

July 28, 2026

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Via email: benjamin.scholes@sa.gov.au

Dear Ben,

RESPONSE TO REPRESENTATIONS OUTLINE CONSENT YATALA VALE RESIDENTIAL PARK

We act for Gary and Lorelie Williams (**Proponent**) in relation to the application for outline consent for the establishment of a Residential Park at 488-500 Yatala Vale Road, Yatala Vale (**Site**). The outline consent seeks approval of the land use, maximum single-storey building height, building envelopes, vehicular access, density and open-space framework which is further described below.

This letter responds to the matters raised in representations received during public notification, including representations both supporting and opposing the proposal, together with comments received from referral agencies and other interested parties.

This response should be read together with the original planning statement, the outline consent plan and the following additional material:

- Locality setback and redevelopment analysis;
- Yatahlia Manor frontage widths analysis;
- McDonald Game Lawyers: legal advice concerning the land use suitability of the Residential Park;
- Sonus: Environmental Noise Assessment; and
- Health Risk Services: Air Quality Assessment;

1. Scope of Outline Consent

For the avoidance of doubt, the outline consent seeks planning consent for the following aspects of the proposed development:

- the use of the Site as a Residential Park;
- a maximum building height of one building level;
- the building envelopes shown on the outline consent plan;
- the location of the access to Yatala Vale Road and the internal access framework shown on the outline consent plan;
- the density of the Residential Park, being a low-density outcome of no more than 30 residential park sites;

- a change in use of the existing Yatahlia Manor homestead from a dwelling to a communal facility to be used by residents of the Residential Park; and
- the open-space and landscape framework, including the retention and protection of healthy trees and established vegetation.

The outline consent does not seek approval for the detailed design or construction of any dwelling or other building. Those buildings and the associated physical works will be the subject of a later and separate development application for planning consent. That application must be consistent with the aspects approved by the outline consent and will assess the exact dwelling footprints within the approved envelopes, architectural design, dimensions and materials, detailed internal road and parking design, servicing infrastructure, stormwater and wastewater systems, detailed landscaping and other works-related matters.

The outline consent plan is therefore not merely illustrative. It is the spatial plan against which approval is sought for the building envelopes, access framework, density and open-space structure. It should be endorsed only to the extent that it depicts those outline consent aspects and should not be treated as approval of final dwelling designs, detailed engineering or construction works.

2. Nature and Operation of Residential Park

The proposal is not a conventional residential subdivision. The land will remain in single ownership and no additional allotments are proposed. Residents will obtain rights of occupancy under residential park agreements pursuant to the *Residential Parks Act 2007* and will share common facilities, common landscaped areas and internal access arrangements managed by the park owner or operator.

Yatahlia Manor is intended to be retained and adapted as the principal community hub for residents and their visitors. The established gardens, lake and open landscape will provide communal recreation and a high level of amenity. The management model will allow the landowner to retain responsibility for the common areas, landscaping, internal infrastructure and the overall presentation of the estate.

The operating model is therefore materially different from a conventional subdivision comprising individually owned and independently serviced and maintained rural-residential allotments. The use is intended to operate as a single, integrated and managed residential community within the existing high quality landscaped estate.

3. Land Use in the Rural Living Zone

Representors have questioned whether a Residential Park is an appropriate land use within the Rural Living (RuL) Zone. The proposal is a performance-assessed form of development and is therefore to be assessed against the relevant Performance Outcomes of the Planning and Design Code (**Code**).

In regard to land use, the following RuL Zone policies are relevant:

- DO 1** *A spacious and secluded residential lifestyle within semi-rural or semi-natural environments, providing opportunities for a range of low-intensity rural activities and home-based business activities that complement that lifestyle choice.*
- PO 1.1** *Residential development with complementary ancillary non-residential uses that do not place additional demands on services and infrastructure, and compatible with a secluded semi-rural or semi-natural residential character.*

A Residential Park is not identified in RuL Zone DTS/DPF 1.1. However, the absence of a land use from a DTS/DPF does not mean that it is prohibited or incapable of approval. Rather, it means that the proposal must be assessed on a performance basis against the applicable Performance Outcomes.

Based on our reading, a Residential Park is an expressly recognised as a form of residential development within the broader policy framework of the Code. This includes Design in Urban Areas (DIUA) Table 1 – Private Open Space, together with Transport, Access and Parking (TAP) POs 8.1 and 8.2 and Table 1 – General Off-Street Car Parking Requirements, which contain specific provisions dealing with private open space, parking and internal roads for Residential Parks.

Accordingly, the proposal is properly characterised as residential development for the purposes of RuL Zone PO 1.1. The key issue is not whether a Residential Park is residential in nature, but whether this particular form of residential development is acceptable on the Site having regard to the remaining elements of PO 1.1. In particular, the assessment must determine whether the proposal:

- will place unreasonable additional demands on services and infrastructure; and
- is compatible with a secluded semi-rural or semi-natural residential character.

The proposal does not introduce industrial, commercial or intensive recreational activity into the locality, therefore, the relevant question is whether the proposed residential model can operate without undermining the spacious, secluded and landscape-dominant character sought by the RuL Zone or placing unreasonable demands on services and infrastructure.

In our opinion, the proposed land use is capable of satisfying those outcomes because:

- the Site is a large, established landscape estate capable of accommodating additional residential occupation while retaining Yatahlia Manor, the lake, substantial areas of open space and the established vegetated perimeter, including significant trees identified for retention;
- the Site will remain a single allotment under common ownership and management;
- residents will share common access, infrastructure, facilities and open-space areas;
- the outline consent concentrates residential occupation within the southern portion of the Site, south of Yatahlia Manor and away from the northern quarry interface;
- the principal landscape setting associated with Yatahlia Manor, the lake and the northern garden area will be retained;
- the maximum density, single-storey building height, building envelopes, access arrangements, open-space framework and principal landscape and tree-retention areas will be fixed through the outline consent;
- the detailed design of future dwellings and associated works will remain subject to a subsequent development application and assessment against the applicable Code policies, including those relating to building design, residential amenity, landscaping, access and infrastructure;
- the Residential Park can be supported through common infrastructure and a coordinated management framework; and
- the accompanying technical evidence addresses whether future residents can be appropriately protected from noise and dust associated with the nearby quarry without unreasonably constraining its lawful operation.

The proposal would establish a broader pattern of residential occupation across the Site. In considering the relationship with the quarry, it is relevant that none of the proposed residential park building envelopes would be located closer to the quarry than the existing dwelling at Yatahlia Manor.

The implications of this arrangement for future residential amenity and the continued lawful operation of the quarry are addressed in the interface assessment in Section 6 of this report.

4. Density

Several representors characterise the proposal as an urban or high-density residential development. It's acknowledged that the proposal will increase the residential density compared with the existing dwelling on the Site. As maximum density is an expressed aspect of the outline consent, the following RuL Zone policies to be of particular relevance:

- DO 1** *A spacious and secluded residential lifestyle within semi-rural or semi-natural environments, providing opportunities for a range of low-intensity rural activities and home-based business activities that complement that lifestyle choice.*
- PO 1.1** *Residential development with complementary ancillary non-residential uses that do not place additional demands on services and infrastructure, and compatible with a secluded semi-rural or semi-natural residential character.*
- PO 3.1** *Allotments/sites created for semi-rural residential purposes are consistent with the density expressed in any relevant Minimum Site Area Technical and Numeric Variation¹ or are of suitable size and dimension to contribute to the existing semi-rural pattern of development consistent to the locality and suitable for their intended use.*

We first note that no new legal allotments are proposed. The Site will remain a single allotment contained within the existing Certificate of Title. All residential park sites will share the same access to Yatala Vale Road and will be serviced by common infrastructure. Nevertheless, the reference in PO 3.1 to 'allotments/sites' means that the policy cannot be disregarded solely because no land division or new allotments are proposed.

The relevant performance assessment is therefore whether the proposed Residential Park, considered as an integrated use of the entire Site and constrained by the approved maximum density, building envelopes and open-space framework, can preserve the spatial and landscape outcomes sought by the RuL Zone, notwithstanding that the individual residential park sites will be smaller than the 4-hectare benchmark applicable to a conventional rural-residential land division.

The proposal is distinguishable from conventional urban subdivision in the following respects:

- the Site will remain a single landholding under common ownership and management;
- no new Certificates of Title will be created;
- residents will share common open space, facilities, infrastructure and internal access arrangements;
- Yatahlia Manor, the lake and the established gardens will remain the principal organising elements of the property;
- the outline consent provides substantial landscaped setbacks to the external boundaries and excludes residential park sites from the northern landscape area adjoining the quarry;
- all future dwellings will be low scale, single-storey buildings and confined to the approved building envelopes; and
- the maximum dwelling yield and approved spatial framework will prevent subsequent intensification or expansion beyond the outline consent parameters without a further variation application.

¹ The applicable Minimum Site Area Technical and Numeric Variation is 4 hectares.

The relevant question is not whether each residential park site independently resembles a 4-hectare rural-living allotment. Rather, the question is whether the proposed density can be accommodated within the surrounding landscaped setting while retaining, across the Site as a whole, a spacious, landscape-dominant and semi-rural character.

The proposal should also be considered within the broader context of the locality. The surrounding area comprises an established transition between rural-living land to the north of Yatala Vale Road and more conventional urban residential development within the General Neighbourhood (GN) Zone to the south.

Within the defined RuL Zone locality:

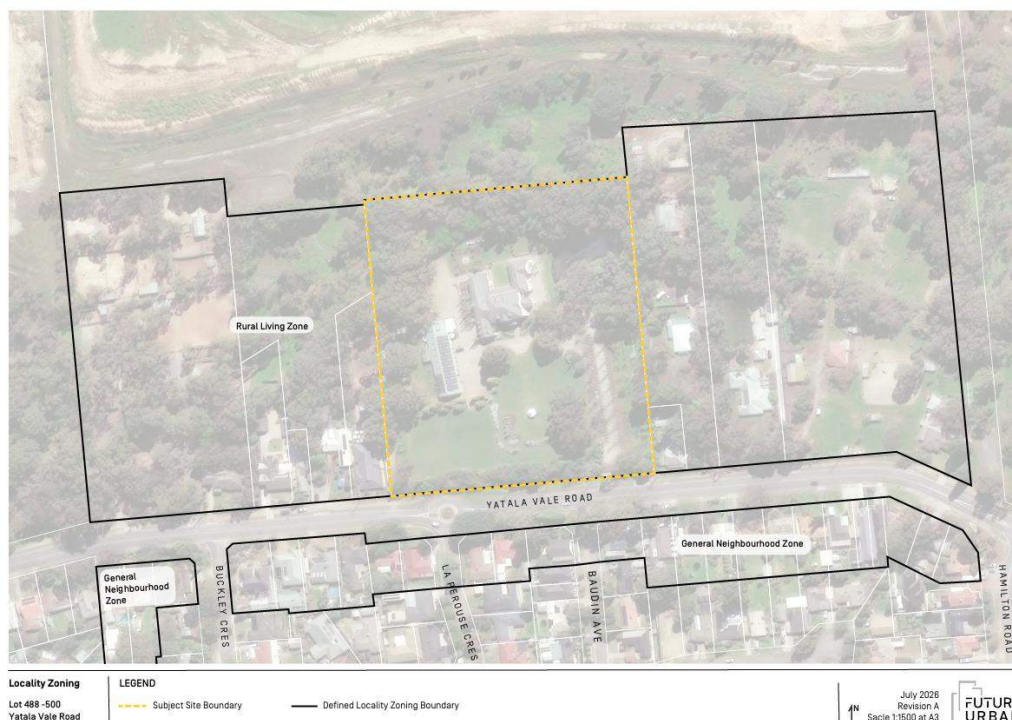
- the relevant land area is approximately 10.4ha (103,544m²);
- 10 existing dwellings are sited within the defined area;
- existing residential site areas range from approximately 572m² at 482 Yatala Vale Road to approximately 29,064m² comprising the Site;
- all existing allotments are substantially less than 4ha in area; and
- the existing residential density is approximately 1 du/ha.

Within the adjacent GN Zone:

- the relevant land area is approximately 1.4ha (14,459m²);
- 25 existing dwellings are sited within the defined area;
- allotment sizes generally range from approximately 380m² at 545A Yatala Vale Road to 1,211m² at 509 Yatala Vale Road); and
- the existing residential density is approximately 17 du/ha.

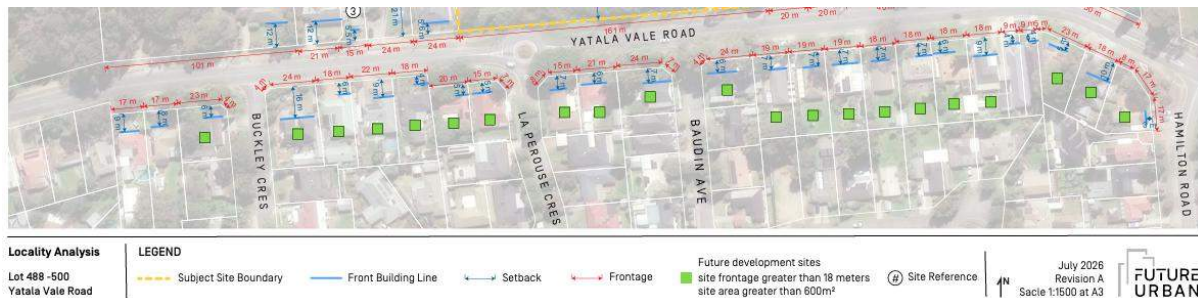
The localities referred to above are shown in Figure 1 below:

Figure 1 *RuL Zone and GN Zone localities*



There also remains a degree of theoretical infill potential within the GN Zone locality. Almost all of the existing allotments are greater than 600m² in area and have frontage widths exceeding 18 metres. At a purely theoretical level, further division of those properties into allotments of approximately 300m², with frontages of approximately 9 metres, could increase the number of dwellings within the defined area to approximately 48. This would equate to an indicative residential density of approximately 33du/ha.

Figure 2 Future Yeild potential in GN Zone



That calculation is provided only to illustrate the potential density outcome within the GN Zone. It does not assume that every allotment will be divided or that all such development would necessarily obtain approval, as each proposal would remain subject to site-specific constraints and assessment against the applicable Code policies.

Based on the proposed maximum density of 30 dwellings, the Residential Park would have an indicative density of approximately 10 du/ha across the Site. Across the defined RuL Zone locality, the proposal would increase the indicative residential density from approximately 1 dwelling per hectare to approximately 4 dwellings per hectare.

The numerical increase is relevant, but density should not be considered in isolation from the physical and operational form of development. Unlike a conventional subdivision, the proposal will not produce separately owned allotments, individual access points to Yatala Vale Road or a regular pattern of street-facing dwellings. Its spatial character will instead be determined by the approved building envelopes, retained landscape areas, shared infrastructure and common management arrangements.

The proposed density has been structured to retain the characteristics that are most important to the RuL Zone. The outline consent framework preserves:

- substantial areas of communal open space;
- established vegetation and significant trees identified for retention;
- the landscape setting associated with Yatahlia Manor and the lake;
- substantial landscaped setbacks to the external boundaries;
- a broad open and landscaped area between the principal residential park area and the northern quarry interface; and
- a low-scale form of single-storey development confined to defined building envelopes.

These characteristics will allow the Site to retain a spacious, landscape-dominant and semi-secluded rural character, consistent with the residential lifestyle sought by RuL Zone DO 1. The proposed density will also be accommodated in a form that remains compatible with the secluded semi-rural or semi-natural residential character sought by PO 1.1, while the shared servicing and infrastructure arrangements avoid the fragmented infrastructure demands ordinarily associated with separately titled residential allotments.

For these reasons, the proposed maximum density is considered appropriate when assessed as part of the outline consent framework and in the context of the locality. It provides a transitional residential outcome that responds to the Site's location, preserves the dominant landscape and semi-secluded rural character of the property, and avoids the physical form and consequences of conventional urban subdivision. Accordingly, the proposed density is consistent with the outcomes sought by RuL Zone DO 1, PO 1.1 and PO 3.1.

5. Character, Pattern of Development and Built Form

Representors have raised concerns that the proposed Residential Park would be inconsistent with the existing rural or semi-rural character of the locality and would introduce an urban form of development into the RuL Zone.

Our assessment of the proposal has had regard to the existing pattern of development within the immediate locality, the broader transition between the GN Zone, the RuL Zone and the quarry, and the built-form and spatial parameters proposed to be fixed through the outline consent.

RuL Zone policies of particular relevance are:

- DO 1** *A spacious and secluded residential lifestyle within semi-rural or semi-natural environments, providing opportunities for a range of low-intensity rural activities and home-based business activities that complement that lifestyle choice.*
- PO 1.1** *Dwellings are sufficiently separated from site boundaries and of a scale that reinforces the semi-rural or semi-natural character and amenity.*
- PO 2.1** *Dwellings are sufficiently separated from site boundaries and of a scale that reinforces the semi-rural or semi-natural character and amenity.*

The corresponding DTS/DPF 2.1 provides a useful quantitative reference point. For an allotment with an area of 1 hectare or more, it anticipates dwellings that:

- are set back at least 20 metres from all allotment boundaries;
- do not exceed two building levels or 9 metres in height; and
- do not exceed a wall height of 6 metres.

While these measures are not mandatory requirements for a performance-assessed development, they assist in identifying the setbacks and scale ordinarily associated with the spacious and semi-rural character ordinarily sought by PO 2.1.

Existing pattern of development

The immediate RuL Zone locality along Yatala Vale Road comprises a sequence of 10 allotments extending generally from the allotments at approximately 470–478 Yatala Vale Road in the west to 510–520 Yatala Vale Road in the east.

The primary road frontages of those allotments vary considerably, measuring approximately, from west to east as detailed in Table 1 below:

Table 1 Site frontage and setback characteristics in RuL Zone

Ref. No.	Site Address	Primary Road Frontage Width	Primary Road Setbacks	Rear Boundary Setbacks
1	470-478 Yatala Vale Road	101m	12m	176m
2	480 Yatala Vale Road	21m	12m	214m
3	482 Yatala Vale Road	15m	5.5m	216m
4	484 Yatala Vale Road	24m	21m	134m
5	486 Yatala Vale Road	24m	5.6m	223m
6	488-500 Yatala Vale Road (the Site)	161m	91m	44m
7	502 Yatala Vale Road	20m	3m	256m
8	504 Yatala Vale Road	20m	72m	119m
9	506-508 Yatala Vale Road	40m	30m	149m
10	510-520 Yatala Vale Road	68m	9m	183m

Figure 3 Primary road frontage widths and setbacks (front and rear)



There is no uniform allotment frontage, consistent front setback or regular rhythm of development pattern along this section of Yatala Vale Road within the RuL Zone. Dwellings range from being positioned relatively close to the road to being substantially recessed and screened within their allotments.

A more consistent characteristic is the considerable depth of the allotments and the concentration of residential development within their front or central portions. Rear setbacks range from approximately 44 metres to 256 metres, with all properties other than the Site having a rear setback exceeding 100 metres.

The prevailing pattern is therefore characterised by deep allotments containing relatively dispersed residential development, with substantial open, landscaped or semi-rural areas extending behind the dwellings towards the quarry interface. This rear landscape component provides an important semi-rural style transition between the residential frontage to Yatala Vale Road and the extractive-industry land to the north.

The semi-rural character experienced from Yatala Vale Road is also strongly influenced by mature vegetation, particularly the large native trees located on private land and visible from the public road. The character is not derived solely from allotment size or the numerical density of dwellings. It is also established by:

- the spacing and limited scale of buildings;
- substantial areas of open land behind dwellings;
- mature vegetation and landscaped setbacks;
- the absence of a continuous develop pattern or regular development rhythm; and
- the limited visibility of some buildings from the public realm.

