaped will be amended using RMG, red loam or similar material that will increase the soil's phosphorus retention capability, and the amending material will be evenly distributed and blended in, to the satisfaction of the EPA.

4. The school soils will be verified as being pesticide free, to the satisfaction of the Education Department.

5. All areas to be grassed, including the oval, will be planted with Kikuyu.

6. Replanting of native trees and shrubs will be maximised to benefit nutrient retention and drainage management, but with regard to safety, security and maintenance constraints specified by the Education Department.

7. The Landscape Design Branch of the BMA, in consultation with the Department of Agriculture's Community Catchment Centre, will prepare specific guidelines and recommendations for fertiliser management for use by the school ground's keeping staff, to the satisfaction of the EPA and prior to the school's opening.

8. Temporary on-site sewage disposal facilities will be constructed and maintained in accordance with the manufacturers specifications and the Department of Health's Amended Sewage Policy Regulations, to the satisfaction of the Department of Health.

9. The proposed stormwater compensation basin will be designed to retain runoff from the site during a 1 in 10 year storm for at least three days.