Kalgoorlie industrial sites study
Industrial Lands Development Authority

Advice of the Environmental Protection Authority

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1. Introduction

The Industrial Lands Development Authority commissioned a study on two potentially heavy industrial sites near Kalgoorlie. The sites are at Gidji, 6km north and Hampton, 20km south, of Kalgoorlie respectively (Figure 1 and 2). The study report was released for public review by the Industrial Lands Development Authority on 22 June and closed on 30 September 1991. As the study did not constitute a proposal, the Environmental Protection Authority decided not to formally assess it but rather to offer advice during the public comment stage, via this Bulletin.

The Environmental Protection Authority (EPA) has reviewed the study and gives its comments below. The Authority reached its conclusions following site inspections and discussions of issues with relevant Government agencies and interested members of the public.

2. Environmental criteria

Before discussing the merits or otherwise of each site the Authority sets out below key environmental criteria used as a basis for providing comments on each site.

2.1 Sulphur dioxide

Near Kalgoorlie, most heavy industry produces sulphur dioxide. Both sites studied have been impacted upon by sulphur dioxide emissions, consequently, neither site could be considered as a "greenfield" site. A special Environmental Protection Policy for the control of sulphur dioxide in the air environment of the Kalgoorlie-Boulder residential area was promulgated in 1988. The purpose of the policy was to establish ambient air quality objectives for sulphur dioxide emitted by existing sources in and around the policy area (specifically gold roasting and nickel smelting industries). The objectives set by the policy require sulphur dioxide levels to be less than 2000 micrograms per cubic metre for a one hour averaging period, 1300 micrograms per cubic metre for a 3 hour averaging period, and 365 micrograms per cubic metre for a one day averaging period, in order to be acceptable.

Since then, the gold roasters have been shut down, and the operations relocated to Gidji. This has resulted in an overall improvement in air quality in the area covered by the policy. The Minister for the Environment has directed the Environmental Protection Authority to review the policy, and it is expected that new air quality standards and limits will be established after a public consultation period. All sources of emissions, including new sources, will be bound by the new policy. Consequently, the Environmental Protection Authority will propose, after public consultation, a new standard. The new policy will also cover a wider geographic area than the existing policy. To avoid unnecessary constraints on industry in the proposed estate, a buffer zone ranging 2-3km downwind, depending on the climatic conditions, is advisable.

2.2 Noise

Heavy industry produces noise and usually operates twenty four hours per day. Noise emissions from an industrial estate should not cause or contribute to noise levels in excess of:

1. 50dB(A) between 0700 hours and 1900 hours Monday to Saturday;
2. 45dB(A) between 1900 hours and 2200 hours Monday to Saturday;
3. 45dB(A) between 0700 hours and 2200 hours Sunday and Public Holidays;
4. 40dB(A) between 2200 hours and 0700 hours always;

when measured at the nearest residence or at a location which requires noise control.

These levels should not be viewed as normal operating levels. They are the upper limit above which action will be taken by the Environmental Protection Authority. The Environmental Protection Authority considers that noise below these levels is not unreasonable provided it does not include tonal components, impulses or other intrusive characteristics.