The locality therefore has a semi-rural character, but it is not uniform. It contains a variety of allotment widths, dwelling setbacks and degrees of visual exposure, while maintaining a broader pattern of low-scale residential development within a mature landscape setting.

Character of the subject Site

The subject Site is distinct from much of the surrounding pattern. It has a frontage of approximately 161 metres, substantially wider than most nearby allotments, and Yatahlia Manor is set back approximately 91 metres from Yatala Vale Road.

The Manor is therefore not a prominent or dominant feature when viewed from the road. Its visibility is moderated by its substantial setback and the dense established vegetation along the Yatala Vale Road frontage. The lake, established gardens, mature trees and extensive open areas collectively give the Site a secluded and landscape-dominant character.

These characteristics provide the Site with a greater capacity to visually absorb the sensitively located Residential Park development than would be available on the narrower and less vegetated allotments elsewhere in the locality.

That capacity does not mean that character impacts can be disregarded. Rather, it means that the acceptability of the proposal depends upon the extent to which the outline consent preserves the Site's established landscape structure and constrains the location and scale of future built form.

Proposed built-form and open-space setting

The outline consent does more than establish the Residential Park land use. It also fixes:

- a maximum single-storey building height;
- defined building envelopes;
- the maximum residential density;
- the Yatala Vale Road access location and internal access framework; and
- the principal open-space and landscape areas.

Those parameters are central to determining whether the proposed density can be accommodated without an unacceptable loss of the semi-rural character sought by RuL Zone DO 1, PO 1.1 and PO 2.1.

The proposed outline consent demonstrates that the Residential Park can be accommodated while retaining the principal features that presently define the Site, including:

- Yatahlia Manor as the principal built and communal focus;
- the lake and northern garden setting;
- substantial areas of communal open landscape;
- healthy regulated and significant trees;
- established vegetation along the Site boundaries and Yatala Vale Road frontage; and
- a broad landscaped separation between the residential park area and the northern boundary adjoining the quarry land.

The proposed concentration of residential park sites within the southern portion of the Site is also generally consistent with the broader pattern of development in the locality. Residential activity will remain associated with the Yatala Vale Road side of the deep landholding, while the more open and landscape-dominant northern part of the Site will continue to provide a transition towards the quarry interface.

The single-storey height limitation proposed by the outline consent is materially below the two-building-level and 9 metre height contemplated by DTS/DPF 2.1. It will ensure that future dwellings remain low in scale, generally sit below the predominant mature tree canopy and avoid the visual prominence that could arise from two-storey or elevated development.

The approved building envelopes will confine future dwellings to defined parts of the Site and prevent the later spread of built form into the principal landscape and open-space areas. The envelopes also provide the mechanism for maintaining external boundary separation and avoiding a continuous or visually urban pattern of development.

Building separation and apparent frontage pattern

In assessing the proposal against PO 2.1, the separation of future dwellings from the external boundaries of the Site is particularly relevant to the development's presentation to adjoining land and the public realm.

The spacing between individual residential park sites is also relevant to the internal spatial character and amenity of the development. However, those internal sites will not operate as separately titled and independently developed allotments. They will form part of a single managed landholding supported by shared access, infrastructure, landscaping, facilities and open space.

The outline consent plan demonstrates that the proposed building envelopes can be accommodated within an established landscape framework and with substantial separation from the external boundaries. This will assist in avoiding built form presenting as a continuous or visually urban edge to adjoining land.

Along the southern portion of the Site, the apparent frontage widths of the proposed building-envelope groupings, measured generally parallel to Yatala Vale Road, are approximately 44 metres, 22 metres, 23 metres, 21 metres, 14 metres and 27 metres as shown in Figure 4 below:

Figure 4 Apparent frontage widths of building envelopes



These widths sit within the broad range of allotment frontages evident along the adjoining RuL Zone section of Yatala Vale Road and will contribute to a varied rather than uniform development rhythm.

This comparison is not intended to suggest that the residential park sites are equivalent to conventional rural-living allotments. Rather, it demonstrates that the distribution of future built form along the southern portion of the Site will not establish the narrow, regular and repetitive frontage pattern ordinarily associated with an urban subdivision.

The front setbacks of the proposed building envelopes are also varied, consistent with the irregular setback pattern evident along Yatala Vale Road. More importantly, the substantial established vegetation along the Site's southern boundary is to be retained as part of the approved open-space and landscape framework. The future dwellings will therefore be substantially screened and have limited visibility from Yatala Vale Road.

The combination of varied building-envelope widths, non-uniform setbacks, single-storey height, retained vegetation and the absence of individual access points to Yatala Vale Road will ensure that

the development does not present as a conventional urban subdivision comprising separate street frontages, individual crossovers, front fencing and a continuous line of dwellings.

Instead, the Site's external presentation will continue to be defined predominantly by the established vegetated frontage, mature tree canopy and low-scale built form positioned behind the landscape edge. The approved spatial framework will therefore preserve the features that are most influential in maintaining the semi-rural character experienced from Yatala Vale Road.

6. Interface Management

Representors have raised concerns regarding the potential interface impacts of the proposed Residential Park upon adjoining residential properties and, conversely, the potential impacts of the adjoining quarry upon future residents.

The relevant policies of the Interface between Land Uses (IBLU) module require consideration of both sides of that relationship as follows.

DO 1 *Development is located and designed to mitigate adverse effects on or from neighbouring and proximate land uses.*

PO 1.1 *Sensitive receivers are designed and sited to protect residents and occupants from adverse impacts generated by lawfully existing land uses, lawfully approved land uses and land uses desired in the zone.*

PO 1.2 *Development adjacent to a site containing a sensitive receiver, a lawfully approved sensitive receiver or a zone primarily intended to accommodate sensitive receivers is designed to minimise adverse impacts.*

PO 4.1 *Development that emits noise (other than music) does not unreasonably impact the amenity of sensitive receivers (or lawfully approved sensitive receivers).*

PO 10.1 *Sensitive receivers are separated from existing mines to minimise the adverse impacts from noise, dust and vibration.*

Collectively, these policies require the proposal to be located and designed to manage effects in both directions. The assessment must therefore consider:

- whether the proposed Residential Park will cause unreasonable noise or other amenity impacts upon existing sensitive receivers; and
- whether future residents of the Residential Park can be protected from noise, dust and vibration associated with the lawful operation of the adjoining quarry.

6.1 Interface with Existing Residences

Representors have raised concerns that the Residential Park may result in increased residential activity, vehicle movements, noise, lighting and general disturbance to adjoining properties.

The proposed occupation will comprise ordinary day-to-day residential activity. It will not involve intensive commercial or entertainment activity or regular large-scale gatherings. The outline consent also fixes a maximum single-storey building height, defined building envelopes, substantial landscaped areas, retention of established boundary vegetation and a single access point to Yatala Vale Road.

The Sonus assessment considers noise generated by typical residential air-conditioning equipment and resident and visitor vehicle movements. It predicts a highest noise level of 40 dB(A) at an existing sensitive receiver during both the day and night, comfortably achieving the applicable World Health

Organisation recommended outdoor noise levels. Sonus therefore concludes that noise from the Residential Park will not unreasonably affect the amenity of nearby sensitive receivers.

It is also relevant that the Site is presently approved for use as a function centre accommodating up to 100 patrons, with the potential for intermittent concentrations of traffic, parking demand, social noise and visitor activity. By comparison, the Residential Park will generate a more regular and predictable pattern of activity associated with permanent residential occupation.

On the basis of the spatial parameters fixed through the outline consent and the findings of the Sonus assessment, the proposal is capable of maintaining an appropriate interface with adjoining residential properties, consistent with IBLU POs 1.2 and 4.1.

6.2 Interface with the Quarry

Representors have also raised concerns regarding potential exposure of future residents to quarry-related noise and dust and the possibility that the proposal may constrain the quarry's lawful operation.

While the proposal broadens the pattern of residential occupation across the Site, it does not reduce the existing minimum separation between the quarry and sensitive receivers. The proposed dwellings will be no closer to the quarry than existing nearby residences, including the existing residence at Yatahlia Manor.

The quarry-residential interface is therefore not a new relationship created by the proposal. Residential occupation has long existed on the Site and adjoining land, and there is no identified evidence that this established relationship has caused a material constraint upon the reasonable and lawful operation of the quarry.

The relevant issue is whether the proposed dwellings can be appropriately sited and designed to provide acceptable residential amenity without requiring an unreasonable alteration to lawful quarry operations. That question has been considered directly through the appended noise and air-quality assessments.

6.2.1 Noise

The Sonus assessment considers noise from the existing and potential future operation of the nearby extractive industries. It notes that current activity within the quarry areas closest to the Site is limited, that the applicable operating hours are predominantly confined to daytime periods and that an earth mound has been established along the quarry boundary.

Sonus concludes that:

- the proposed dwellings will be no closer to the quarry than existing nearby residences;
- future dwellings can incorporate minimum 6.38 mm laminated glazing;
- the recommended glazing will achieve the applicable internal noise goals by a margin of at least 5 dB(A); and
- the proposed dwellings will not place an additional constraint on the ongoing operation of the approved extractive industries.

Unlike many existing older dwellings in the locality, the future dwellings can be purpose-designed and constructed to incorporate contemporary, project-specific acoustic treatments from the outset. The detailed construction measures will be resolved and secured through the subsequent development application, or by way of a condition imposed on the outline consent requiring that future dwellings are constructed using a minimum 6.38mm laminated glazing to all windows.

The Sonus findings support the conclusion that the proposed building envelopes can accommodate future dwellings with an acceptable acoustic environment while protecting the continued lawful operation of the quarry, consistent with IBLU POs 1.1 and 10.1.

6.2.2 Dust and Air Quality

The HealthRisk Services report assesses potential impacts associated with PM₁₀, PM_{2.5} and respirable crystalline silica, drawing upon the extensive 12-month monitoring program undertaken for the Golden Grove Neighbourhood investigations and data from the nearby HVt4 monitoring location.

The report finds that:

- respirable crystalline silica and PM_{2.5} concentrations remained below the applicable annual health-based guideline values;
- the annual average PM₁₀ concentration at the nearby monitoring location complied with the relevant guideline;
- the limited daily PM₁₀ exceedances were comparable in frequency and magnitude to those recorded at SA EPA monitoring locations;
- analysis at a quarry-boundary monitoring location found no statistically significant difference in PM₁₀ or PM_{2.5} concentrations between days when quarry activities were occurring and days when they were not; and
- suitably designed vegetation buffers and surface treatments can provide an additional precautionary layer of dust mitigation.

HealthRisk Services concludes that the proposed Residential Park can be designed and sited to protect residents from adverse air-quality impacts associated with current and future quarry activities and that potential impacts from PM₁₀, PM_{2.5} and respirable crystalline silica can be adequately managed.

Those findings support the conclusion that the proposed separation and landscape framework provide an appropriate response to the air-quality aspects of IBLU POs 1.1 and 10.1.

6.2.3 Protection of Lawful Quarry Operations

The proposal should not be approved on an assumption that the quarry will subsequently be required to curtail or modify its lawful operations to protect future residents. Rather, the proposed dwellings must be capable of achieving an acceptable level of amenity under the quarry's reasonably foreseeable lawful operating conditions.

The appended technical assessments demonstrate that this can be achieved through the proposed siting of the building envelopes, the retained separation and landscape areas, contemporary dwelling construction and the specific acoustic and air-quality measures recommended by the experts.

Planning approval for the Residential Park will not remove or diminish the quarry operator's obligation to comply with the environmental and operational requirements applying to its lawful activities. Equally, the technical evidence does not identify a need for the quarry to alter its lawful operations to accommodate the proposal.

Accordingly, the Residential Park is capable of maintaining an acceptable interface with adjoining residences and the quarry, consistent with IBLU POs 1.1, 1.2, 4.1 and 10.1.

7. Infrastructure

Representors have questioned whether existing infrastructure and services are capable of supporting the proposed development.

Representors have questioned whether existing infrastructure and services are capable of supporting the proposed Residential Park.

As the Site will remain a single landholding under common ownership and management, the development can be serviced through coordinated and shared infrastructure rather than separate connections for independently titled allotments. This provides an opportunity for servicing arrangements to be planned and managed across the Site as an integrated development.

At the outline consent stage, the relevant consideration is whether there is a feasible infrastructure solution capable of supporting the proposed maximum density and spatial framework. The detailed design, capacity and location of individual service connections and infrastructure components can then be resolved through the subsequent development application.

8. Conclusion

The representations raise matters concerning the compatibility of the proposed Residential Park with the Rural Living (RuL) Zone, including its density, building height and envelopes, interface with the quarry, traffic and access, infrastructure, flooding, and the retention of the Site's open-space and landscape character.

The proposal will operate as a single, integrated and managed residential community across a large landholding, with shared access, infrastructure, facilities and open space. This coordinated framework enables the proposed density to be accommodated while retaining the principal landscape features of the estate and the spacious, landscape-dominant and semi-rural character of the locality. Considered across the Site as a whole, the proposal responds positively to the outcomes sought by RuL Zone DO 1, PO 1.1 and PO 3.1.

Subject to confirmation of the technical and legal matters identified in this response, the evidence demonstrates that the outline consent parameters are capable of:

- establishing a low-scale and landscape-led Residential Park within defined building envelopes;
- limiting all future dwellings to a single building level and maintaining a landscape-dominant and semi-rural setting;
- retaining substantial areas of open space and protecting healthy trees and established vegetation;
- maintaining an appropriate interface with adjoining residents and providing acceptable amenity for future residents without unreasonably constraining lawful quarry operations;
- providing a safe and feasible access arrangement and appropriate servicing infrastructure; and
- reserving detailed dwelling design, engineering and construction matters for a subsequent development application that must remain within the approved outline consent parameters.

The proposed single-storey height limit, building envelopes, substantial boundary separation and retained landscape framework respond directly to the scale, separation and semi-rural character outcomes sought by RuL Zone PO 2.1. The proposed interface arrangements are also capable of satisfying Interface between Land Uses DO 1, PO 1.1, PO 1.2, PO 4.1 and PO 10.1.

Accordingly, the matters raised in the representations do not warrant refusal of the outline consent. The proposed land use, maximum density, single-storey height limit, building envelopes, access arrangement and open-space framework are capable of achieving the relevant Performance Outcomes of the Code and may appropriately be supported, subject to conditions or limitations that are lawful, certain and confined to matters within the scope of the outline consent.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Chris Vounasis', is enclosed within a light grey rectangular box.

Chris Vounasis
Managing Director

- | | |
|----------------|--|
| Encl. 1 | Locality setback and redevelopment analysis |
| Encl. 2 | Yatahlia Manor frontage widths |
| Encl. 3 | Letter by McDonald Game Lawyers |
| Encl. 4 | Environmental Noise Assessment by Sonus |
| Encl. 5 | Air Quality Assessment by Health Risk Services |

Encl. 1 Locality setback and redevelopment analysis



Locality Analysis

Lot 488 -500
Yatala Vale Road

LEGEND

--- Subject Site Boundary

— Front Building Line

↔ Setback

↔ Frontage

Future development sites
■ site frontage greater than 18 meters
■ site area greater than 600m²

Site Reference

↑ N
July 2026
Revision A
Scale 1:1500 at A3

FUTURE
URBAN

Encl. 2 Yatahlia Manor frontage widths



Frontage Widths

LEGEND

Frontage

N

Encl. 3 Letter by McDonald Game Lawyers

28 July 2026

Ben Scholes
Senior Planning Officer
Planning and Land Use Services
Department for Housing and Urban Development

Dear Ben

Proposed Outline Consent – “Yatahlia” – 488-500 Yatala Vale Road

We act for Gary and Lorelie Williams, the proponents for an Outline Consent, for Development Number SA-604, pursuant to section 120 of the *Planning, Development and Infrastructure Act 2016 (PDI Act)*.

The nature of the proposed development has been described as “*Retention of an existing dwelling, removal of five (5) diseased significant trees, and outline consent for 30 dwellings to be used for the purpose of a Residential Park*”. The subject land is 488-500, Yatala Vale Road, Yatala Vale (**Land**).

This letter is provided in support of our clients’ response to representations. The purpose of this letter to respond to contentions about the appropriateness of the proposed land use within the Rural Living Zone.

For the reasons that follow and having the necessary regard to the particular circumstances of the land and the locality, the proposed development is an appropriate land use in the Zone. That view can be formed primarily on the basis that:

1. Residential development is envisaged in the Zone;
2. The nature and density of the development can be supported on the Land having regard to:
 - 2.1 The suburban context of the locality and siting of the Land adjacent the General Neighbourhood Zone;
 - 2.2 The ability for the development to sit in harmony with the mixed character and pattern of development in the locality; and
 - 2.3 The ability for the development to comfortably manage impacts from the adjacent Resource Extraction Zone.

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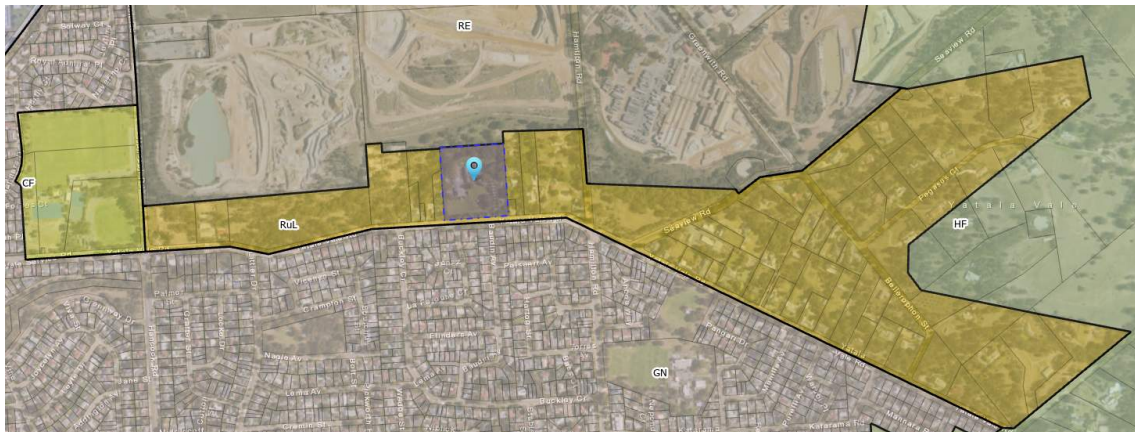
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Relevant provisions of the Planning and Design Code

The proposed development includes a change in the use of land to a “residential park” which, for the purpose of the Planning and Design Code (**Code**) means “a residential park operating under the regulatory framework of the Residential Parks Act 2007”.

Under the residential parks framework, residents purchase their respective dwellings but lease the underlying site from the park operator. Ownership of the land is therefore retained by the park operator which is tasked with the maintenance and management of the park and its communal areas.

The land the subject of the proposed development is located within the Rural Living Zone under the Code. Per the below SAPPA image, the Rural Living Zone applies to allotments on the northern side of Yatala Vale road with the Resource Extraction Zone to the immediate north and the General Neighbourhood Zone to the South (on the southern side of Yatala Vale Road).



The provisions of the Zone which are relevant to land use include the following:

DO 1 *A spacious and secluded residential lifestyle within semi-rural or semi-natural environments, providing opportunities for a range of low-intensity rural activities and home-based business activities that complement that lifestyle choice.*

PO 1.1 *Residential development with complementary ancillary non-residential uses that do not place additional demands on services and infrastructure, and compatible with a secluded semi-rural or semi-natural residential character.*

While not strictly related to land-use, PO 2.1 of the Zone also seeks:

Dwellings that are sufficiently separated from site boundaries and of a scale that reinforces the semi-rural or semi-natural character and amenity.

