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Victorian Planning Authority

Cardinia Shire Council

Planning Scheme Amendment C 232

Officer Precinct Structure Plan

Review of

GHD report # 75469 dated 31 July 2018

draft

Contents

Figures

1. Introduction

PEC was engaged by GHD to conduct a review of their buffer assessment report[1] of the Hy Gain Feed Pty Ltd (Hy Gain) feed mill operations at Officer. That report was prepared for the Victorian Planning Authority (VPA) to inform their deliberations in relation to a Precinct Structure Plan (PSP) for the township of Officer in Cardinia Shire.

Tim Pollock, the principal of PEC was previously (up to February 2018) employed by GHD as a principal environmental engineer, and had authored a previous GHD report[2] for Vic Urban considering the appropriate buffer for Hy Gain in 2011. Mr Pollock has had no input in the preparation of the recent GHD report and this review is accordingly independent.

This review is informed by a site visit of the Hy Gain operations on 12 July 2018 by Michael Asimakis and Danny Craggs of GHD, Christolphe Delaire of Marshall Day and Tim Pollock , PEC. The tour was conducted by the Hy Gain maintenance engineer, Ken Duncanson and the Hy Gain CFO , Kevin Bariera.

[1] GHD 2018 “Officer PSP Buffer Assessment Review” Report to VPA, # 75469, 19 July 2018
[2] GHD 2011 “Report for Hy Gain Feeds Pty Ltd, Officer – Buffer Assessment”, report to Vic Urban, # 188370, 15 August 2011

2. Review of GHD Report

2.1 Context

The 2018 GHD report essentially adopts the same methodology as did the 2011 report, but with the advantage that the EPA guideline had in the interim been revised[3]. A significant change was the reduction of buffer distance classifications from eight (viz. 100, 200, 300, 400, 500, 1000, 2000, and 5000 m) down to six (viz. 100, 250, 500, 1000, 2000, and 5000 m). In addition, a new industry category, namely 'Grain and stockfeed mill and handling facility' was included with a default separation distance of 250 m.

This improvement enabled the previous device of using the category 'grain elevator' at 300 m default buffer in the previous guideline (i.e. to be derated on the annual throughput of the Grainco wheat terminal at Corio, Geelong to the Hy Gain annual throughput of 50,000 tonne) to be discarded in favour of the new, directly appropriate category.

The current amendment C232 proposes to change 'the local business' sub precinct, in which the Hy Gain premises is located, to 'Commercial 1'. This latter zoning will (subject to permit) allow a range of sensitive land uses in proximity to Hy Gain, so that the request by VPA to revisit the buffer assessment for Hy Gain in view of the above listed changes is timely.

2.2 Review of 2011 GHD Report (*Section 3*)

This section accurately summarises the methodology and results used and the subsequent discussions (see *section 3.3.4*) that resulted in a 200 m default buffer being agreed for Hy Gain.

2.3 Existing Conditions (*Section 4.1*)

Here the expansion in the export line capacity at Hy Gain can be seen when comparing Figure 3 to *Figure 2*. What was the export warehouse in *Figure 2* has been converted to a process operation, while a new export warehouse (see Figure 3) has been constructed to the east. The effect is to extend the 'activity area' at Hy Gain to the south by ~ 40 m, and the revised buffer will also therefore be so extended.

[3] The guideline AQ2/86, last revised in July 1990, was replaced on March 2013 by the 1518 Guideline.

The proposed increase in annual throughput to 120,000 tonne from the current 60,000 tonne as export and local markets increase will be effected by bringing on an extra shift, making use of the permitted 24 hour operation.

The dust emission controls consist of bag houses or cyclones with in some cases a cyclone followed by a baghouse.

GHD makes the point that dust emissions from the delivery areas during unloading will cover a wide range in particulate size and would be categorised as nuisance dust. The coarser fractions from these emissions can deposit downwind onto car bonnets or window sills. In contrast, fine (< 10 micron) dust fractions only would emit from a baghouse when a 'sock' fails (assuming the baghouse is preceded by a cyclone). The issue of dust particle size is addressed in section 2.6 of this report.