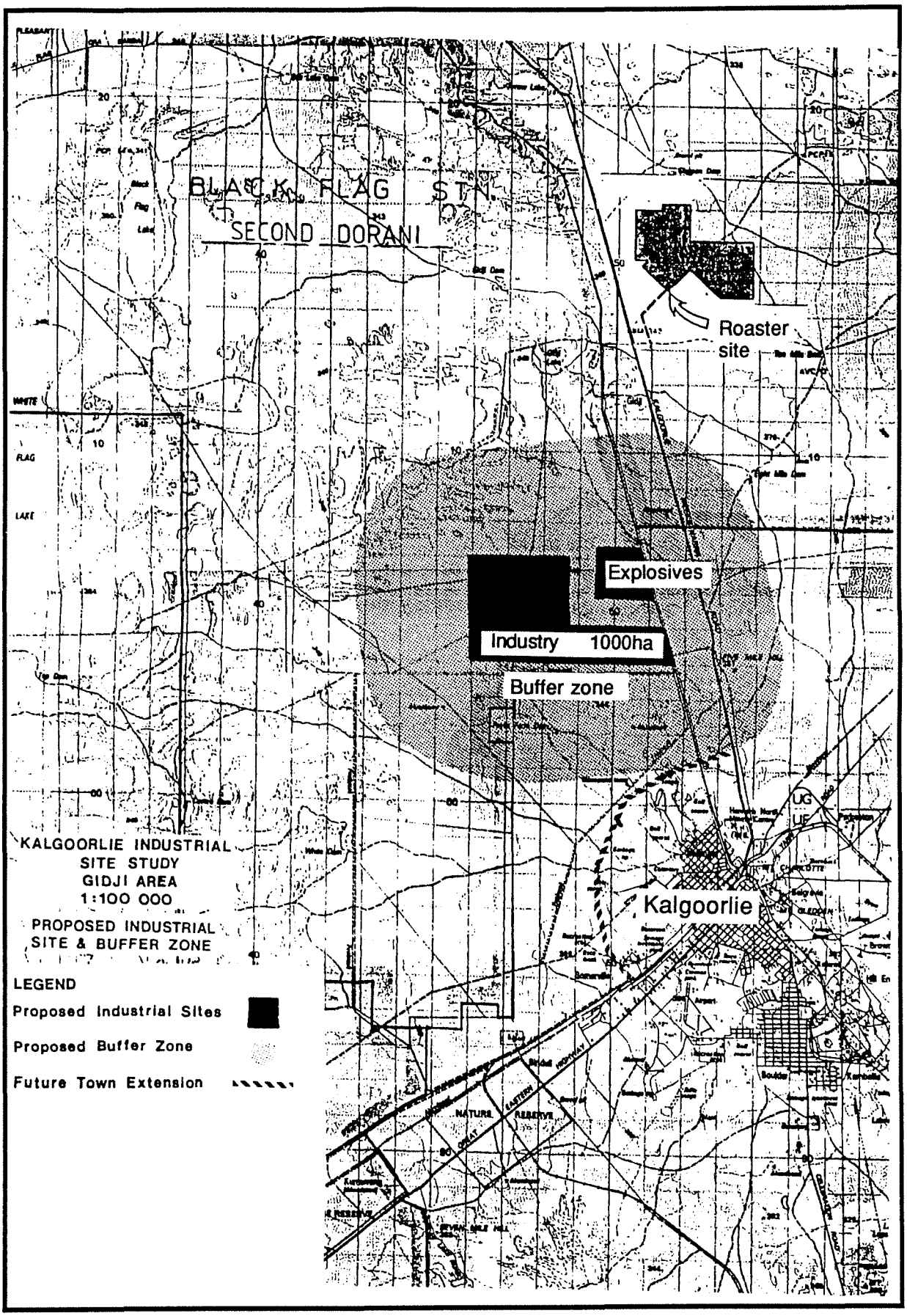

Figure 1. Proposed industrial site and buffer zone. Gidji area

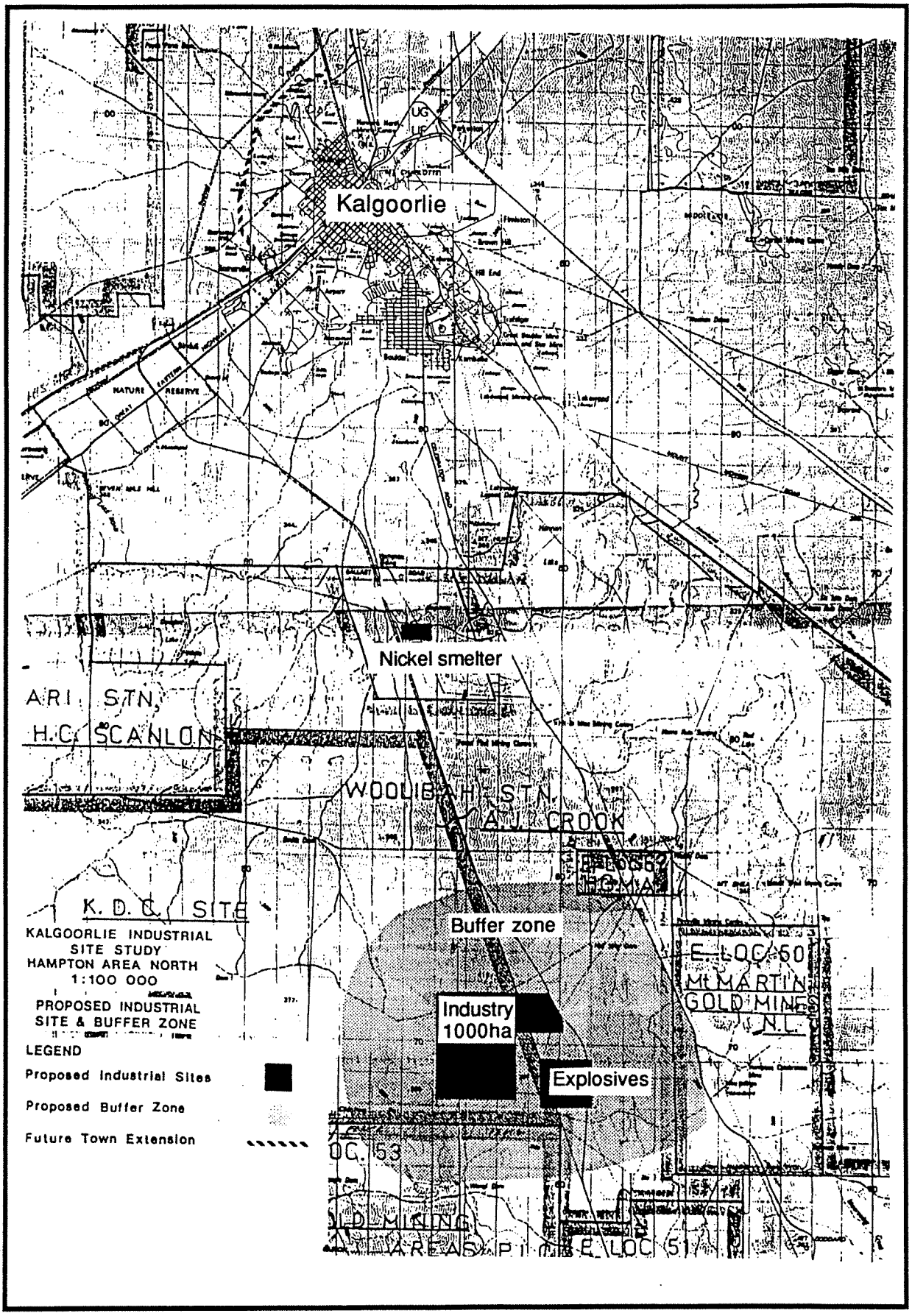

Figure 2. Proposed industrial site and buffer zone. Hampton area north

2.3 Dust

The concentration of airborne dust contributed by any premises licensed under the Environmental Protection Act should not exceed the acute impact level of 1000 micrograms per cubic metre, averaged over 15 minutes, at the boundary of the premises. For the longer term, at residences the NH&MRC guideline of an annual mean of 90 micrograms per cubic metre, measured over 24 hour periods should be a target not to be exceeded.

2.4 Risks and hazards

Present criteria for individual fatality risk levels are given in the EPA Bulletin 278, which states: "*An individual risk level in residential zones of less than 1 in a million a year is so small as to be acceptable to the Environmental Protection Authority.*"

New guidelines being finalised by the EPA are unlikely to affect the above requirement, but provide further guidance.

The size of the buffer zone between industrial and residential areas is dependent on the type and number of hazardous industries, the hazardous properties of the materials involved, the quantity and physical conditions of the materials stored, and meteorological and topographical conditions.