In respect of the dwelling sites to be created, some regard may also be had to PO 3.1 of the Zone, which seeks:

Allotments/sites created for semi-rural residential purposes are consistent with the density expressed in any relevant Minimum Site Area Technical and Numeric Variation or are of suitable size and dimension to contribute to the existing semi-rural pattern of development consistent to the locality and suitable for their intended use.

Also relevant, noting the land uses within the Resource Extraction Zone to the north, are the following provisions of the Interface between Land Uses module of the General Development Policies:

- DO 1 Development is located and designed to mitigate adverse effects on or from neighbouring and proximate land uses.*
- PO 1.1 Sensitive receivers are designed and sited to protect residents and occupants from adverse impacts generated by lawfully existing land uses (or lawfully approved land uses) and land uses desired in the zone.*
- PO 10.1 Sensitive receivers are separated from existing mines to minimise the adverse impacts from noise, dust and vibration.*

The Land is not subject to the Significant Interface Management Overlay or the Resource Extraction Protection Area Overlay.

Scope of assessment

The assessment of an application for Outline Consent is necessarily limited to the matters the subject of the consent. It will be necessary for the SCAP to consider whether the proposed land use is appropriate in principle. Matters of design detail, landscaping, infrastructure, car parking and servicing will be the subject of a subsequent application for Planning Consent.

The Outline Consent will give the proponent the “incremental confidence” to proceed with a detailed proposal.

The SCAP may, pursuant to section 127 of the PDI Act, impose conditions on the grant of any Outline Consent.

Need to consider particular circumstances of the land and locality

In undertaking an assessment of the proposed development against the above provisions of the Code, a planning authority must have regard to the particular factual circumstances of the land and the proposed development. As the then Chief Justice (King CJ) of the Full Court of the Supreme Court said in the matter of *Courtney Hill Pty Ltd v South Australian Planning Commission*:

The argument in its extreme form, was that the degree of variance from the Plan had to be determined by comparing the Plan itself with the proposal, ignoring the historical and factual context in which the development is proposed to occur. I cannot accept that argument. It seems to me that the extent of the variance from

the Plan involved in the project must be judged in the context in which the project will be implemented.¹

In the decision of the Full Court of the South Australian Supreme Court in the matter of *DAC v A&V Contractors*, Justice Kourakis (as he then was), who delivered the leading judgment, determined that:

*... planning authorities do not apply the objectives and principles of development plans in a vacuum. First, as I earlier observed, there will often be tension between those objectives and principles. Most of the objectives and principles, as a matter of construction, apply as general rules and not as inviolable prescriptions; they are guidelines within which an expert planning judgment must be made. Most obviously, the particular factual circumstances of a proposed development will inform that planning judgment, and, in particular, affect which of the principles and objectives will predominate. The fact that the subject land in *Paradise Developments* was not arable but ideally located for tourist accommodation explains the planning judgment made by Jacobs J in that case. The passage in which Jacobs J referred to the Development Plan not speaking to the land was concerned with the factual planning judgment and not a question of principle. Ultimately, an exercise of planning judgment within the ambit scope and purpose of the Act, Regulations and the applicable development plan is required.²*

The weight that is given to planning policies on sites at the boundary of two zones (as is the case for the subject land) often differs to the way those policies might be applied to a site at the centre of a zone.³ Further, the particular circumstances of a site may mean that it is less suited to a particular type of development and better suited to another. In *McMillan v City of Salisbury* Justice Jacobs observed that:

The characteristics of a “zone” are not necessarily the same throughout its whole area and the achievement of the objectives of a zone may simply not be possible, not only by reason of existing non-conforming uses, but by reason of the geographical relationship of the zone to other zones.⁴

It follows from the above authorities that the expectations for the development of the land, and the land uses which may be acceptable on it, may be different from what might be expected in other parts of the Zone and must be considered in light of the actual context of the land.

In the case of the subject land, the relevant context includes that:

1. The neighbouring allotments to the east and the west of the land, being those between Hamilton Road and Hanock Road and within the Rural Living Zone,⁵ range dramatically in their allotment size from approximately 536m² to 29,000m² (the latter being the approximate area of the subject land) and frontage widths.

¹ (1990) 59 SASR 259.

² [2011] SASCF 77 at [77].

³ *Papadopoulos v Corporation of the City of Woodville* (1985) 39 SASR 569 at p 577; *Lanzilli Holdings v City of Campbelltown* (1982) 38 SASR 81, 85.

⁴ (1990) 69 LGRA 359, 364-365.

⁵ Excluding the land comprised in CT 5490/278 and known as Lot 2 Hancock Road which is a larger allotment the majority of which is located within the Resource Extraction Zone.

-
2. Each of the neighbouring allotments appears to be used predominantly for residential purposes with some evidence of storage facilities and agistment yards (or similar) on allotments further to the west.
 3. On the southern side of Yatala Vale Road, the land within the General Neighbourhood Zone has been extensively subdivided and developed for residential purposes with allotments in the order of 300m² to 1000m².
 4. The land to the north, within the Resource Extraction Zone is occupied by a number of extractive industries.

Accordingly, the Rural Living Zone, which between Hamilton Road and Hanock Road is only one allotment deep, effectively acts a transition between the General Neighbourhood Zone to the south and the Resource Extraction Zone to the north.

The locality is not archetypal of other areas within the Rural Living Zone, not being overtly rural or natural in character.

Not seriously at variance

A residential park is a form of residential development. The Rural Living Zone clearly seeks residential development as the primary land use within the Zone; indeed, it is a neighbourhood type zone.

In describing what is an appropriate land use within the Zone, PO 1.1 of the Zone adopts the term “residential development”. Similarly, DO 1 speaks to a “spacious and secluded residential lifestyle”. Both adopt broad terms which encompass a wide variety of dwelling types and residential accommodation.

There is no merit to an assertion that the proposed land use could be considered seriously at variance with the provisions of the Code.

Alignment of proposed land use with Zone outcomes

Zone PO 1.1

As above, PO 1.1 of the Zone seeks “*residential development with complementary ancillary non-residential uses that do not place additional demands on services and infrastructure, and compatible with a secluded semi-rural or semi-natural residential character.*”

The use of the land as a residential park involving a number of group dwellings is clearly a residential use. The communal facilities (i.e. Yatahlia Manor) are also residential in nature, being ancillary and complementary to the residential use. The communal facilities will be exclusive for the use of residents of the park and do not place any additional demand on services and infrastructure beyond, or different to, that generated by the residential use of the land.

It is not entirely clear, from the wording of PO 1.1, whether the requirement to be “*compatible with a secluded semi-rural or semi-natural residential character*” applies to both residential and non-residential uses of land within the Zone or whether this is intended to place an additional character control on non-residential uses only.

Assuming, for the sake of completeness, that this requirement does apply to residential uses, we make the following observations:

1. The Rural Living Zone is of very limited application across the Greater Adelaide area.
2. Where the Rural Living Zone appears elsewhere within Greater Adelaide, it is commonly adjoining zones including the Hills Face Zone, the Hills Neighbourhood Zone, the Open Space Zone, the Conservation Zone or the Rural Zone.
3. In such instances there is a quite clear transition, or connection, to rural or natural (including highly vegetated) landscapes leading, in many instances, to what could be described as a “semi-rural” or “semi-natural” character.
4. A “semi-rural” or “semi-natural” character is, however, far less evident within the portion of the Rural Living Zone in which the subject land is located. This is for reasons including:
 - 4.1 The proximity to the General Neighbourhood Zone and the Resource Extraction Zone and, accordingly, the absence of any adjoining rural or natural landscapes to which the Zone provides a transition.
 - 4.2 The limited spatial application of the Zone (particularly between Hamilton Road and Hanock Road).
 - 4.3 The orientation of allotments towards Yatala Vale Road and, in the case of a number of dwellings, the fairly modest setback from that road.
 - 4.4 The presence of a number of distinctly smaller allotments (including 482 and 502 Yatala Vale Road).

To the extent that a “*secluded semi-rural or semi-natural residential character*” exists within the locality of the subject land, PO 1.1 seeks that the proposed development be “*compatible*” with that character.

In *PC Infrastructure v City of Mitcham Assessment Panel*,⁶ the Honourable Judge Burnett together with Commissioner Dyer adopted the definition of “compatible” per the Macquarie Dictionary of:

... (1) *capable of existing together in harmony* (2) *capable of orderly, efficient integration with other elements in a system.*

Those same definitions were adopted in *Development Holdings Pty Ltd v City of Salisbury Assessment Panel & Anor*,⁷ while, in the earlier decision of *Riley & Ors v City of Unley & Anor*, the Full Bench of the ERD Court confirmed that compatibility does not require replication or sameness.⁸

⁶ [2003] SAERDC 14. See also *Project Venture Developments v Pittwater Council* [2005] NSWLEC 191.

⁷ [2024] SAERDC 6, as upheld by the Supreme Court in *City of Salisbury Assessment Panel v Development Holdings Pty Ltd* [2024] SASC 92.

⁸ [2009] SAERDC 90, [47]. See also *Lodge Construction & Building P/L v City of Salisbury (No 2)* [2011] SAERDC 44, [51].

Considering the context of the subject land, the proposed land use is compatible with the existing character of land in the Rural Living Zone for at least the reasons that:

1. The allotments within the residential park will remain within the setting of a very large allotment with significant landscaping around its perimeter and an expansive area of open space in the northern portion.
2. A large portion of the vegetation to be retained on the subject land is existing and mature with extensive tree planting also proposed.
3. Dwellings will be set back a generous distance from Yatala Vale Road and afforded privacy through hedging/screening plants rather than any internal fences.

Accordingly, the proposed development satisfies PO 1.1 and is an appropriate land use within the Zone.

Zone PO 3.1

PO 3.1 seeks that *“allotments/sites created for semi-rural residential purposes are consistent with the density expressed in any relevant Minimum Site Area Technical and Numeric Variation or are of suitable size and dimension to contribute to the existing semi-rural pattern of development consistent to the locality and suitable for their intended use”* (our underlining).

PO 3.1 will be satisfied if a proposed site/allotment meets the TNV as adopted in the corresponding DPF provision. In the case of the subject land, that TNV prescribes a minimum site area of 4 ha which is significantly larger than the site area of the land. Indeed, there are no allotments which are wholly located in this portion of the Rural Living Zone that have a site of 4 ha (with the subject site being among the largest of those allotments).

On the basis that the TNV is not met, the test under PO 3.1 becomes whether the sites are:

- (a) *“of suitable size and dimension to contribute to the existing semi-rural pattern of development consistent to the locality”; and*
- (b) *“suitable for their intended use”.*

The first limb of this test could be read as assuming that the pattern of development within the Zone, and to be contributed to, is that of a semi-rural area. However, the addition of the words “consistent to the locality” mean, in our view, that the on-ground existence of such a pattern must be considered.

There are a number of characteristics or elements which may contribute to the development pattern in a locality. Per *Vikhlyaev v City of West Torrens Assessment Manager*,⁹ these elements can include allotment sizes, frontages, building setbacks, the

⁹ [2023] SAERDC 1.

existence of front boundary fencing, and the availability and design of access points and on site carparking.¹⁰

For the reasons expressed above, there are difficulties in describing the locality as comprising a “semi-rural” pattern of development. Any real pattern or consistency across the locality is diminished as a result of:

1. The limited spatial application of the Zone and its interface with a number of different zones.
2. A very wide range of allotment sizes and frontage widths (particularly among allotments fronting Yatala Road).
3. A mix of site orientations and dwelling siting, with some dwellings sited near the front of allotments and others occupying the rear portion and accessible via a long driveway.
4. A mix of locations and design of access points, with a number of battle axe allotments, or allotments sited behind others.
5. A disparate arrangement of outbuildings, agricultural buildings and vehicle parking/hardstand areas.
6. A number of allotments, particularly to the east of Seaview Road, which have minimal established vegetation.

To the extent that the pattern of development can be described as “semi-rural”, the proposed develop will not disrupt this pattern. While there will be a greater density of dwellings within the residential park than is seen elsewhere within the Zone, that increase in density is limited to a discrete area within the land and will only be perceived aerially.¹¹ The outward presentation of the subject land will, however, contribute to the existing or semi-rural pattern in that:

1. Dwellings will be set back a generous distance from Yatala Vale Road and separated from the road frontage but an established landscape buffer.
2. The dwellings will also be set back significantly from the side and rear boundaries of the land, again with areas of open space and/or landscaping creating a buffer around the dwellings.
3. The maintenance of the existing single access point from Yatala Vale Road.
4. The dwellings will have no overlooking or overshadowing impacts to nearby dwellings.

It is also relevant to consider Zone PO 2.1 which seeks “*dwellings that are sufficiently separated from site boundaries and of a scale that reinforces the semi-rural or semi-natural character and amenity*”. While this involves an assessment of built form, as opposed to land use, it has relevance to the question of density as raised by PO 3.1.

¹⁰ [2023] SAERDC 1, [66].

¹¹ *Juczenko v City of Mitcham* [2006] SAERDC 91 at [24].

As above, the setbacks of the dwellings from the boundaries of the land and the landscaping will assist to reinforce a semi-rural or semi-natural character and amenity, to the extent that such character exists.

Further, as a residential park, the approach to site areas and density requires a more nuanced approach. The proposed development is in many ways akin to a small retirement village. The ERD Court has in the past eschewed the application of quantitative criteria in assessing such developments. In *Karidis Corporation v Marion*, which concerned an expansion to an existing retirement village, Commissioner Hamnett observed:

Factors such as the site coverage, the allotment size, the number of bedrooms per dwelling, the number of persons per dwelling and the areas of private and common open space available may all provide useful indicators of density, but density is a relative concept that will often need to be considered in the context of a particular locality. What is regarded as medium density in one part of a city may be regarded as high in another. While some quantitative indicators of density may be available, such as the minimum site areas per dwelling required in this case, these will not always be decisive in a planning assessment. One group of residential flat buildings may have dwellings with smaller site areas and floor areas than another but may be better designed so that the consequences in terms of overlooking, overshadowing or other potential impacts of increased density on adjoining land are less. Two storey dwellings may sometimes allow for more attractive and usable open space than single-storey dwellings on similar sized blocks. In some circumstances, proximity to public or common open spaces may substitute to an extent for reduced amounts of private open space on an allotment, while the quality of private open space may be more important than the quantity. In short, there will usually be important qualitative questions to ask about the consequences of introducing a higher density form of development into an existing residential area.¹²

It is also notable that the proposed development has around one-third of the density of a typical retirement village or residential park in a comparison of dwelling numbers to total site area.

In the case of *Phillips & Ors v DAC & Anor*¹³ the ERD Court approved the construction of 97 retirement village units on a site of 28,069m², being slightly smaller than the Land. It is also notable that the proposed retirement village was located adjacent an industry zone.

Management of zone interface

The submission received from Hallett Brick Pty Ltd, Heidelberg Materials Australia Pty Ltd, PGH Bricks & Pavers Pty Limited and Clay & Mineral Sales Pty Ltd raises concerns about the adverse impacts of activities within the Extraction Zone on the proposed land use.

¹² *Karidis Corporation v Marion* [2013] SAERDC 34 at [95].

¹³ *Phillips & Ors v DAC & Anor* [2011] SAERDC 51.

The General Development Policies, Interface between Land Uses module contains a number of provisions to ensure the adequate protection of sensitive receivers from adverse impacts. As above, these include:

- | | |
|----------------|--|
| <i>DO 1</i> | <i>Development is located and designed to mitigate adverse effects on or from neighbouring and proximate land uses.</i> |
| <i>PO 1.1</i> | <i>Sensitive receivers are designed and sited to protect residents and occupants from adverse impacts generated by lawfully existing land uses (or lawfully approved land uses) and land uses desired in the zone.</i> |
| <i>PO 10.1</i> | <i>Sensitive receivers are separated from existing mines to minimise the adverse impacts from noise, dust and vibration.</i> |

An Air Quality Report has been undertaken by Health Risk Services to determine any adverse impact. In respect of the above performance outcome that report determines that:

PO 1.1 -

On the basis of the data and information presented in this report and also from the GGEIZ investigation outcomes I am satisfied the proposed Residential Park can be designed and sited to protect residents and occupants from adverse air quality impacts associated with current and future GGEIZ activities associated with PM10, PM2.5 and RCS.

PO 10.1 –

Based on the data and information presented in this report and from the GGEIZ investigation outcomes I am satisfied the proposed Residential Park will be separated from current and future GGEIZ activities in order to minimise air quality impacts from PM10, PM2.5 and RCS.

The Environmental Noise Assessment prepared by Sonus similarly concludes that residents of the residential park will not be adversely affected by noise from the Resource Extraction Zone and that indoor noise levels can be further reduced through the incorporation of 6.38mm laminated glass. The proponents are agreeable to a condition requiring dwellings to incorporate 6.38mm laminated glass.

More generally, we observe that any impacts of the extraction activities to the north of the subject land will be no greater than presently experienced by other dwellings within the locality. Indeed, the dwellings within the residential park, being sited within the southern portion of the subject land, will have a greater separation distance from the extraction activities than several other dwellings. The significant landscape buffer at the rear of the subject land is to be maintained.

There is nothing to suggest that residents will be subjected to adverse amenity impacts from current or future operations within the Resource Extraction Zone. Indeed, the maintenance of a substantial landscape buffer and use of prescribed glazing will mitigate impacts, with improved performance over many of the existing dwellings in the area.

From an operational perspective, residents will be encouraged to raise any concerns regarding the maintenance of the Residential Park grounds, communal facilities or shared infrastructure, or interface matters involving adjoining residential properties or quarry operations, with Residential Park management in the first instance. This will provide a central point of contact and enable any concerns to be coordinated and, where necessary, referred to the appropriate party.

The proponents Gary and Lorelie Williams have resided on the Land for a long time and intend to reside in one of the dwellings within the residential park, a testament to the lack of adverse impacts experienced on the Land.

Conclusion

Having regard to the relevant provisions of the Code, and particularly the factual circumstances of the land and its locality, the proposed residential park constitutes an appropriate and orderly form of residential development within the Rural Living Zone. The proposal cannot be considered as being seriously at variance with the intent of the Zone, which expressly anticipates residential development and residential lifestyles as its primary land use outcome. While the development adopts a different tenure and density model to that typically associated with rural living allotments, its external presentation, generous setbacks, extensive landscaping, retention of open space and single-point access ensure that it remains compatible with the character and amenity of the locality.

Importantly, the subject land occupies a transitional position between established residential areas to the south and resource extraction activities to the north, in a portion of the Zone that exhibits a diverse and non-uniform pattern of development. In that context, the proposal responds appropriately to the actual characteristics of the locality and does not undermine the objectives sought by the Zone provisions.

Furthermore, specialist assessment demonstrates that the development can be designed and sited to adequately manage potential interface impacts arising from nearby extractive industries, consistent with the Interface between Land Uses policies of the Code.

The proposed development satisfies the relevant planning policies relating to land use, site configuration and interface management, and should be regarded as an appropriate form of development for the subject land.

Yours faithfully



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Encl. 4 Environmental Noise Assessment by Sonus

Yatahlia Manor Residential Park

Environmental Noise Assessment

S9101C2

July 2026

sonus.

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Document Title : Yatahlia Manor Residential Park
Environmental Noise Assessment

Document Reference : S9101C2

Date : July 2026

Author : Byron Holmes, MAAS

Reviewer : Chris Turnbull, MAAS

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1 INTRODUCTION

An environmental noise assessment has been conducted for the proposed residential development to be established at Yatahlia Manor, 388-500 Yatala Vale Road, Yatala Vale South Australia (the **Proposed Development**).