2.4 Future Upgrades at Hy Gain

In *section 4.2* GHD refer to a future installation of 10 silos in the north eastern corner of the premises. As this has been permitted, the activity boundary of the sources has been extended to include this installation and the default and directional buffers have been correspondingly extended in that direction. *Figure 4* shows the extent of these buffers – they now come close (within 50 m) to the residential zone east of Hy Gain.

2.5 Updates to Buffer distance Guideline

This was addressed in section 2.1 above. *Figure 4* in the GHD report shows the extent of constraint posed by the 250 m default buffer ; (i) to the north into the mixed use sub-precinct, (ii) to the east and north east into the core sub precinct and (iii) to the south and west into the balance of the local business sub precinct. As such there will be potential constraints on proposed sensitive land uses in each of these sub precincts.

GHD also envisages the buffer to be drawn from the premises boundary – rather than from the activity boundary as shown in *Figure 4*. Were this to be done, then the buffer extends further south as shown in *Figure 5*. Given that Hy Gain has in the past converted warehouses to process buildings, it is feasible to consider a future conversion of warehouse 3 to a process building so as to increase plant output. Then on that scenario, the designation of the activity boundary as the premises boundary is a reasonable scenario to adopt.

2.6 Factors for Site-Specific Variation to Default Buffer – Section 4.3

GHD accept that the proposed annual throughput of 120,000 tonne for Hy Gain would not allow a derating of the default buffer. However, the effect of site-

representative meteorology in defining the directions of good and poor dispersion and thereby forming a directional buffer can be quantified as there is a good meteorological dataset from the EPA AQMS at Pakenham. While a methodology to account for topography and meteorology (see Table 4 in Section 9 of the 1518 Guideline) has not been provided by EPA, the directional buffer method[4] used by GHD has been accepted in Planning Panel and VCAT hearings.