In the Kwinana industrial area the distance to the one in million individual fatality risk contour extends up to 700 metres from some hazardous industries.

2.5 Zoning of site

For the long term security and viability of any industrial site it is important there is no overlap with a residential and associated amenity area. Therefore industrial sites (including buffer zones) should be clearly and publicly zoned by the local authority to exclude residential activity of any form, or any other potentially incompatible form of landuse. This is best carried out during the establishment period of the industrial site, thus clearly indicating the landuse priority of the area.

3. Study sites

3.1 Gidji

This site is the one favoured by the Industrial Lands Development Authority. It is regenerated bushland which was cleared earlier this century. It is used for pastoral purposes and has no unique environmental features. Future plans for Kalgoorlie, however, could allow residential development to spread out to the southern extension of the proposed buffer zone. If this occurs, careful planning in terms of what types of industry that could be located in the industrial area would be required. It is possible that the nature of the industries which would be attracted there would require appropriate separation using risk criteria.

The study implies that the site would not be subject to excessive levels of sulphur dioxide during northerly winds because of the close-down practice of the roaster if Kalgoorlie is subject to unacceptably high levels of sulphur dioxide. The site is approximately halfway between the Gidji roaster and Kalgoorlie. Consequently, emissions from the roaster have the potential to impact on the workforce. It is unlikely that the present shut-down practice of the roaster would suffice for the Gidji site as it is much closer to the roaster than Kalgoorlie.

As the rail line servicing this area goes through Kalgoorlie, the transport of dangerous goods around Kalgoorlie is an issue that would need to be addressed if a proposal for the industrial estate were to be referred to the Environmental Protection Authority. For the site to be properly

planned, serious consideration would need to be given to building a spur rail-line to avoid Kalgoorlie. Ideally, road transport of dangerous goods should also avoid Kalgoorlie.

Other issues such as odour, containment of wastewater and contaminated stormwater (run-off), proper solid waste disposal, groundwater protection for stock purposes and water supply are issues which would need to be addressed. Odour can be particularly difficult to address as it depends largely on perception, and there is no numerical standard. The distance odour travels and its persistence depend on weather conditions, process management, and sensitivity of local residents. Whilst this may not be an issue now, it may become one if Kalgoorlie expands or the proposed buffer zone is not properly protected.

3.2 Hampton

This site is also regenerated bushland and is used for pastoral purposes. Presently it is being drilled for minerals. It has no obvious unique environmental character. It is in the path of the sulphur dioxide emissions from the nickel smelter located approximately 12km south of Kalgoorlie. The study summary states that the site is unacceptable as it would be subject to excessive sulphur dioxide emissions during northerly winds. The Environmental Protection Authority does not believe that present emissions from the nickel smelter should be taken for granted. The viability of this site for heavy industry should not be jeopardised by the present practices of the smelter operation.

This site has several advantages. Due to its remoteness it is unlikely to have serious constraints due to risks and hazards, odour, sulphur dioxide or noise. The general area is serviced by a rail spur which avoids the Kalgoorlie township. This spur-line could be modified to service the Hampton site.

Other environmental issues that would need to be addressed if a proposal were referred for this site are containment of wastewater and contaminated stormwater (run-off), proper solid waste disposal, water supply and groundwater protection for stock purposes.

4. Conclusions

The Environmental Protection Authority believes that both sites are manageable for heavy industry. Advantages of the Hampton site are its remoteness and the general area is serviced by a rail spur which avoids Kalgoorlie. A disadvantage is that the work force could be subjected to excessive levels of sulphur dioxide from the nickel smelter during northerly winds, however, the present levels of sulphur dioxide emissions from the smelter should not be taken for granted. Whilst the Gidji site could meet the site criteria given above, any industry emitting sulphur dioxide may have problems during a northerly wind as its contribution of sulphur dioxide to the Kalgoorlie airshed would be in addition to that from the Gidji roaster. Additionally, the workforce at the Gidji site may be affected by sulphur dioxide from the Gidji roaster unless further restrictions were placed on emissions from the roaster.