The Proposed Development seeks to establish a residential park comprising 30 dwellings in addition to an associated internal road network, parking areas and landscaping within the southern part of the Yatahlia Manor site. The existing Yatahlia Manor building (currently utilised as a private residence) will remain as part of the Proposed Development) but will not be used as a residence. It is understood that subdivision of the Subject Site is not proposed as part of the Proposed Development.

The Subject Site is generally well suited to residential development from a noise perspective, being located amongst other existing residential land uses, with the only potential source of noise impacts on the Proposed Development being from existing extractive industries located within the *Strategic Resource Area (SRA)* to the north of the Subject Site.

An overview of the Subject Site and the surrounding locality showing the locations of the proposed residential park and nearby existing noise sensitive receivers (residences) is provided in Figure 1 below. A site plan is provided in Appendix A.

This environmental noise assessment considers potential noise impacts from ongoing operation of the nearby existing extractive industries on the Proposed Development and from the Proposed Development on nearby existing noise sensitive receivers, and compares the predicted noise levels against relevant criteria determined in accordance with the South Australian *Planning and Design Code* (the **Code**) and the *Environment Protection (Commercial and Industrial) Noise Policy 2023* (the **Policy**).

The assessment has been based on *Yatahlia Manor Country Club – Site Plan*, prepared by Galvin Group Studio, revision CD1.0 dated 27 March 2026.



Figure 1: Subject site and surrounding locality

2 SOUTH AUSTRALIAN PLANNING AND DESIGN CODE

Development in South Australia is assessed against the *South Australian Planning and Design Code* (the **Code**) under the *Planning, Development and Infrastructure Act 2016*. The Code has been reviewed and the provisions considered relevant to the acoustic assessment are provided in Appendix B.

With reference to the *South Australian Property and Planning Atlas (SAPPA)*, the Proposed Development and nearby existing noise sensitive receivers (residences) to the east and west are located within the *Rural Living* zone. Existing noise sensitive receivers to the south of the Proposed Development (across Yatala Vale Road) are located within the *General Neighbourhood* zone. The existing extractive industries to the north of the Subject Site are located within the *Resources Extraction* zone.

3 EXISTING NOISE SOURCES

3.1 Criteria

Performance Outcome (**PO**) 1.1 of the *Interface between Land Uses* module of the Code requires that sensitive receivers are designed and sited to protect residents and occupants from adverse impacts generated by lawfully existing land uses (or lawfully approved land uses) and land uses desired in the zone. No Deemed-to-Satisfy / Designated Performance Feature (**DTS/DPF**) is provided for PO 1.1.

In addition to the above, PO 10.1 of the *Interface Between Land Uses* module of the Code seeks the separation of sensitive receivers from existing mines to minimise adverse impacts from noise, dust and vibration. DTS/DPF 10.1 identifies that a separation distance of 500 metres from the boundary of an existing mine as one means, but not the only means, of achieving PO 10.1.

Notwithstanding the above, the appropriate assessment methodology for noise from existing commercial and industrial noise sources is by reference to the *Environment Protection (Commercial and Industrial) Noise Policy 2023* (the **Policy**).

The Policy provides objective noise criteria to be achieved at sensitive receiver locations (such as residential dwellings). The criteria provided by the Policy are based on the *World Health Organisation Guidelines for Community Noise (1999)*¹ (the **WHO Guidelines**) to prevent community annoyance, sleep disturbance and adverse impacts on the amenity of a locality. Therefore, compliance with the Policy will satisfy the WHO Guidelines and the subjective requirements of the Code relating to environmental noise.

The Policy establishes *Noise Goals* to be achieved at noise sensitive receivers (e.g. residences) based on the zones² in which the noise source (existing extractive industries) and sensitive receivers (the Proposed Development) are located.

Based on the above, and with reference to the *Indicative noise factor guidelines for the Environment Protection (Commercial and industrial Noise) Policy 2023*, the following *Noise Goals* apply to existing noise when assessed outdoors at noise sensitive receivers within the Proposed Development:

- An average noise level ($L_{eq, 15 \text{ min}}$) of 56 dB(A) during the Policy “Day” period (i.e. between 7:00 am and 10:00 pm)
- An average noise level ($L_{eq, 15 \text{ min}}$) of 48 dB(A) during the Policy “Night” period (i.e. between 10:00 pm and 7:00 am)

However, where facade treatments are applied to residences, the Policy requires the assessment location to be within relevant habitable rooms (i.e. living and sleeping areas). The relevant criteria are determined in accordance with the Policy and Australian / New Zealand standard 2107:2016 “Acoustics – Recommended design sound levels and reverberation times for building interiors” (**AS/NZS 2107:2016**).

Based on the above, as the Proposed Development is near minor roads, the following indoor *Noise Goals* apply under the Policy where facade treatments are applied to the proposed dwellings:

- An average noise level ($L_{eq, 15 \text{ min}}$) of 36 dB(A) indoors within other habitable spaces (living areas) during the Policy “Day” period (7:00 am to 10:00 pm)
- An average noise level ($L_{eq, 15 \text{ min}}$) 30 dB(A) indoors within bedrooms during the Policy “Night” period (i.e. from 10:00 pm to 7:00 am).

¹ Berglund B, Lindvall T & Schwela DH 1999, *Guidelines for Community Noise*, World Health Organisation (WHO).

² or subzones

3.2 Assessment

The proposed dwellings will be constructed in the vicinity of the *Strategic Resource Area (SRA)* which accommodates a range of existing extractive industrial land uses. As such, it will be important that the Proposed Development is designed to achieve an appropriate level of amenity for future residents, and to safeguard the ongoing operation of nearby existing extractive industries from potential future noise complaints from encroaching noise sensitive development.

3.2.1 Existing Noise Impacts

It is understood that limited activity is currently occurring within the parts of the quarry nearest to the Proposed Development (other than an internal road), and that an earth mound has been constructed along the boundary. Further, the allowed hours of operation within the two mining leases nearest to the Subject Site are limited to the following hours:

Mining Lease:	Allowed Hours of Operation:
EML 5892 (north of the Subject Site)	7:00 am to 5:00 pm Monday to Saturday
PM 56 (north-west of the Subject Site)	6:30 am to 5:30 pm Monday to Friday 6:30 am to 12:00 pm Saturday

Based on the above, noise levels at existing residences in the immediate vicinity of the Subject Site due to nearby extractive industry are currently relatively low and largely confined to the less sensitive Policy “Day” period.

The proposed dwellings will be no closer to existing extractive industries than a number of the nearby existing residences (including the existing Yatahlia Manor residence within the same allotment). As such, noise levels at the proposed residences will also be relatively low (consistent with noise levels at the existing residences) and similarly confined generally to the Policy “Day” period.

Notwithstanding the above, to provide the best practical level of residential amenity and to further protect the ongoing approved operations of nearby extractive industry (in the event that activity was to increase in the future), it is proposed to provide upgraded glazing to the new residences comprising minimum 6.38mm laminated glass.

3.2.2 Future Noise Impacts

If the potential exists for activity within the SRA near the Subject Site to increase in the future, the extractive industry would need to ensure that appropriate noise levels are achieved at all existing residences consistent with the Policy and all relevant approvals.

As noted above, the proposed residences are no closer to the SRA than existing residences. As such, where noise levels from increased activity are compliant with the Policy at the existing residences, they will also be compliant outdoors at the new residences. In such circumstance, the new residences will not place any additional constraints on the ongoing operation of the existing approved mineral extraction operations.

Where the Policy *Noise Goals* are achieved outdoors at the nearest existing residences, noise levels within standard-sized bedroom and living room spaces within the proposed dwellings with the upgraded glazing in place are predicted to be no higher than 30 dB(A) during the Policy “Day” period, and no higher than 25 dB(A) during the Policy “Night” period.

On this basis, noise from the existing ongoing quarry operations is expected to achieve the internal *Noise Goals* applicable under the Policy where noise attenuation is installed by a minimum margin of 5 dB(A).

In the event that the Policy *Noise Goals* could not be achieved at existing residences due to a future expansion of extractive industrial operations within the nearest mining leases to the Subject Site, this would need to be considered in the context of Clause 18 of the Policy. Specifically, the following factors would need to be considered:

- a) The amount of dB(A) by which the *Noise Goals* are predicted to be exceeded
- b) Any components of the ambient or extraneous noise which has a similar or greater noise level, character or regularity and duration
- c) The times of occurrence of the noise
- d) The number of persons adversely affected, and any special need for quiet
- e) The land uses existing in the vicinity when extractive industry was first undertaken in the locality
- f) The kind of activity undertaken within the locality when the noise sensitive premises were first occupied.

Although the number of persons with the potential to be adversely affected (factor d) will increase with the proposed development, this will be outweighed by other factors, including:

- (Factor a) With the proposed glazing, the amount in dB(A) by which the noise goals are predicted to be exceeded will reduce by at least 5 dB(A) at the property in comparison with the existing residence. That is, even if future noise levels from nearby extractive industry are allowed to increase to 5 dB(A) above the Policy *Indicative Noise Levels* at existing residences (in recognition of the relevant factors under Clause 18 of the Policy), indoor noise levels within the proposed future dwellings would remain compliant with the applicable indoor *Noise Goals*.
- (Factors e and f) The extractive industry will be well established at the time that any residences are occupied, providing less weight to any potential impacts in the future.

It is therefore considered that the proposed dwellings have been designed and sited to protect residents and occupants from adverse impacts generated by lawfully existing land uses and will therefore satisfy PO 1.1 of the Interface between Land Uses module of the Code.

4 NOISE FROM THE PROPOSED DEVELOPMENT

4.1 Criteria

Performance Outcome (PO) 4.1 of the *Interface between Land Uses* module of the Code requires that noise from a development (other than music) does not unreasonably impact the amenity of sensitive receivers (or lawfully approved sensitive receivers). The Deemed-to-Satisfy / Designated Performance Feature (DTS/DPF) for PO 4.1 references the *Environment Protection (Commercial and Industrial Noise) Policy* (the **Policy**).

However, The Policy applies only to noise from commercial or industrial premises and as such does not provide relevant noise criteria for the assessment of noise from a residential development.

In the absence of relevant criteria provided by the Policy, reference is made instead to the WHO Guidelines. The WHO Guidelines provided the following recommended outdoor noise levels:

Noise Sensitive Receivers:	Descriptor:	Guideline Values [dB(A)]
		Outdoors
To protect against moderate annoyance within outdoor living areas	Leq, 16 hour	50
To protect against sleep disturbance during the night-time	Leq, 8 hour	45 ³
	L _{max}	60 ³

Where noise from the residential development achieves the above criteria, it is considered that the noise will not unreasonably impact the amenity of noise sensitive receivers.

4.2 Assessment

Noise from the Proposed Development has been predicted using the SoundPLAN environmental noise modelling software package. The predictions consider the distance between the noise sources and noise sensitive receivers, the sound power level of each noise source, reflections and shielding provided by buildings and other structures, ground absorption, terrain shielding, and weather conditions conducive to noise propagation (resulting in higher noise levels).

³ The outdoor night-time sleep disturbance noise levels provided by the WHO Guidelines assume that the noise reduction from outside to inside with the window open is 15 dB

Noise from the Proposed Development will comprise typical residential air conditioners and activity associated with resident and visitor vehicles accessing the proposed dwellings. Specifically, noise from the Proposed Development has been predicted based on the following:

- Continuous operation of a typical domestic air conditioning unit at the rear of each proposed dwelling with a sound power level of 64 dB(A) throughout the assessment period.
- Vehicle movement and activity associated with a vehicle either arriving at or departing each dwelling on average once within an 8-hour period at night, and four times within a 16-hour period during the day.
- Additional vehicle movements and activity associated with a vehicle either arriving at or departing each parking space adjacent to the existing Yatahlia Manor building twice within an 8-hour period at night, or four times within a 16-hour period during the day.

Based on the above, the highest predicted noise level outside at an existing noise sensitive receiver is 40 dB(A) during both the day and night, which comfortably achieves the WHO Guidelines recommended outdoor noise levels during both the day and night. On this basis, it is considered that noise from the Proposed Development will *not unreasonably impact the amenity of sensitive receivers*, thereby satisfying PO 4.1 of the *Interface between Land Uses* module of the Code.

5 NOISE FROM WASTE COLLECTION

Noise from waste collection is typically assessed against the provisions of the *Local Nuisance and Litter Control Act 2016* (the **Act**). Under the Act, noise from waste collection is considered to constitute a *Local Nuisance* only when it occurs outside of the following hours:

- 9:00 am to 7:00 pm on Sundays or public holidays
- 7:00 am to 7:00 pm on any other day.

Therefore, it is recommended that any private waste collection is conducted within the above hours, so that noise from waste collection will not cause a *Local Nuisance*.

6 CONCLUSION

An environmental noise assessment has been conducted for the proposed residential development to be established at Yatahlia Manor, 388-500 Yatala Vale Road, Yatala Vale South Australia (the **Proposed Development**).

The environmental noise assessment considers potential noise impacts from ongoing operation of the nearby existing quarry on the Proposed Development and from the Proposed Development on nearby existing noise sensitive receivers, and compares the predicted noise levels against relevant criteria.

The new dwellings to be constructed as part of the Proposed Development will be no closer to the existing quarry than existing nearby residences, and will therefore not place any additional constraint on the ongoing operation of the existing approved quarry. The dwellings also incorporate upgraded glazing to further reduce indoor noise levels. In addition to the above, noise from the Proposed Development is predicted to easily achieve appropriate noise levels at all nearby existing noise sensitive receivers.

On this basis, it is considered that the Proposed Development has been *designed and sited to protect residents and occupants from adverse impacts generated by lawfully existing land uses* and to *not unreasonably impact the amenity of sensitive receivers*, thereby achieving POs 1.1, 4.1 and 10.1 of the Code.

APPENDIX A: SITE PLAN



APPENDIX B: SOUTH AUSTRALIAN PLANNING AND DESIGN CODE

Part 4 – General Development Policies

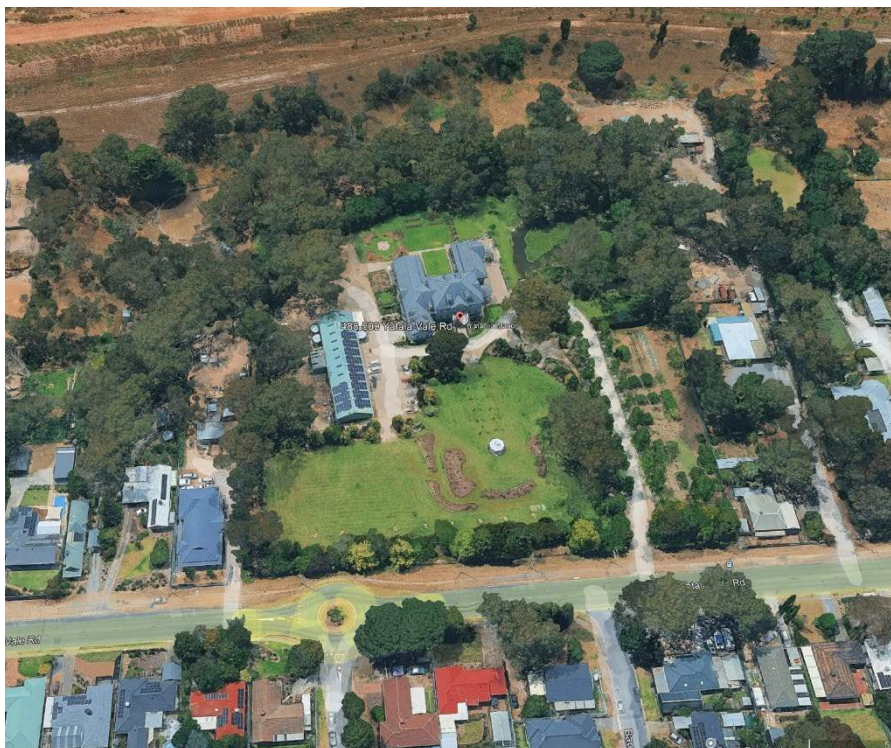
Interface between Land Uses

Desired Outcome	
DO 1	Development is located and designed to mitigate adverse effects on or from neighbouring and proximate land uses.

Performance Outcome	Deemed-to-Satisfy / Designated Performance Feature
General Land Use Compatibility	
PO 1.1 Sensitive receivers are designed and sited to protect residents and occupants from adverse impacts generated by lawfully existing land uses (or lawfully approved land uses) and land uses desired in the zone.	DTS/DPF 1.1 None are applicable
PO 1.2 Development adjacent to a site containing a sensitive receiver (or lawfully approved sensitive receiver) or zone primarily intended to accommodate sensitive receivers is designed to minimise adverse impacts.	DTS/DPF 1.2 None are applicable.
Activities Generating Noise or Vibration	
PO 4.1 Development that emits noise (other than music) does not unreasonably impact the amenity of sensitive receivers (or lawfully approved sensitive receivers).	DTS/DPF 4.1 Noise that affects sensitive receivers achieves the relevant Environment Protection (Commercial and Industrial Noise) Policy criteria.
Interface with Mines and Quarries (Rural and Remote Areas)	
PO 10.1 Sensitive receivers are separated from existing mines to minimise the adverse impacts from noise, dust and vibration.	DTS/DPF 10.1 Sensitive receivers are located no closer than 500m from the boundary of a Mining Production Tenement under the Mining Act 1971.

Encl. 5 Air Quality Assessment by Health Risk Services

“Yatahlia” Outline Consent Report on Air Quality
488-500 Yatala Vale Road
For Future Urban



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2 GLOSSARY OF ABBREVIATIONS

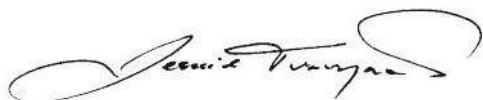
≥	equal to or more than
%	Percentage
µg	microgram(s) = one millionth of a gram
µg/m ³	Microgram per cubic metre
ACGIH	American Conference of Governmental Industrial Hygienists
AQS-1	AEROQUAL Near reference real-time monitor for particulates (nephelometric)
AS	Australian Standard
CI	Confidence Interval
COPD	Chronic Obstructive Pulmonary Disease
df	Degrees of freedom in statistics
DME	Department of Mines and Energy
E	East
EEA	European Environmental Agency
ENE	East-Northeast
EPA	Environmental Protection Authority/Agency
GGEIZ	Golden Grove Extractive Industries Zone
HiVol	High volume gravimetric sampler (e.g. HVt4)
HRS	HealthRisk Services Pty Ltd
IARC	International Agency for Research on Cancer
m	Metre (100 cm or 1000 mm)
m ³	Cubic metre
mg	Milligram = one thousandth of a gram
mg/m ³	Milligram per cubic metre
n	number
N	North
NE	North-East
NEPC	National Environment Protection Council (Australia)

(cont.)	
NEPM	National Environment Protection Measure (Australia)
NNE	North-Northeast
NNW	North-Northwest
p	Page when associated with citations/probability when associated with statistics
PM	Particulate Matter (also AQS-1 monitors designation, e.g. PMt7 (Particulate Matter Test Location 7))
PM _{2.5}	Particulate matter equal to or less than two and a half microns in aerodynamic diameter
PM ₁₀	Particulate matter equal to or less than ten microns in aerodynamic diameter
RCS	Respirable Crystalline Silica
S	South
SA	South Australia
SA EPA	South Australian Environment Protection Authority
SSE	South-Southeast
SSW	South-Southwest
t	Statistical t-test
TSP	Total Suspended Particulates with aerodynamic diameter of less than 50 to 100 microns
TWA	Time-weighted average
US	United States
US EPA	United States Environmental Protection Agency
Vic EPA	Victorian Environment Protection Authority
W	West
WA	Western Australia
WHO	World Health Organisation
WNW	West-Northwest
WSW	West-Southwest

3 LIMITATIONS

The outcomes presented in this air quality health risk appraisal report have been based on data and information made available by the client and information received from Future Urban. It is assumed these data and information are correct and representative of site conditions at the time of the assessment. Any changes in data or information that may arise may alter the conclusions presented therein and are subsequently subject to reassessment by the author of this document.