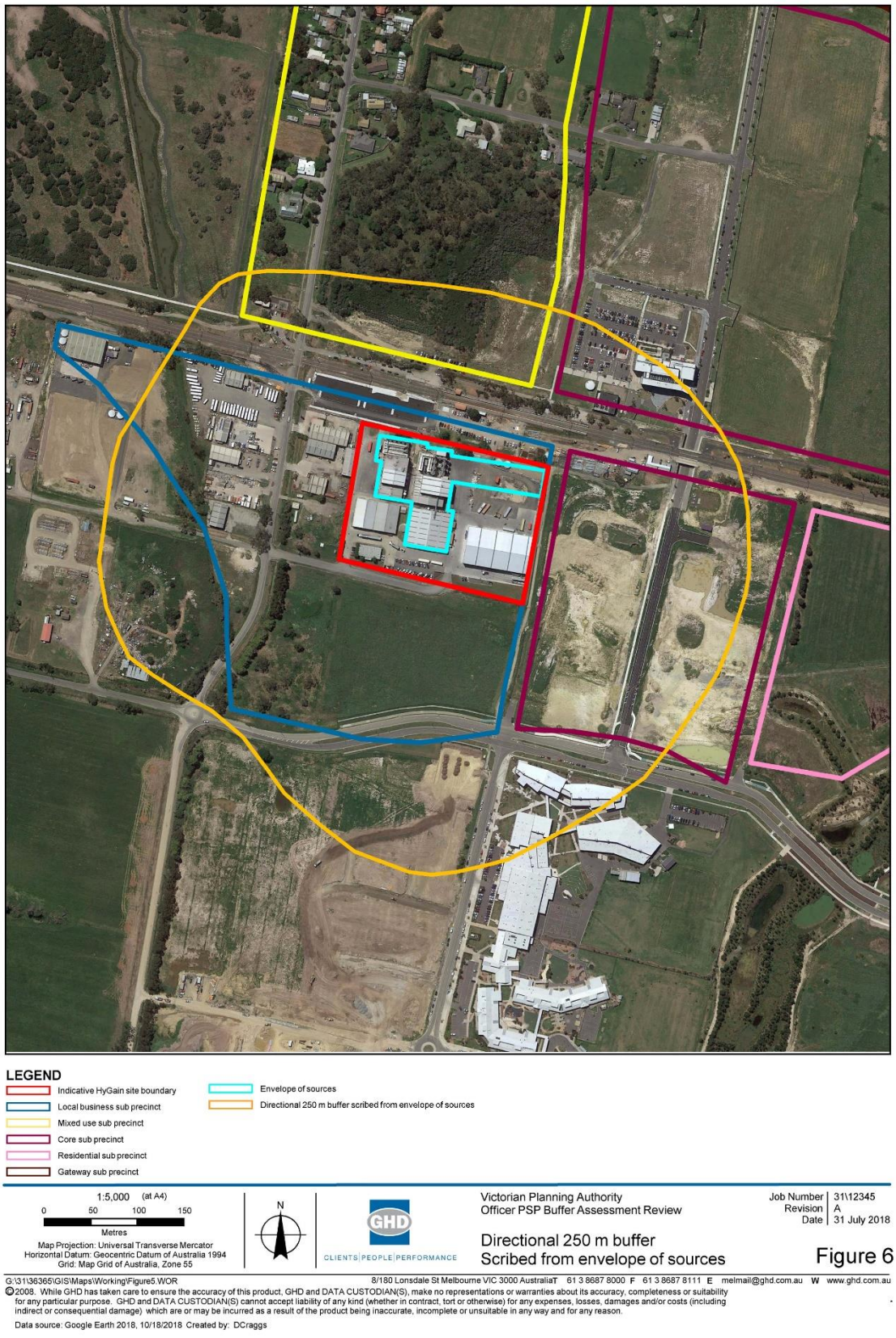
In essence the method ensures that for the area defined by the default radial buffer **D** (i.e. $\pi \mathbf{D}^2$), the directional buffer gives equal protection in the event of a process upset/malfunction independent of the direction of the sensitive land use from the industrial premises.

Figure 6 of the report (see below) shows that the 250 m directional buffer throws the following constraints on the nearby sub precincts:

- On the local business sub precinct where all but the western margin is constrained;
- On the mixed use sub precinct where from 60 m to 80 m of the southern margin is constrained;
- On the Core sub-precinct where almost the complete area of the parcel bordering the east margin of Hy Gain is constrained, and
- No constraint on the residential sub precinct further east of Hy Gain.

[4] Clarey P, Pollock T "Integrating Separation Distances with Dispersion Modelling" Enviro 04 28 March – 1 April 2004, Darling Harbor, Sydney.

Figure 1 GHD 2018 report – Figure 6



2.7 Recommendations

Section 5.1 concludes that the directional buffer developed in the GHD 2011 report is no longer appropriate based on; (i) the introduction of a default buffer specific to feed mills in the latest Separation distance guideline, and (ii) the changes in operations at Hy Gain since 2011. PEC agrees that is sensible to take account of these factors to revise the recommended buffer.

Section 5.2 considers the range of sensitive land uses as defined by the 1518 guideline. These are exampled by;

- Residences
- Child care centres
- Pre-schools
- Primary schools
- Education centres
- Informal outdoor recreation sites

Of these, only the last is a new addition to the list in the previous guideline.

GHD then considers the definition of 'sensitive land use' (given in section 13 of the guideline) as

"*Any land uses which require a particular focus on protecting the beneficial uses of the air environment relating to human health and wellbeing, local amenity and aesthetic enjoyment, for example….*"

This definition is more specific than that in the predecessor document (AQ2/86) which gave it as;

"*Land uses which warrant protection from amenity-reducing off-site effects of industry by the maintenance of a buffer distance"*

GHD appears to have taken the revised definition (viz. the inclusion of *human health and wellbeing*) as posing an obligation on the responsible authority not to countenance the allowance of these land uses within a buffer, i.e. a prohibition rather than a requirement to consider each specific case by means of a permit.