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4 EXECUTIVE SUMMARY

This report sought to provide an assessment of potential air quality impacts associated with PM₁₀, PM_{2.5} and RCS based on extrapolation of data from an extensive air monitoring program undertaken for the Golden Grove Neighbourhood development to the north and north-east of the quarry site. This program also used a High Volume (HiVol) gravimetric reference method sampler for 12 months (HVT4) on a site to the immediate west, some 500m west of the current proposed Residential Park.

The conclusions associated with the Golden Grove Neighbourhood development investigations were as follows:

- ***“RCS and PM_{2.5} concentrations remained below annual health-based guideline values, indicating no significant health risk to future populations.***
- *PM₁₀ exceedances at this site were consistent with those experienced across South Australia at all SA EPA monitoring sites when frequency and magnitude of the exceedances were considered. This includes those associated with winds from the quarry but also from other sources.*
- ***Directional analysis and statistical evaluation** support the conclusion that **multiple sources**, not solely the quarry, contribute to observed particulate levels. These will be mitigated as the development progresses.*
- *The implementation of **vegetative buffers and surface treatments** will provide additional confidence in mitigating potential dust impacts, including nuisance dust for the potential minor exceedances or unexpected events that may occur.” (HRS 2025, p10).*

The evaluations across HVT4 are consistent with observations from the Hi Vol northern monitoring stations in that PM₁₀ reported limited exceedances of the daily guidance values for non-quarry stations, compliance with the annual average guidance value for PM₁₀ and compliance with the interim annual average value for RCS.

Taking into consideration all the information that is available regarding quarry impacts from recent monitoring investigations, the data supports the fact that the most hazardous substances, RCS and PM_{2.5} are not exceeding levels of health concern based on current regulatory guidelines. Furthermore, PM₁₀ level exceedances where they were identified (include both HiVol and nephelometric real-time samplers), were comparable to SA EPA levels when the magnitude of exceedances was considered. This means that potential population health risks associated with the most hazardous contaminants are within current acceptable parameters and for larger particles (PM₁₀) are comparable to SA EPA monitoring results.

The assessments against quarry operational activities and atmospheric dust burdens reported that PM₁₀ and PM_{2.5} concentrations at the closest boundary monitoring station were not affected by quarry operations. In other words, the concentrations of PM_{2.5} and PM₁₀ remain consistent regardless of whether the quarry was operational. This location in terms of proximity is equivalent to the proposed Residential Park location and implies that for current and future quarry activities air quality impacts will not be influenced by operational activities.

In addition, evaluation of mitigation measures suggested that suitably designed vegetation buffers can be applied to provide additional confidence to mitigate any potential dust generation. The peer-reviewed literature supports the ability of greening buffers to capture and retain particulate matter including PM₁₀ and PM_{2.5}. Furthermore, there is local research information across the types of trees, shrubs and low vegetation that provides efficacy data across particulate mitigation enabling the most effective site-specific vegetation to be identified. This subsequently provides a precautionary approach to unforeseen atmospheric dust emissions from the quarry or surrounds noting also that the

proposed Residential Park itself will suppress non-quarry dust due to the presence of handstand, lawns, paving, footpaths and verges and other surface encapsulation methods.

Overall, this information suggests that the air quality impacts from PM_{10} , $PM_{2.5}$ and RCS can be adequately managed at the proposed Residential Park development.

5 INTRODUCTION

This report seeks to present an evidence-based discussion regarding the potential human health risks arising from adjacent quarry emissions associated with residence at a planned Residential Park located at 488-500 Yatala Vale Road, Yatala Vale. Specifically, whether residents of the proposed Residential Park will be exposed to unacceptable air quality impacts because of the current or future operations of the quarry or brick making activities on the adjoining land.

An application for an outline consent has been submitted to the State Planning Commission and has undergone public notification which has resulted in a range of representations.

6 OBJECTIVE

Present an evidence-based discussion regarding whether residents of the proposed Residential Park located at 488-500 Yatala Vale Road, Yatala Vale will be exposed to unacceptable air quality impacts as a result of the current or future operations of the quarry or brick making activities on the adjoining land.

7 SCOPE OF WORK

- Present an assessment of the proposal (receiving environment) against any relevant objective standards for air quality (SA EPA policies or relevant guidelines etc.) with consideration of the following questions:
 - If adverse impacts will be experienced on the site as a result of the quarry or brick yard, what is the likely frequency and severity of those impacts?
 - What steps can be taken on the Yatahlia Manor site to mitigate adverse impacts (this could be physical e.g. mounding, tree planting or behavioural – e.g. staying inside)?
 - Whether the proposed development will prejudice the continued operation of the quarry and brick making yard?
- Review and provide a response to the representations from Hallett and Department of Energy and Mining (DEM).
- An assessment of the proposal against the Planning and Design Code provisions listed below (from a health risk assessment perspective):
 - Relevant module: General Development Policies – Interface between Land Uses
 - Performance Outcome 1.1
 - Sensitive receivers are designed and sited to protect residents and occupants from adverse impacts generated by lawfully existing land uses (or lawfully approved land uses) and land uses desired in the zone.
 - Performance Outcome 10.1
 - Sensitive receivers are separated from existing mines to minimise the adverse impacts from noise, dust and vibration.

8 ASSESSMENT OF THE PROPOSAL (RECEIVING ENVIRONMENT) AGAINST ANY RELEVANT OBJECTIVE STANDARDS FOR AIR QUALITY (SA EPA POLICIES AND RELEVANT GUIDELINES)

8.1 LEGISLATION AND RELEVANT AIR QUALITY GUIDELINES

In Australia, national air quality legislation is administered by the National Environment Protection Council under the following Acts:

- National Environment Protection (Ambient Air Quality) Measure (NEPM) 2021
- National Environment Protection (Air Toxics) Measure (NEPM) 2004

The goal of the National Environment Protection Measure (NEPM) is to achieve National Environment Protection Standards, as assessed according to the established monitoring protocols, with the ultimate objective of ensuring adequate protection of human health and well-being. Accordingly, this measure requires each participating jurisdiction to be involved in dust monitoring programs, including South Australia (SA), and submit an annual report on air quality monitoring. The legislation provides guidance on monitoring instrumentation, methodologies and target national health-based criteria.

In South Australia, The Environment Protection (Air Quality) Policy 2016 is the applicable local legislation including applicable criteria for assessing developments. Clause 18 of the Environment Protection (Air Quality) Policy 2016 refers to ground level concentrations in Schedule 2 of that policy including that associated with particulate matter. These should be used in the first instance and have been presented in Table 1. Where criteria are unavailable, they have been included from the Ambient Air NEPM 2021 (as detailed above) or in the case of RCS, this interim criterion reflects development by SA Health and SA EPA with subsequent publication through the SA EPA.

Applicable criteria including their sources have been detailed in Table 1.

Table 1: Ambient air quality criteria (SA and National)

Contaminant	Maximum concentration ($\mu\text{g}/\text{m}^3$)	Averaging period	Exceedance Allowances	Source
National and SA EPA				
Particles as PM_{10}	50	24 hours	None	SA EPA 2016 ^a
	25	1 year	None	NEPC, 2021 ^b
Particles as $\text{PM}_{2.5}$	25	1 day	None	SA EPA 2016 ^a
	8	1 year	None	SA EPA 2016 ^a
South Australia				
RCS ^c	3	1 year	Not established	SA Health/SA EPA 2022

Footnotes:

- SA EPA (2016) Environment Protection (Air Quality) Policy 2016. South Australian Environmental Protection Authority, Adelaide.
- NEPC (2021) National Environment Protection (Ambient Air Quality) Measure (NEPM) 2021. National Environment Protection Council, Canberra.
- SA EPA (2022) Interim criteria developed by the SA EPA in consultation with SA Health.

In South Australia air quality legislation administered by the SA EPA includes the *Environment Protection Act 1993* and the *Environment Protection (Air Quality) Policy 2016* and several SA

EPA guidelines have been developed under this legislation to aid in air quality assessment, monitoring, and surveillance. These include:

- SA EPA (2022) *Interim criteria for RCS concentration in ambient air for mining and extractive industries*. South Australian Environment Protection Authority, Adelaide, South Australia.
- SA EPA (2016b) *Ambient air quality assessment*. South Australian Environment Protection Authority, Adelaide, South Australia.
- SA EPA (2016c) *Evaluation distances for effective air quality and noise management*. South Australian Environment Protection Authority, Adelaide, South Australia.
- SA EPA (2012) *Emission testing methodology for air pollution*. South Australian Environment Protection Authority, Adelaide, South Australia.

These documents are available from

https://www.epa.sa.gov.au/environmental_info/air_quality/air_quality

The planning, methodological development, instrumentation, and operations with respect to the Golden Grove Extractive Industries Zone (GGEIZ) rezoning works air quality assessments were based on these documents. That final air quality report is publicly available and relevant elements of that work are presented in this report due to the proximity of the Residential Park proposal.

The GGEIZ air quality assessment report was used in the assessment of potential impacts at the Residential Park location through extrapolation of data and review of data from a nearby reference method monitoring station that was part of the GGEIZ investigations. The details across elements of this assessment are subsequently presented.

8.2 INTERIM CRITERIA FOR RCS CONCENTRATIONS IN AMBIENT AIR FOR MINING AND EXTRACTIVE INDUSTRIES (2022)

Guidelines associated with respirable crystalline silica exposure have principally been developed for occupational health purposes and designed for high-risk groups, such as workers who are occupationally exposed to silica dust. The current guideline for occupational exposure is a time-weighted average (TWA) of 50 $\mu\text{g}/\text{m}^3$ over an 8-hour period. Commonly used occupational exposure limits include the ACGIH's limit of 25 $\mu\text{g}/\text{m}^3$ (ACGIH, 2012) and Safe Work Australia's revised limit of 50 $\mu\text{g}/\text{m}^3$ (SafeWork Australia, 2020).

Exposure to RCS in the community is lower than the levels typically encountered in a workplace where silica-based materials are used. There are limited data across environmental health exposures, and it has been reported that there is no conclusive evidence linking environmental exposure to silica dust with significant health risks and that the health risk from non-occupational exposure is considered minimal (Bhagia, 2012). However, residents living near industrial sites, such as quarries, may frequently express concerns about potential exposures and it is therefore important that data be acquired to provide an assessment of health risks which, if identified, can then be mitigated.

The SA EPA, in collaboration with SA Health, conducted an extensive literature review on recent criteria for RCS in ambient air, particularly for mining and extractive industries. Based on this review, an interim criterion was developed and adopted by the SA EPA of 3 $\mu\text{g}/\text{m}^3$ as an annual average for the PM_{10} size fraction in ambient air (SA EPA, 2022). This interim guideline was used as the toxicological reference value to assess potential health risks to future residents of the

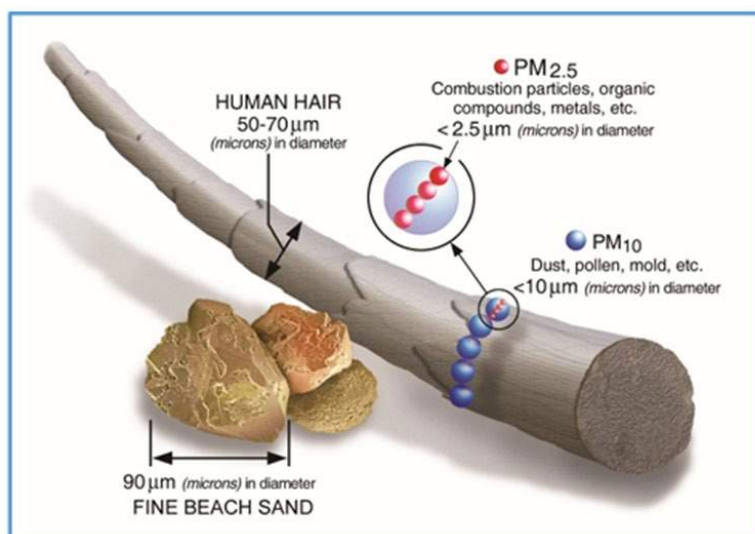
Golden Grove rezoning area in relation to nearby quarry activities based on monitoring operations. These latter data (relevant to the location) are the subject of this report.

8.3 TOXICOLOGY AND HEALTH EFFECTS

As particulate matter is composed of tiny particles or droplets suspended in the air, the smaller the particle size the longer it is suspended in the air and the deeper it penetrates the lung. Total Suspended Particulates (TSP), also known as nuisance dust, encompasses suspended particles of less than or equal to 50 to 100 microns aerodynamic diameter (EEA, 2020). These particles primarily pose a nuisance but may present health concerns depending on their composition. They are inspirable rather than respirable, with most being trapped in the upper respiratory tract and not reaching the alveoli in the lung unless their diameter distribution is in the lower PM₁₀ particle range.

PM₁₀ refers to particles with an aerodynamic diameter of 10 microns or less, while PM_{2.5} refers to particles 2.5 microns or smaller. These particles are too small to be seen with the naked eye. For comparison, human hair is about 50-70 microns thick, and fine beach sand is around 90 microns in diameter (refer Figure 1).

Figure 1: Illustration of relative sizes of particulate matter (US EPA 2024a)



RCS refers to silica dust that is small enough (less than 10-micron aerodynamic diameter) to be inhaled into the deepest parts of the lungs. RCS is commonly generated during activities like quarrying, mining, and construction work, particularly when working with materials such as sand, stone, concrete, and mortar. It is therefore a component of the PM₁₀ fraction and is analysed as such by being captured on the HiVol sampling filters.

The primary exposure pathway involves inhaling dust containing various particle size fractions, such as TSP, PM₁₀, PM_{2.5}, and RCS within the PM₁₀ fraction, which may be generated by nearby quarrying activities. Dust particles are measured in micrometers (microns), with their size directly linked to their potential to cause health problems. Smaller particles can bypass the body's natural defenses, like cilia and mucus in the nose and upper respiratory tract, allowing them to reach deep into the lower respiratory system. The smaller the particle, the greater the likelihood it will penetrate the bronchioles and alveoli, where gas exchange and uptake into the blood occurs (WHO, 2013; Melzi, et al. 2023).

Health effects associated with TSP include irritation of the eyes, nose, and throat and may also be associated with compositional concerns such as lead as this would lead to absorption of such substances along the respiratory tract. TSP may also cause discomfort and stress due to aesthetics such as visual pollution or impacts through soilage of materials and property. As it has been recognised that the smaller the particle size the more hazardous the dust, TSP measurement has been replaced with PM₁₀ and PM_{2.5} monitoring and assessment.

Health effects of PM₁₀ are associated with the ability of PM₁₀ particles to penetrate the upper respiratory tract and reach the lower regions of the lungs (the alveoli). In the short term (hours to days), exposure to elevated levels of PM₁₀ has been associated with respiratory symptoms such as coughing, throat irritation, and exacerbation of pre-existing conditions such as asthma and bronchitis. Long-term exposure (years) may contribute to the development of chronic respiratory diseases such Chronic Obstructive Pulmonary Disease (COPD), and emphysema with subsequent reduced lung function.

Due to their smaller size, PM_{2.5} particles can penetrate deeper into the lungs and even enter the bloodstream. This may lead to more severe health effects, including cardiovascular and pulmonary diseases with chronic exposure to PM_{2.5} associated with an increased risk of heart attacks, strokes, respiratory infections, and lung cancer. There is also evidence linking PM_{2.5} exposure to adverse pregnancy outcomes, such as low birthweight and pre-term birth (WHO, 2013). It is hypothesized that PM_{2.5} impairs normal immune responses by damaging the bronchial mucociliary system, increasing epithelial barrier permeability, and inhibiting alveolar macrophage phagocytosis (Thangavel et al., 2022).

Inhalation of RCS can lead to silicosis, a chronic lung disease caused by the formation of scar tissue in the lungs, which reduces the lung's ability to take in oxygen. Silicosis can be disabling or fatal, and there is no cure once it has developed. In addition, prolonged or chronic exposure to RCS may lead to an increased risk of developing COPD, which includes conditions such as emphysema and chronic bronchitis. As the International Agency for Research on Cancer (IARC), has classified RCS as a Group 1 (proven) human carcinogen, prolonged exposure may result in lung cancer in humans (IARC 2022).

8.4 IF ADVERSE IMPACTS WILL BE EXPERIENCED ON THE SITE AS A RESULT OF THE QUARRY OR BRICK YARD, WHAT IS THE LIKELY FREQUENCY AND SEVERITY OF THOSE IMPACTS?

8.4.1 HISTORICAL LOCAL AMBIENT AIR MONITORING ACTIVITY

Understanding the potential impacts of PM_{2.5} and PM₁₀ particulates and RCS arising from quarry operations was a key objective in the extensive ambient air monitoring works undertaken for the 'Proposal to initiate a Code Amendment: Golden Grove Neighbourhood Code Amendment' to rezone areas to the north and northeast of the quarry operations. This monitoring occurred from February 2024 to February 2025 and included a distribution of real-time (PMt locations in Figure 2) and time-weighted average monitoring locations (HVt locations in Figure 2). That monitoring plan's geospatial distribution is detailed in Figure 2. This figure also presents the relative location of the proposed Residential Park to the monitoring locations, particularly the nearby HVt4 location used in the above monitoring investigations. Extracted information from these investigations is subsequently presented with a focus on results from HVt4 that is located some 500m west of the proposed Residential Park.

Figure 2: Site location and previous monitoring locations

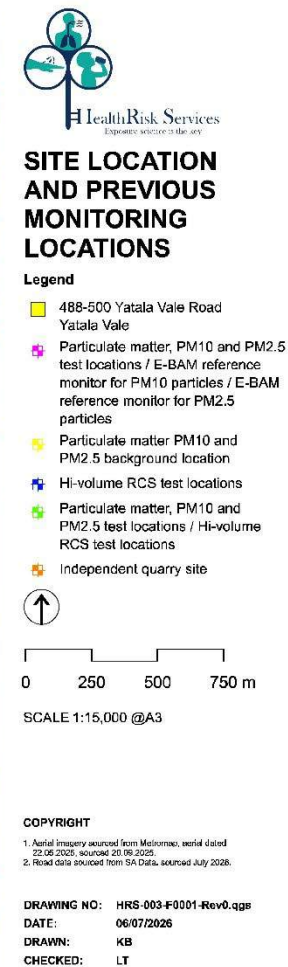


FIGURE 1

8.4.2 RESULTS FROM GOLDEN GROVE NEIGHBOURHOOD CODE AMENDMENT INVESTIGATIONS

The results from an intensive 12-month monitoring campaign were summarised as follows:

- *“RCS and PM_{2.5} concentrations remained below annual health-based guideline values, indicating no significant health risk to future populations.*
- *PM₁₀ exceedances at this site were consistent with those experienced across South Australia at all SA EPA monitoring sites when frequency and magnitude of the exceedances were considered. This includes those associated with winds from the quarry but also from other sources.*
- *Directional analysis and statistical evaluation support the conclusion that multiple sources, not solely the quarry, contribute to observed particulate levels. These will be mitigated as the development progresses.*
- *The implementation of vegetative buffers and surface treatments will provide additional confidence in mitigating potential dust impacts, including nuisance dust for the potential minor exceedances or unexpected events that may occur.” (HRS, 2025, p10).*

Overall, the findings supported the suitability of the proposed rezoning for residential and commercial development from an air quality perspective.

8.4.3 SPECIFIC INFORMATION RELATED TO PM₁₀ PARTICULATES AND RCS

HiVol samplers (labelled HVt) are gravimetric samplers with size-specific inlets and high-volume air flow rates that capture and deposit the particle size of interest onto pre-weighed filters for gravimetric determination. These samples can then also be analysed for contaminants such as lead or in this case, RCS. HiVol samplers are a Reference Method as detailed in the ambient air quality NEPM (NEPC, 2021) and are used by National and State/Territory regulatory environment authorities for compliance monitoring for PM₁₀. This approach is based on the Ambient Air Quality NEPM published methods for one day in six monitoring to establish annual averages for PM₁₀ across monitoring locations. Sampling of the filters enabled analyses to be undertaken for respirable crystalline silica.

The following two extracted tables summarise the annual data across the locations for the HiVol samplers including both PM₁₀ and RCS from the captured sample.

Table 2: Annual PM₁₀ data from HiVol samplers

	PM ₁₀ (µg/m ³)			
	HVt1	HVt2	HVt3	HVt4
Arithmetic mean	33.4	17.9	17.1	20.7
Geometric mean	26.3	15.3	14.9	17.6
Standard Error	3.7	1.4	1.1	1.7
Median	24.0	15.5	15.0	17.0
Standard Deviation	29.1	11.2	8.8	13.6
Minimum	8.5	3.6	2	5.6
Maximum	170	72	43	80
n	61	62	61	61
Number of exceedance days	8	1	0	2
% of Exceedance days	13.1	1.6	0.0	3.3

Table 3: Annual RCS data from HiVol samplers

	RCS ($\mu\text{g}/\text{m}^3$)			
	HVt1	HVt2	HVt3	HVt4
Arithmetic mean	1.63	0.50	0.57	0.59
Geometric mean	1.16	0.38	0.41	0.42
Standard Error	0.16	0.05	0.05	0.07
Median	1.30	0.44	0.50	0.41
Standard Deviation	1.23	0.39	0.41	0.51
Minimum	0.10	0.00	0.05	0.08
Maximum	5.6	2.0	2.0	2.4
n	61	62	61	61
Number of exceedance days	0	0	0	0
% of Exceedance days	0	0	0	0

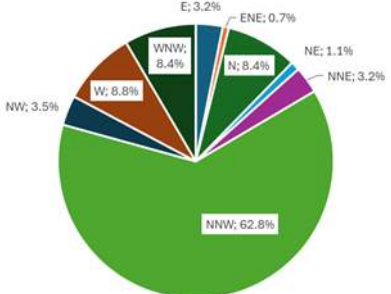
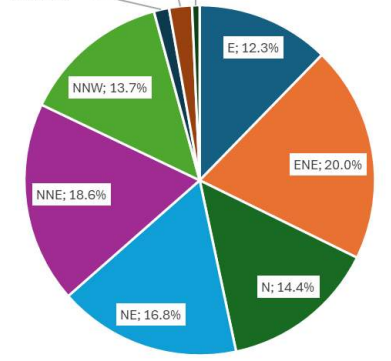
Table 2 provides a statistical summary of the HiVol results across the annual duration of monitoring for all HiVol sites. HVt1 represented an on-site quarry location where processing and loading facilities were located. This was considered to represent a 'worst-case' dust generation setting.

There were eleven exceedances of the daily target for PM_{10} of $50 \mu\text{g}/\text{m}^3$ over the twelve-month period which were at HVt1 (the quarry site) being $54 \mu\text{g}/\text{m}^3$ (07/03/2024); $110 \mu\text{g}/\text{m}^3$ (30/04/2024); $130 \mu\text{g}/\text{m}^3$ (18/05/2024); $88 \mu\text{g}/\text{m}^3$ (23/06/2024); $72 \mu\text{g}/\text{m}^3$ (29/08/2024); $67 \mu\text{g}/\text{m}^3$ (08/01/2025); $53 \mu\text{g}/\text{m}^3$ (14/01/2025) and $170 \mu\text{g}/\text{m}^3$ (07/02/2025); at HVt2 being $72 \mu\text{g}/\text{m}^3$ (30/04/2024); and at HVt4 being $80 \mu\text{g}/\text{m}^3$ (24/04/2024) and $63 \mu\text{g}/\text{m}^3$ (13/02/2025). The arithmetic average over the twelve-month period ranged from $17.1 \mu\text{g}/\text{m}^3$ to $33.4 \mu\text{g}/\text{m}^3$ with the latter being on the quarry site. Non-quarry sites were all below the annual average PM_{10} target value of $25 \mu\text{g}/\text{m}^3$.

The exceedance at HVt4 represents $2/61 \times 100 = 3.3\%$ of all results. The latter represents the closest monitoring location to the proposed Residential Park. On this basis the frequency of any impacts exceeding current target regulatory criteria may be twice yearly depending on other factors such as wind speed, wind direction and source generation.

Wind data at HVt4 on those exceedance days is presented in Table 4. These show how the wind directions shift over the day. Some winds did derive from the quarry location being N, NE and NNW. In terms of Table 3 however, there were no exceedances of the RCS interim annual criterion of $3 \mu\text{g}/\text{m}^3$ across all locations including HVt4. The twelve-month arithmetic average across RCS results ranged from $0.50 \mu\text{g}/\text{m}^3$ to $1.63 \mu\text{g}/\text{m}^3$ and these were below the interim SA EPA target guideline value of $3 \mu\text{g}/\text{m}^3$ as an annual average. These data suggest that RCS exposures at the Residential Park will be within the interim regulatory criteria.

Table 4: Wind direction distribution on the two days of exceedances at HVt4 over the annual monitoring period

Location	Date	Result (µg/m³) / Comment	Wind directions																				
HVt4	24/04/2024	80 Dominant wind directions are NNW, W, N, WNW and NNW, SSE and SSW Direction of quarry are N and NE and NNW.	Wind Direction Distribution (%) – 24/04/2024 HVt4  <table><thead><tr><th>Direction</th><th>Percentage</th></tr></thead><tbody><tr><td>NNW</td><td>62.8%</td></tr><tr><td>W</td><td>8.8%</td></tr><tr><td>N</td><td>8.4%</td></tr><tr><td>WNW</td><td>8.4%</td></tr><tr><td>NNE</td><td>3.2%</td></tr><tr><td>NE</td><td>1.1%</td></tr><tr><td>E</td><td>3.2%</td></tr><tr><td>ENE</td><td>0.7%</td></tr><tr><td>NW</td><td>3.5%</td></tr></tbody></table>	Direction	Percentage	NNW	62.8%	W	8.8%	N	8.4%	WNW	8.4%	NNE	3.2%	NE	1.1%	E	3.2%	ENE	0.7%	NW	3.5%
Direction	Percentage																						
NNW	62.8%																						
W	8.8%																						
N	8.4%																						
WNW	8.4%																						
NNE	3.2%																						
NE	1.1%																						
E	3.2%																						
ENE	0.7%																						
NW	3.5%																						
HVt4	13/02/2025	63 Dominant wind directions are E, ENE, N, NE, NNE, NNW. Direction of quarry is N and NE and NNW.	Wind Direction Distribution (%) – 13/02/2025 HVt4  <table><thead><tr><th>Direction</th><th>Percentage</th></tr></thead><tbody><tr><td>ENE</td><td>20.0%</td></tr><tr><td>N</td><td>14.4%</td></tr><tr><td>NE</td><td>16.8%</td></tr><tr><td>NNE</td><td>18.6%</td></tr><tr><td>NNW</td><td>13.7%</td></tr><tr><td>E</td><td>12.3%</td></tr><tr><td>W</td><td>2.1%</td></tr><tr><td>NW</td><td>1.4%</td></tr><tr><td>WNW</td><td>0.7%</td></tr></tbody></table>	Direction	Percentage	ENE	20.0%	N	14.4%	NE	16.8%	NNE	18.6%	NNW	13.7%	E	12.3%	W	2.1%	NW	1.4%	WNW	0.7%
Direction	Percentage																						
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W	2.1%																						
NW	1.4%																						
WNW	0.7%																						

8.4.4 SPECIFIC INFORMATION RELATED TO QUARRY OPERATIONAL IMPACTS, COMPLAINTS, COMPARISONS WITH SA EPA PM₁₀ MONITORING DATA AND METEOROLOGICAL INFLUENCES

8.4.4.1 Quarry operational impacts

The following information is drawn from HRS, 2025, pp68-70.

Information on quarry operations was received from Steve Seal, Hanson Industries on 8 January 2025 as a series of images that captured plant and glass plant operating periods from January 2024 to January 2025. These images were converted to an excel file for analysis with activity information separated into Plant and Glass Plant; Overburden, Load and Haul and Load and Haul + Overburden activities. The period associated with monitoring was screened and daily PM_{2.5} and PM₁₀ data from PMt7 (nearest boundary location) aligned to the activity data. The dataset was prepared by including both activity and non-activity days, marked as 'yes' or 'no' respectively. Statistical analysis was then conducted to determine whether there was a significant difference between activity and non-activity

days using a t-test. The prepared dataset was analysed using R cloud statistics calculator software with the primary analysis being an independent t-test as follows:

- T-tests were performed to evaluate whether a statistically significant difference exists in PM_{2.5} and PM₁₀ concentrations between monitoring days with and without quarry operations.
- Additional t-tests were conducted to determine differences in particulate concentrations on days with and without specific quarry activities (Load and Haul and Overburden).

Results from the HRS report are detailed in Figures 3 to 6.

Figure 3: Analyses for Glass Plant

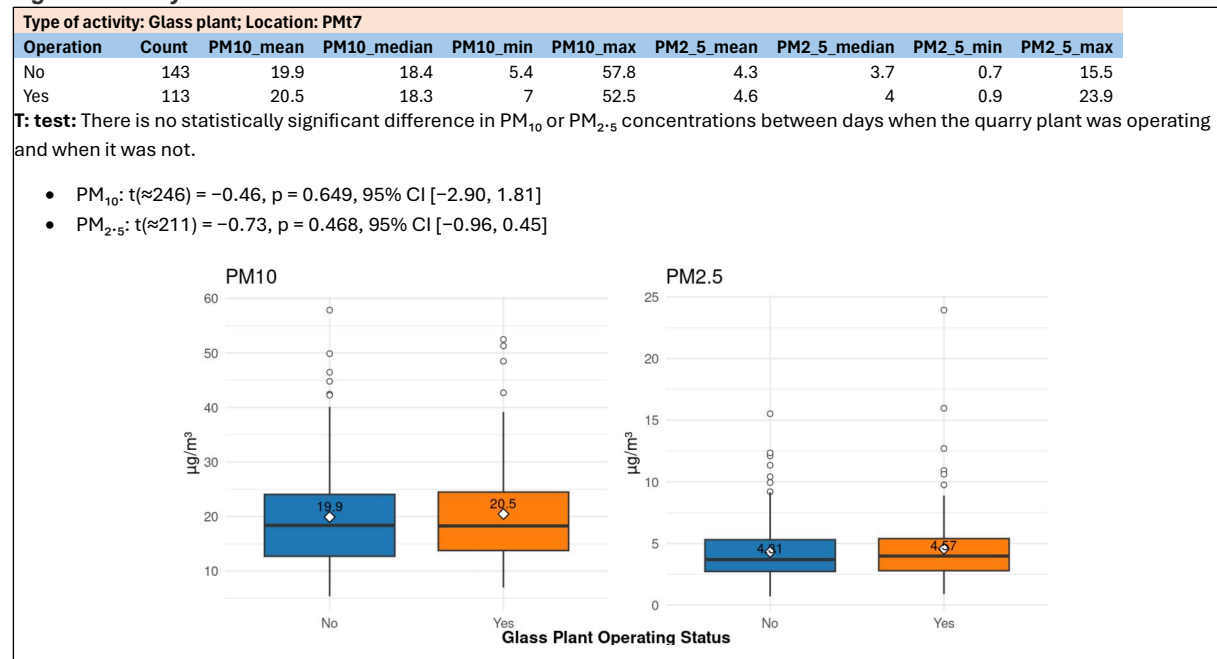


Figure 4: Analyses for Quarry Plant

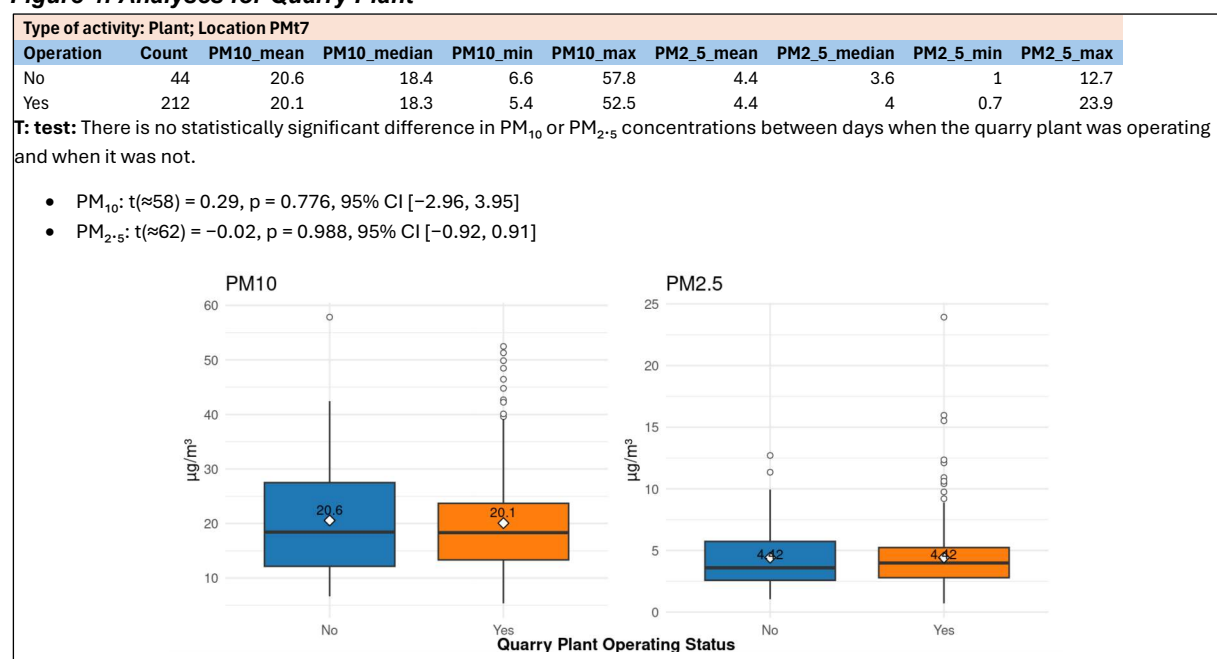


Figure 5: Box plots across Overburden, Load and Haul and combined data sets

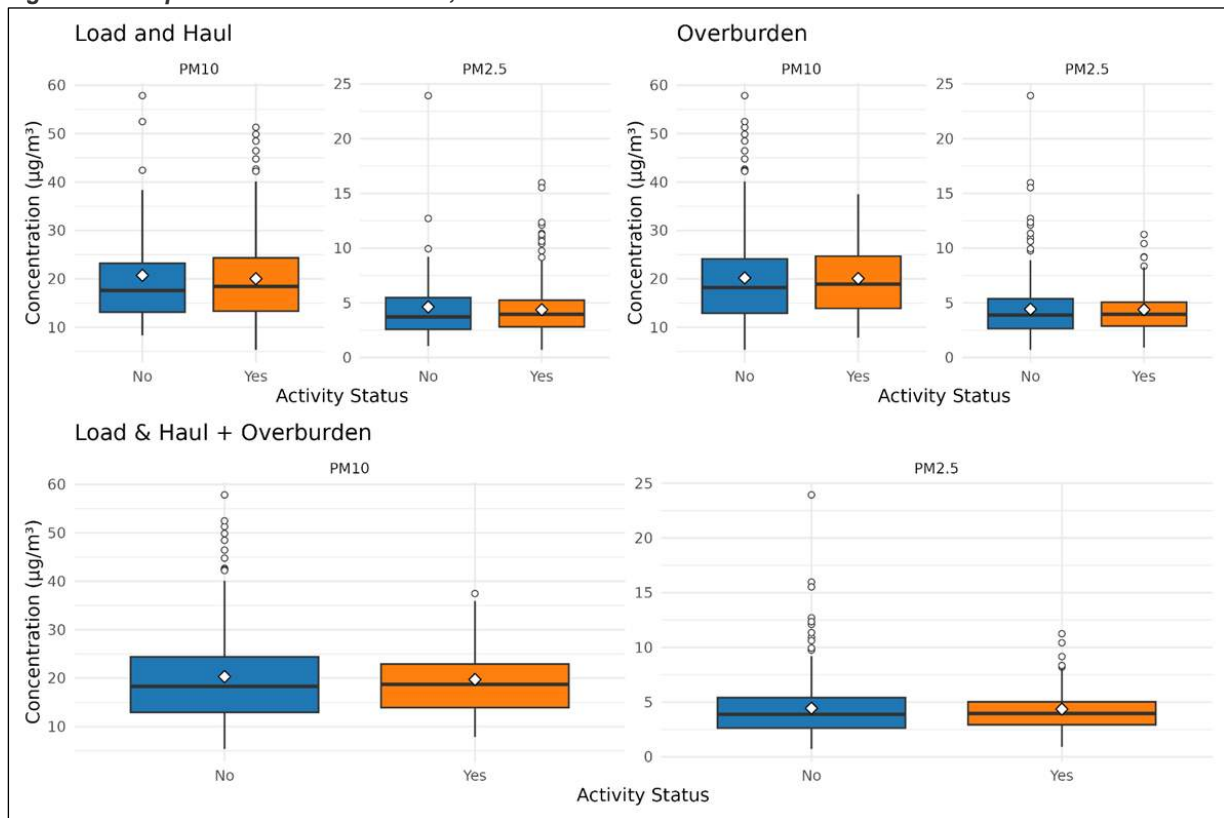


Figure 6: Analyses across Overburden, Load and Haul and combined datasets

Type of activity: Load and Haul; Location: PMt7									
Operation	Count	PM10_mean	PM10_median	PM10_min	PM10_max	PM2.5_mean	PM2.5_median	PM2.5_min	PM2.5_max
No	50	20.7	17.6	8.3	57.8	4.7	3.8	1	23.9
Yes	226	20	18.4	5.4	51.3	4.4	4	0.7	16
T: test: There is no statistically significant difference in PM ₁₀ or PM _{2.5} concentrations between days with and without Load&Haul activity.									
- PM₁₀: $t(\approx 66) = 0.42$, $p = 0.674$, 95% CI [-2.57, 3.94] - PM_{2.5}: $t(\approx 62) = 0.49$, $p = 0.623$, 95% CI [-0.80, 1.32]									
Type of activity: Overburden; Location: PMt7									
Activity	Count	PM10 Mean	PM10 Median	PM10 Min	PM10 Max	PM2.5 Mean	PM2.5 Median	PM2.5 Min	PM2.5 Max
No	203	20.2	18.2	5.4	57.8	4.4	3.9	0.7	23.9
Yes	72	20.1	18.9	7.9	37.5	4.4	4	0.9	11.2
T: test: There is no statistically significant difference in PM ₁₀ or PM _{2.5} concentrations between days with and without Overburden activity.									
- PM₁₀: $t(\approx 162) = 0.10$, $p = 0.924$, 95% CI [-2.15, 2.36] - PM_{2.5}: $t(\approx 161) = 0.12$, $p = 0.903$, 95% CI [-0.61, 0.69]									
Type of activity: Load & Haul + Overburden; Location: PMt7									
Operation	Count	PM10_mean	PM10_median	PM10_min	PM10_max	PM2.5_mean	PM2.5_median	PM2.5_min	PM2.5_max
No	208	20.3	18.3	5.4	57.8	4.5	3.9	0.7	23.9
Yes	68	19.7	18.7	7.9	37.5	4.4	4	0.9	11.2
T: test: There is no statistically significant difference in PM ₁₀ or PM _{2.5} concentrations between days with and without Load&Haul+Overburden activities.									
- PM₁₀: $t(156.4) = 0.52$, $p = 0.602$, 95% CI [-1.63, 2.81] - PM_{2.5}: $t(\approx 152) = 0.25$, $p = 0.805$, 95% CI [-0.56, 0.72]									

Results can be summarised as:

There is no evidence to suggest that quarry activity has an impact on PM_{2.5} and PM₁₀ concentrations at PMt7, the closest beyond boundary monitoring location. In other words, the concentrations of PM_{2.5} and PM₁₀ remain consistent regardless of whether the quarry is operational.