This then leads to their recommendation in Section 6 "that sensitive land uses are not established within the applicable 250 m directional buffer distance".

PEC considers that this recommendation is valid to the extent that it is plausible that the revised definition implies that human health and wellbeing could be compromised by not excluding these land uses from the buffer area. PEC notes that the guideline states (Section 4) that *"…ambient and hazardous air pollutants have not been considered in the development of this guideline"*.

Further it notes *"while some odorous substances are also ambient or hazardous air pollutants, this guideline only considers these substances in relation to their odorous impact, and only for off-site residual odour and dust emissions."*

In relation to odour, it is clear that the requirement to prevent odour impact off-site in the event of a process upset is a far more stringent requirement to ensure that human health is not impacted by that exposure. In all cases, the odour threshold of odorous compounds is well below the level of potential health impact (taken as the exposure standard ES divided by 30).

In relation to dust emissions the e situation is more complex. The health criteria are specified as design criteria (DC) in SEPP-AQM where the DC for fine (PM10) and very fine (PM2.5) particulates values of 80 and 60 µg/m^3 (based on a 1 hour average) are not to be exceeded. For so-called nuisance dust (i.e. unrestricted by size except able to be suspended in the air column) the criterion is set in SEPP-AQM as 330 µg/m^3. It is the fractions of dust coarser than 2.5 or 10 micron that are likely to deposit downwind – causing disamenity when settling on car bonnets, on washing hung out to dry or on window sills. A direct measure of this impact is done by some form of deposition gauge. Measurement of this latter (disamenity) effect is integrated over time typically over a month and a value of 4 g/m^2/mth (annually averaged) is used as a criterion for unacceptable disamenity.

In PEC's understanding, the buffers for industries whose residual emission of concern is dust rather than odour (e.g. concrete batching plants) are set based on the off-site disamenity of deposited dust. So, it would only involve issues of human health were the dust emission to be fine and have the chemical composition consequent on vehicle exhaust emissions into the air column typical of major cities (on which the fine particulate criteria were based).

In the case of feed mills it is unlikely that the composition of the grains/seeds being ground/flaked would give rise to concerns as to human health upon exposure during an upset (such as a failure of a bag house). Were it not so, then one would expect that EPA would licence emissions from the premises and discharge points would be sited to maximise initial dilution.

It is these considerations that PEC believes leads to a more muted recommendation than that given by GHD. Sensitive uses could properly be allowed within the proposed buffer if a more detailed proposition put by the 'agent of change' convinces the responsible authority that the potential disamenity is acceptable.

Factors that could lead to a favourable decision would include:

- The distance shortfall is marginal

- The established record of complaint is very low at comparable ranges from the premises
- The type of sensitive land use is one in which a section 173 agreement could be made to protect Hy Gain from complaint in the event of a dust emission.

3. Summary

PEC considers that the proposed 250 m directional buffer is appropriate for Hy Gain's operations and is consistent with the EPA separation distance guideline.

The adoption of the premises boundary as a conservative measure of the future activities boundary in drawing the buffer is reasonable and PEC supports that recommendation to VPA.

PEC is not convinced that the rewording of the definition of 'sensitive land use' in the 1518 guideline was intended to give extra force to the application of the default buffers as a measure required to ensure 'human health and wellbeing' is protected. Tim Pollock attended the several meetings convened by Matthew Gordon, EPA for stakeholders to comment on the drafts of the guideline and this issue was not raised for discussion. It would be useful to obtain EPA's view on this, and if indeed it was intended to use buffers to protect this additional beneficial use, then more information will be required of Hy Gain's fine particulate emissions to ascertain whether there are components of particular concern.