The location of PMt7 was on the northern boundary of the quarry within proximity of the boundary. This locale in terms of distance from the quarry is equivalent to the proximity of the proposed Residential Park located on the southern end of the quarry suggesting that impacts from quarry are not associated with observed PM₁₀ and PM_{2.5} results. This further suggests that fugitive dusts (rather than quarry activities) may contribute to the observed exceedances at HVt4 which represented 3.3% of all HVt4 monitoring results across PM₁₀.

These findings suggest that there is no evidence that quarry activity has an impact on PM_{2.5} and PM₁₀ concentrations at the closest beyond boundary monitoring location. In other words, the concentrations of PM_{2.5} and PM₁₀ remain consistent regardless of whether the quarry is operational. This location in terms of proximity is equivalent to the proposed Residential Park location and implies that for current and future activities air quality impacts will not be influenced by operational activities.

8.4.4.2 Complaints

During the Golden Grove Neighbourhood Code Amendment Investigations the following information was received from Nadia Gencarelli, Manager, Code Amendments, Planning and Land Use Services, Department for Housing and Urban Development by email on 13 January 2025.

- *"All complaints provided related to operations from the GGEIZ,*
- *Not all complaints have recorded a location (or distance/direction),*
- *Locations displayed on the map are approximate only, and do not reflect precise address,*
- *No complaints have been recorded from the proposed code amendment area; this does not provide any insight as to the likelihood of impacts to this area in the future due to the lack of existing sensitive receptors in that area.*
- *Complaints received only relate to existing quarry operations, and do not provide any insight into future authorised operations in areas of the Extractive Zone that have not yet commenced.*
- *Not all complaints are linked back to a discrete source location within the zone, just the zone on the whole, as such direction of complaints are taken as approximate from the centre of the zone,*
- *The table only includes complaints received since 2017 regarding air quality, two of these were specific to odour.*
- *The Map summarises all complaints not restricted by date or complaint type."*

The summary of complaints is detailed in Table 5 and the distribution map of complaints is presented in Figure 7.

There is considerable uncertainty regarding these complaints as they are poorly defined both spatially and temporally. In the Golden Grove Neighbourhood Code Amendment investigations evaluation was undertaken by examining PMt1/HVt1 where realtime monitoring was undertaken for PM₁₀ and PM_{2.5} enabling examination of polar plots that provides direction information relative to the particulate concentrations. In that examination it was shown that at the time of those complaints more hazardous fine particles were coming from the residential areas to the NW and coarser dust particles from the quarry at varying times of the year.

Unfortunately we do not have a real-time monitor at HVt4 to examine this further. In addition, the data in Table 5 provides limited information on the dates and directions of the wind from the zone with only one mention in September 2021. This then limits any comparison to the frequency of the complaints

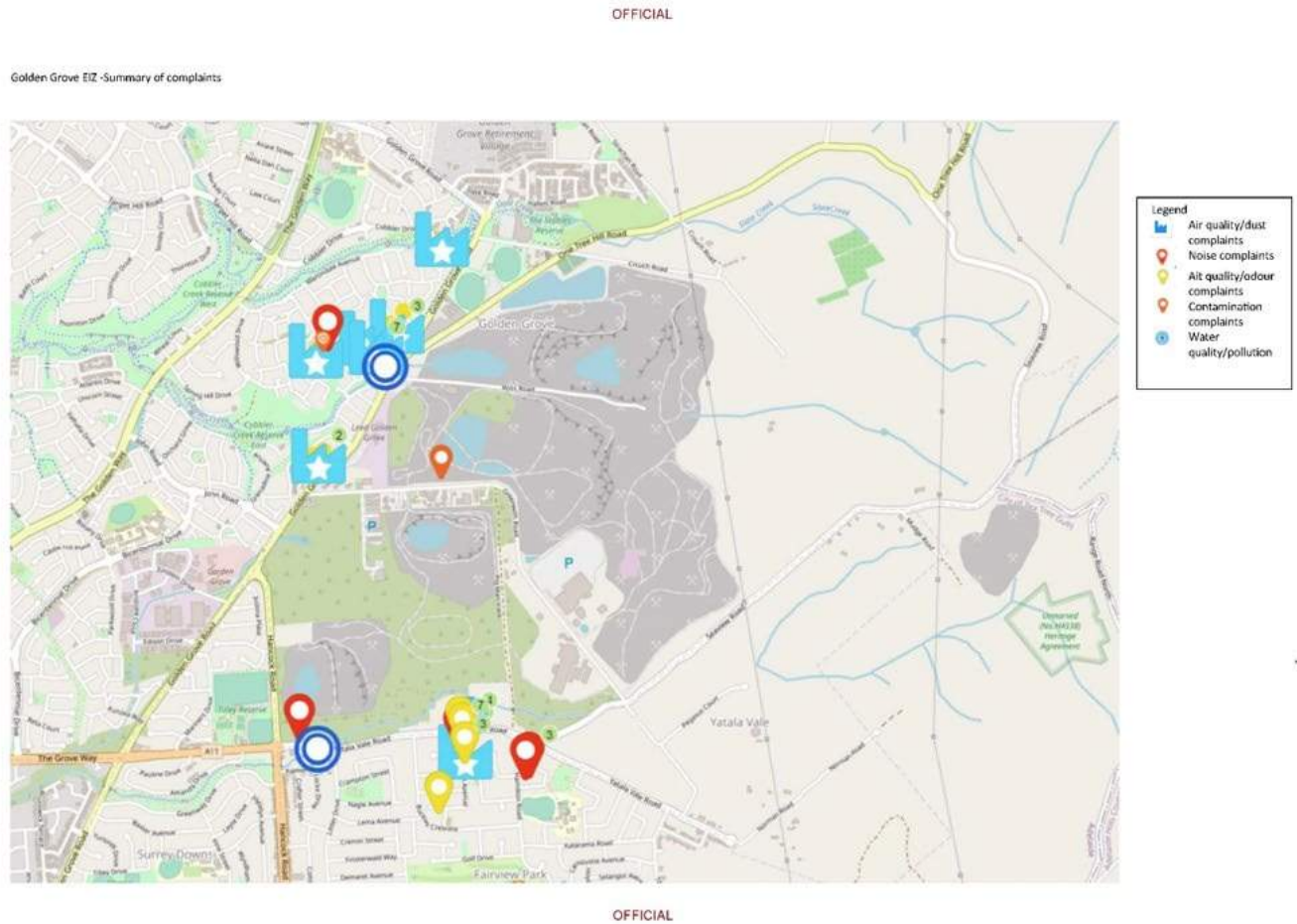
received. Based on Figure 7 there were seven (7) complaints to the south of the quarry over a period of some seven years with only one of those complaints related to air quality and dust and three related to air quality and odours. It is of note that in the discussions with SA EPA during the development of the Sampling and Analysis Quality Plan (SAQP) for the Golden Grove Neighbourhood Code Amendment Investigations the SA EPA did not consider odours to warrant investigation and focussed on PM₁₀, PM_{2.5} and RCS.

This then means we have one (1) air quality dust complaint reported over a duration of 7 years. This level of complaint does not support a theory of dust levels of concern as may be expressed by residents.

Table 5: Summary of complaints

Complaint No.	Year	Month	Distance from Zone (m)	Direction from Zone
1	2017	April	Unknown	Unknown
2	2019	May	Unknown	Unknown
3	2019	June	Unknown	Unknown
4	2021	January	200	NW
5	2021	September	550	S
6	2023	January	200	NW
7	2023	January	200	NW
8	2023	February	200	NW
9	2023	February	200	NW
10	2023	February	200	NW
11	2023	February	200	NW
12	2023	February	200	NW
13	2023	February	350	W
14	2023	February	200	NW
15	2023	March	200	NW
16	2023	March	200	NW
17	2023	March	200	NW
18	2023	April	Unknown	Unknown
19	2023	August	Unknown	Unknown
20	2023	November	Unknown	Unknown
21	2024	March	350	NW
22	2024	March	400	W
23	2024	April	Unknown	Unknown

Figure 7: Distribution of complaints



8.4.4.3 Comparisons with SA EPA data

During the Golden Grove Neighbourhood Code Amendment investigations, the SA EPA requested comparisons of monitoring data with state-wide SA EPA monitoring data for PM₁₀ across the monitoring period of 24 February 2024 to 28 February 2025. Summary statistics were undertaken and statistical evaluations considered. These are subsequently reproduced from HRS, 2025 (pp 91-92). Summary statistics for PM₁₀ from SA EPA sites are detailed in Table 6 and the distribution of SA EPA monitoring locations presented in Figure 8.

Table 6: SA EPA PM₁₀ monitoring data across annual monitoring period

	EPA stations PM ₁₀ (µg/m ³)								
	Elizabeth	Adelaide CBD	Le Fevre 1- Birkenhead	Le Fevre 2- North Haven	Whyalla, Schulz Street	Whyalla, Walls Street	Port Pirie	Christie Downs	Peterhead
Arithmetic mean	17.8	16.9	19.1	16.8	18.1	23.1	21.9	18.0	20.5
Geometric mean	14.8	14.3	15.5	14.3	15.3	18.1	17.6	15.3	17.9
Standard Error	0.1	0.1	0.2	0.1	0.1	0.3	0.2	0.1	0.4
Median	15.6	15.0	16.0	15.0	15.9	18.4	18.0	16.1	19.0
Standard Deviation	12.2	10.1	14.9	11.6	11.5	23.7	18.5	11.8	11.2
Daily Minimum	5.2	3.5	4.7	5.8	4.9	5	6.4	4.3	10.2
Daily Maximum	57.7	43.9	54.4	46.1	45.7	112	61.7	80.4	46.8
No of valid data days	338	368	338	340	287	331	340	334	43
No of days with exceedances	3	0	1.0	0	0	16	6	2	0
% Exceedances	0.9	0.0	0.3	0.0	0.0	4.8	1.8	0.6	0.0
Sampling Method	TEOM	BAM	BAM	BAM	TEOM	TEOM	TEOM	TEOM	BAM

Figure 8: SA EPA monitoring distribution

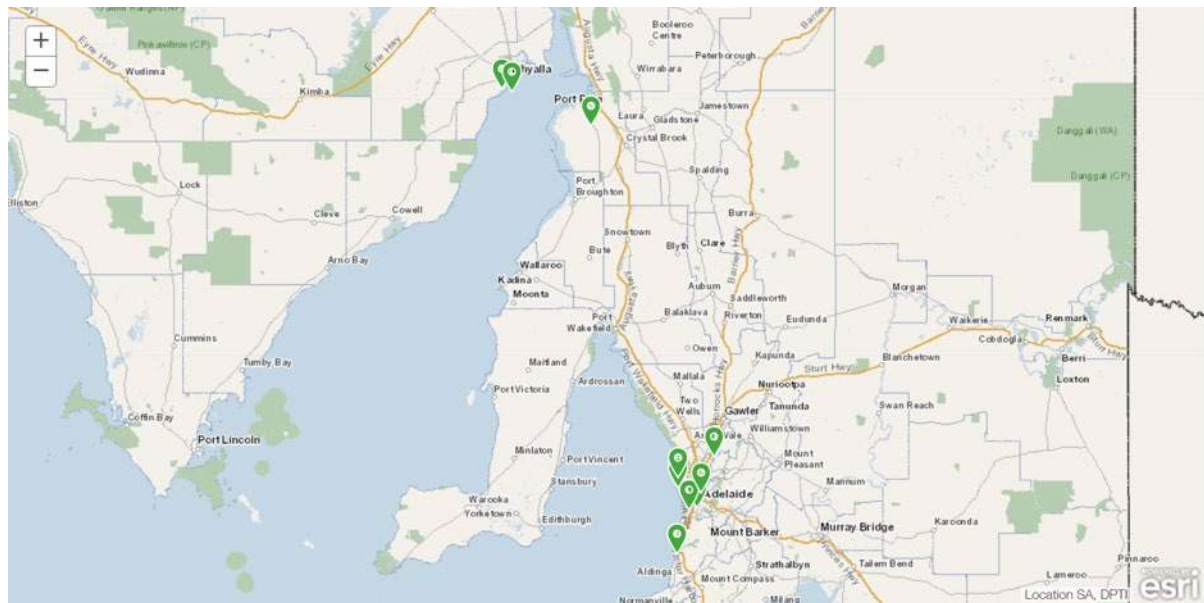


Figure 9: SA EPA exceedance value distribution

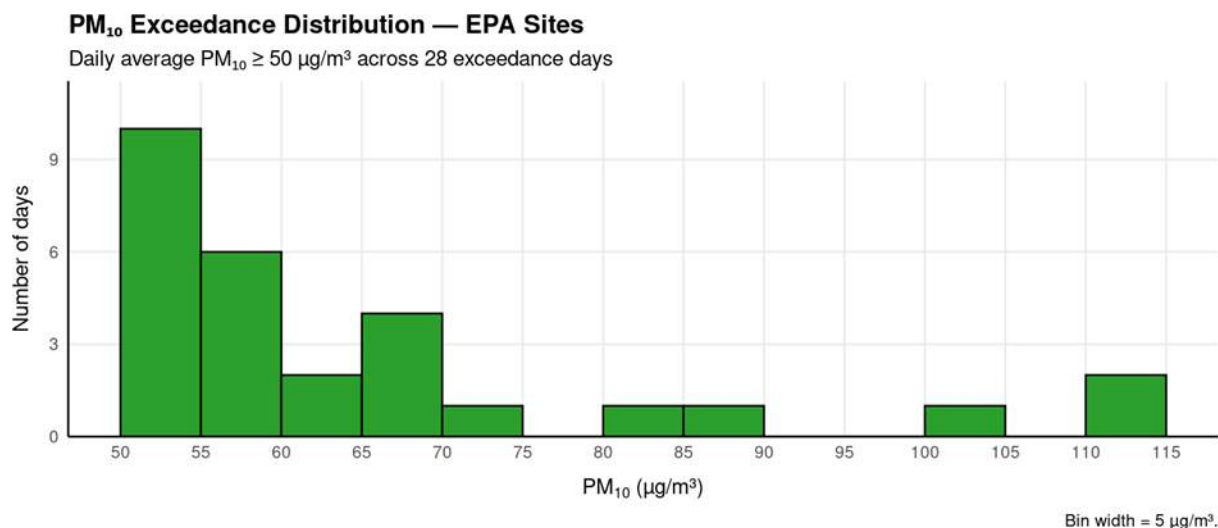
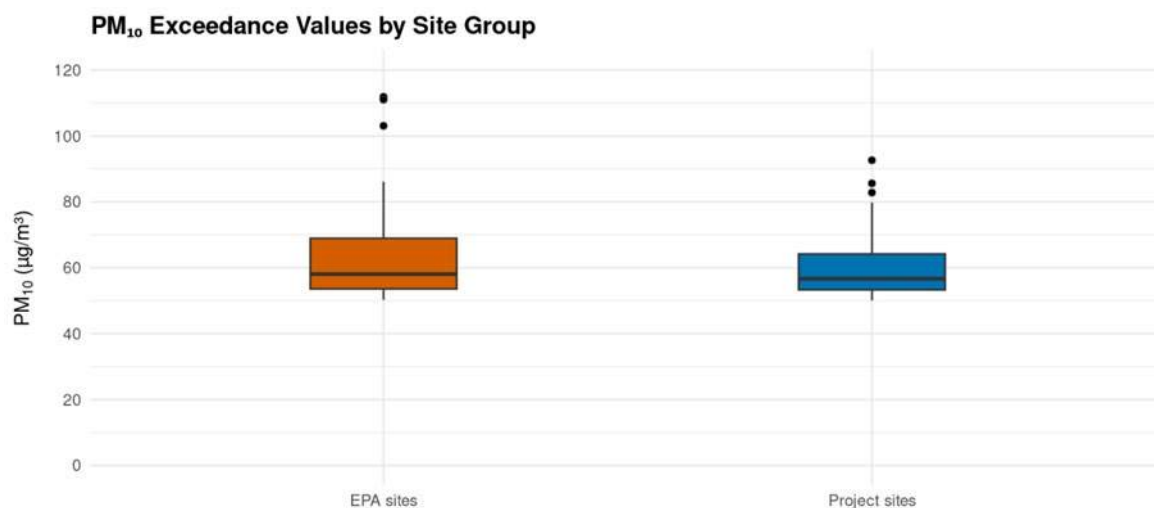


Figure 10: Box plot of exceedance values by group



These data comparisons represented the real-time data monitoring across PM_{t1} to PM_{t7} with the SA EPA monitoring data summarised in Table 6, monitoring locations presented in Figure 8 and evaluation of exceedance values by group presented in Figure 10.

“The arithmetic annual means of the SA EPA data range from 16.9µg/m³ to 23.2µg/m³ compared with the Golden Grove data of 18.9µg/m³ to 26.1µg/m³ and the geometric annual means (the more statistically accurate means) ranged from 14.3µg/m³ to 18.1µg/m³ for the SA EPA data to 15.8 to 22.9 µg/m³ for the Golden Grove dataset. SA EPA reported 28 exceedance days while Golden Grove reported 44 exceedance days with the SA EPA reporting higher exceedance average concentrations. The latter is an important factor as higher exceedance values will generate greater population impacts.” (p92).

“A two-sample t-test was performed to compare PM₁₀ exceedance concentrations between the project sites and SA EPA sites. Although SA EPA sites had a slightly higher mean PM₁₀ exceedance level (65.5 µg/m³) compared to Project sites (60.5 µg/m³), this difference was not statistically significant ($t = -1.34$, $df = 39.87$, $p = 0.19$), with a 95% confidence interval for the difference in means ranging from -12.43 to 2.54 µg/m³. These findings suggest

that the magnitude of exceedances at the Golden Grove project site is broadly comparable to background air quality conditions recorded at SA EPA monitoring locations.” (p92).

These results support that the regional PM₁₀ dust levels around the quarry area are comparable to data across the SA EPA monitoring and this would equally apply to the area of the proposed Residential Park.

8.4.4.4 Meteorological influences

One factor that can influence particulate monitoring results are meteorological conditions which can change from year to year. To assess the potential for such changes the Golden Grove Neighbourhood Code Amendment Investigations considered retrospective meteorological conditions compared to those during the annual monitoring exercise. These are detailed at HRS, 2025 pp74-86 and the key points are summarised here:

- Macro-climatic conditions ranged from El Niño to La Nina; however, neutral conditions prevailed throughout the monitoring period.
- Temperature - results suggested that temperatures were generally higher than what had been observed in the past, particularly during the summer and hence drier periods of the year. Such conditions would potentially support higher atmospheric particulate levels, holding all other variables constant.
- Rainfall - Rainfall data suggested lower precipitation at PMt7 (apart from a peak in June) than was generally reported at the Parafield Airport Bureau of Meteorology station. This suggests that conditions favouring potentially elevated atmospheric particle concentrations may be present holding all other variables constant.
- Windspeeds were considerably lower than those historically recorded at Parafield Airport station. It is uncertain why there is such a difference, however, one factor, that of topography, may be a contributor to this observed variance. The area around Parafield airport is mainly a large flat undulating region of the Adelaide Plains with no physical impediments to winds. At Golden Grove, and in and around the area of testing there are elevations, and the land is not completely flat which may impede wind flow. This means the comparison may not be completely valid due to a confounding factor. If it is valid then any increase in wind speed may potentially increase atmospheric particulate concentrations holding all other variables constant.
- Relative humidity – Early day humidity levels appeared lower at PMt7 (reflecting a greater potential for atmospheric particulate presence) than the historical data while in the afternoon the variance is equivocal with parts of the year higher and other parts of the year lower, with the key period being summer (higher temperatures, increased surface dryness with reduced rainfall, etc.). Monitoring during a lower relative humidity level would represent a more conservative position as historically humidity levels appear higher.

These data suggest that the regional influences on monitoring may have resulted in higher measured levels on most occasions which would be more representative for future influences associated with increased temperatures due to climate change. On this basis the data are useful in future potential predictions in areas around the quarry such as the proposed Residential Park.

8.4.5 UNDERSTANDING HEALTH IMPACTS

An evaluation of health risks was undertaken as part of the Golden Grove Neighbourhood Code Amendment Investigations through examination of dosimetry data for adverse health outcomes associated with the inhalation of particulates, including PM₁₀, PM_{2.5} and RCS. The following information is extracted from HRS, 2025, pp94-95.

“There is a considerable body of literature regarding the population health effects of particulate matter with a growing acknowledgment that the smaller the aerodynamic diameter of the particle the more significant the health effect. This is due to such factors as the penetrative ability when inhaled into the lungs and an increased surface area to carry adsorbed contaminants. In terms of the latter compositional information is also important and active air sampling may also capture particulates for subsequent analyses. In the case of quarries and mineral areas, crystalline silica in the respirable range are important composition factors and PM₁₀ (respirable range) is examined to assess this. The key health factor for respirable crystalline silica is informed from occupational exposures in the mining and processing industries that recognise increased exposure intensity and duration may result in several health conditions including:

- *“Silicosis (an incurable lung disease, with inflammation and scarring of the lungs, causing shortness of breath, coughing, fatigue, and other symptoms). Silicosis can develop either quickly or slowly depending on exposure levels. It is a potentially fatal condition).*
- *progressive massive fibrosis*
- *chronic obstructive pulmonary disease*
- *chronic bronchitis*
- *lung cancer.” (from WorkSafe WA, 2025)”*

“Epidemiological studies provide dosimetry information across population particulate exposures and mortality and morbidity outcomes. These studies provide mortality and morbidity outcomes based on particulate sizes and concentrations.

Stafoggia et al., (2022) undertook a multicentre longitudinal study across seven population-based cohorts of adults over 30 years of age across Belgium, Denmark, England, the Netherlands, Norway, Rome (Italy), and Switzerland. These studies reported positive associations with non-accidental mortality and PM_{2.5}, NO₂ and black carbon with a hazard ratio of 1.053 (95% CI 1.021-1.085) per 5µg/m³ for PM_{2.5}. Contributors to mortality included cardiovascular, non-malignant respiratory and lung cancer mortality. This study outcome was supported by others such as Sun et al., (2024) who reported an increased risk of hospital admissions for natural causes with an excess relative risk of 0.91% (95%CI 0.55% to 1.26%) per 10µg/m³ increase in PM_{2.5} and 1.34% (95CI 0.73% to 1.94%) per 10µg/m³ increase in PM_{2.5} for respiratory disease. Delavar et al., (2023) reported an association between PM_{2.5} and risk of hospitalisation for Chronic Obstructive Pulmonary Disease (COPD) with a 10µg/m³ increase in PM_{2.5} associated with a 1.6% (95% CI 0.4% to 2.9%) increase in COPD hospitalisations. While recent focus has been on PM_{2.5} studies,

PM₁₀ information is also available. Peng et al., (2022) report on the effects of particulate matter on hospital admissions for respiratory disease. In their analyses they present outcome data per 10µg/m³ increases in atmospheric concentrations across cities in China. They found that a 10µg/m³ increase in PM₁₀ resulted in a 0.25% (95%CI 0.042% to 0.459%) increase in hospital admissions for respiratory disease. They also reported positive associations for admissions for COPD, asthma, and pneumonia.”

“If we then examine our monitoring results from a health perspective, we observe that RCS and PM_{2.5} results are within the target acceptable criteria established by Australian regulatory health and environment agencies considering the unusual day on 2 February associated with a bushfire event. These represent the most hazardous contaminants across the monitoring regime.”

The focus of the health risk interpretation is therefore on the PM₁₀ particulates where exceedances were reported both in the annual monitoring program and across the SA EPA monitoring locations. These exceedances were subsequently examined by considering the dosimetry reported in the above Chinese study for PM₁₀ exposures and respiratory disease hospitalisations which supported that for every 10 µg/m³ increase in PM₁₀ an average increase of hospital admissions of 0.25% occurred. The estimations of impact across the exceedance range are presented in Table 7.

The SA EPA data range for exceedances was 54.4 µg/m³ to 112 µg/m³ with potential population impacts of up to 1.55% additional hospitalisations at the maximum reported exceedance value. If we focus solely on the data from HVt4 for PM₁₀ we note reported (daily) exceedance values of 80 µg/m³ (24/04/2024) and 63 µg/m³ (13/02/2025). These values and their respective population impacts are therefore lower or at least comparable to the SA EPA data and impacts. This means the subsequent

health risks are lower or at the most comparable to State conditions for future residents at the proposed Residential Park.

Table 7: Evaluation of PM₁₀ exceedances population impacts

Result (µg/m³)	Frequency	Frequency per 10µg/m³	Dosimetry, 0.25% per 10µg/m³ in %	Additional % impact above guideline	% variance
50	Guideline	5	1.25	0	0
55	16	5.5	1.375	0.125	10
60	14	6	1.5	0.25	20
65	5	6.5	1.625	0.375	30
70	1	7	1.75	0.5	40
75	2	7.5	1.875	0.625	50
80	3	8	2	0.75	60
85	1	8.5	2.125	0.875	70
90	1	9	2.25	1	80
95	1	9.5	2.375	1.125	90
112	1	11.2	2.8	1.55	124

9 WHAT STEPS CAN BE TAKEN ON THE YATAHLIA MANOR SITE TO MITIGATE ADVERSE IMPACTS (THIS COULD BE PHYSICAL E.G. MOUNDING, TREE PLANTING OR BEHAVIOURAL – E.G. STAYING INSIDE)?

Remedial measures were considered as part of the Golden Grove Neighbourhood Code Amendment investigations. These considered a range of factors and evidence of particulate reduction strategies from research undertaken in Australia and the United States and this information can also be applied at the Yatahlia Manor site.

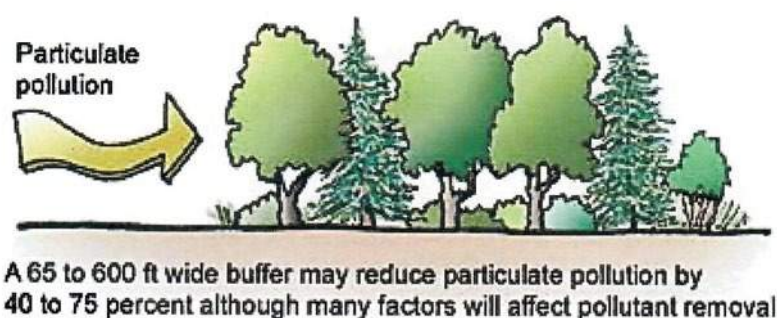
The following information is extracted from HRS (2025, pp87-90) and reflects how exposure reduction strategies can be achieved.

“Dust suppression, dust collection, dust containment, and dust monitoring tend to be the general methods for on-site quarry controls; however, these are specific to the on-site quarry operators. Beyond boundary dust control methods related to land development can be categorized across three basic methods of management including evaluation distance areas (particulate dilution effects) vegetation evaluation distance areas (capture and dilution effects); alterations in topography or barriers to minimize distribution (mounding) and air phytoremediation methods (specific planting of vegetation demonstrated to capture pollutants). In addition to these, structural designs and development layouts may also provide methods for air pollutant dispersal (Zheng et al., 2021).

Vegetation evaluation distance areas have been extensively used in planning mitigation of source emissions, particularly from roadways. The US National Agroforest Centre of the Department of Agriculture (Bentrup, 2008) have examined conservation evaluation distance areas and provided guidance in ensuring protection of soil resources, air and water quality, fish and wildlife habitat, and landscape beautification. Air quality evaluation distance areas filter air pollutants and odours and separate human activities. Removal of air pollutants occurs through uptake by leaves and by interception of airborne particles.

Pollution reduction efficacy ranges of 40-75% have been reported with vegetation evaluation distances of sixty-five feet (20m) to 600 feet (185m>”. (Refer Figure 11 from Bentrup, 2008, p92).

Figure 11: Pollution reduction efficacy (from Bentrup, 2008)



“Vegetation evaluation distance areas reflect the evapotranspiration processes put forward by McDuaie (2023) in her briefing note and the more detailed examination that encompasses the area of air phytoremediation (refer Barwise et al., 2020). In the latter, specific characteristics of plants demonstrating effective air pollution removal are presented and detailed for US settings.

Physical structures may also be used for air mitigation although these are associated with noise abatement methods if, for example, evaluation distance areas are not appropriate or not suitable. These may include fencing, earth mounds and landscaping and elements of the building and structural design approach mentioned previously. This may also include commercial areas where atmospheric exposures are mitigated through landscape and building designs. These approaches are detailed by Zheng et al (2022) and include features such

as building balconies that may increase area-weighted mean pollutant concentrations if placed on the westward façade and both facades of buildings as they influence street canyon air flows.

A summary of these mitigation options is presented in Table 8.

Table 8: Mitigation options for beyond boundary quarry emissions

Mitigation method	Basis	Further examination	References
Evaluation distance area distance	Distance dilution effects. In SA, extractive industry evaluation distance areas are set based on individual case by case assessment.	Basis to current Australian EPA evaluation distance area distances for quarry sites requires review as each setting is site-specific.	SA EPA (2016b, updated 2023; p29); Vic EPA (2023)
Vegetation evaluation distance area	Distance dilution plus impedance to air flow due to vegetation.	Design and efficacy data require further review.	Bentrup (2008).
Topography/barriers (mounding/fencing)	Physical obstruction in terms of air flow impedance		
Air phytoremediation	Selective plant species demonstrated to be efficacious in air particulate removal based around evapotranspiration effects.	Use of iTree software and examination of efficacy.	Gardner et al., (2017)
Planning layouts and building designs	Road and building layouts and building designs can influence air flow and atmospheric pollutant distribution.	Further evaluation and review required to examine potential options, for example, in the commercial development area structural design may facilitate air pollution mitigation.	Zheng et al., (2022)

“Additional information has been presented by staff from the Waite Arboretum where research examining the effects of vegetation buffers on dust mitigation has been undertaken. McDuire (2023) suggests the following in terms of dust mitigation:

- “Ideal width of vegetation buffer – 30-40m, minimum 20m.
- Species selection for dust removal – long thin needle like and rough (hairy, furry) foliage recommended.
- Planning spacings for the trees and shrubs should be 4-5m – interplanting spaces to be occupied by native grasses and low groundcovers.
- Structural components need to be varied (mixed plantings), that is, a variety of shrub and tree species with canopies that extend low to the ground should be considered, along with interplanting spaces occupied by native grasses.
- Plantings should be ‘offset’ the more complex the arrangement of the planting, the more effective the buffering effect.” (p3).

Across non-quarry HiVol monitoring sites the arithmetic annual average range was 17.1 $\mu\text{g}/\text{m}^3$ to 20.7 $\mu\text{g}/\text{m}^3$ compared with an annual average PM_{10} target value of 25 $\mu\text{g}/\text{m}^3$. There were eleven exceedances of the daily PM_{10} target value of 50 $\mu\text{g}/\text{m}^3$ with eight being on the quarry site and three at beyond quarry sites being HVt4, the ‘background’ site which reported 80 $\mu\text{g}/\text{m}^3$ (24/04/2024) and 63 $\mu\text{g}/\text{m}^3$ (13/02/2025) and HVt2 which reported 72 $\mu\text{g}/\text{m}^3$ (30/04/2024). If we apply a 40% reduction associated with a 20m vegetation evaluation distance area as presented by Bentrup (2008) from the USDA information, we can observed reductions in concentrations as presented in Table 9. Note that these reflect extreme events and a small proportion of the total results, meaning exposure will be limited across an annual consideration. Where exceedances still occur the result frequency is less than comparable areas of Adelaide (where there is no mitigation) as reported by SA EPA monitoring

stations. This provides some perspective on the impact reduction associated with suitable vegetation buffers.

Table 9: Mitigation estimates for daily exceedances ($\mu\text{g}/\text{m}^3$)

PM ₁₀	Reduction	Result
72	0.6	43.2
50	0.6	30
55	0.6	33
60	0.6	36
65	0.6	39
70	0.6	42
75	0.6	45
80	0.6	48
85	0.6	51
90	0.6	54
95	0.6	57

It is important to highlight that in the case of HVt4 the two exceedances are below the target acceptable daily PM₁₀ criterion of 50 $\mu\text{g}/\text{m}^3$ based on the reductions suggested with a 20m vegetative buffer.

A site inspection of the existing property at 488-500 Yatala Vale Road, Yatala Vale was carried out on 2 June 2026 and a series of site photographs were taken to provide perspective to the site conditions, particularly the scale of the areas on the rear of the property that could provide a remedial elevated buffer zone with suitable vegetation plantings should that be considered as a precautionary measure. A series of figures is subsequently presented:

- Figure 12 is looking south towards the quarry, and the fence boundary is visible towards the left of the picture.
- Figure 13 is looking along the southern boundary towards the west.
- Figure 14 is at the NW of the property looking west noting the available area for any mounding/vegetation establishment.
- Figure 15 is looking towards the east along the southern boundary.
- Figure 16 is at the NW corner of the property looking north-west.
- Figure 17 is at the NW corner of property looking east.
- Figure 18 is an aerial Google Earth image of the site and surrounds.

These images provide some perspective across distances and support the ability to establish mounding and vegetative buffers as precautionary measures and to provide confidence in the air quality impact mitigation associated with PM₁₀, PM_{2.5} and RCS.

Figure 12: Looking south towards the quarry



Figure 13: Looking west along the southern boundary



Figure 14: At the NW corner of the property looking west



Figure 15: Looking east along the rear fence boundary



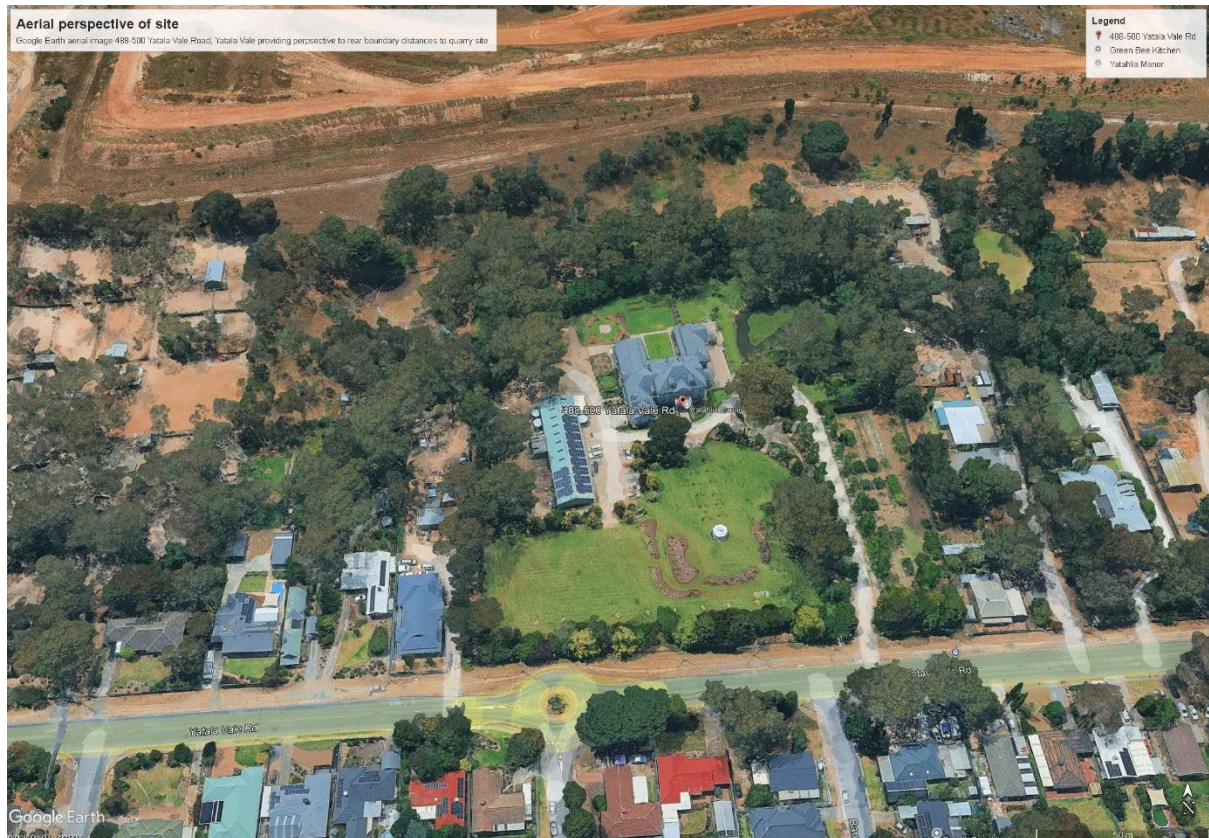
Figure 16: NW corner of the property looking north-west



Figure 17: At NW corner of property looking east



Figure 18: Aerial photograph of site providing distance perspectives



10 GENERAL RESPONSE TO THE REPRESENTATIONS FROM HALLETT AND DEPARTMENT OF ENERGY AND MINES

10.1 REPRESENTATION FROM HALLETT

The Hallett representation provides information on their activities and locale and the legislative framework pertaining to State government strategic resources. It further describes that the Environmental Protection Act 1993 is designed to manage their generation of emissions, odour and noise. In terms of the latter, I understand that SA EPA conditions regarding emissions, odour and noise are generally based on the requirement for industry to monitor emissions and initiate remedial protocols to address concerns where non-compliance with SA EPA conditions occur. These data and information are currently unavailable and subsequently I am unable to provide any quantitative assessments regarding compliance and potential corrective actions that may have been undertaken.

A few key points noted from the Hallett's submission include:

- The buffer zone of 500m in their figure is breached by long-standing residential development across ~50% of that area. A similar situation applies to other parts of the quarry boundary.
- Information on complaints referred to is unavailable so that analysis (e.g. nature of complaint, frequency, prevailing wind directions, monitoring data) cannot be undertaken.
- Buffer distances are generic in nature and are site-specific in terms of evaluation for development purposes as was demonstrated in the Golden Grove Neighbourhood Code Amendment investigations.
- The internal freight road EML 5892 is some 118m from the proposed southern boundary which in addition to any southern boundary remedial buffer areas would provide additional separation in terms of particulate and RCS impacts.
- In terms of the brick-making complaints there are no data or information provided to evaluate these complaints.
- I note that the reference to the Golden Grove Neighbourhood Zone is very positive in nature and canvasses the evaluation process and outcomes as supporting and managing industry concerns.

The available information presented in this report (with much of it based on the Golden Grove Neighbourhood Code Amendment investigations) suggests that air quality concerns can be managed in a manner consistent with the outcomes of the Golden Grove Neighbourhood Zone investigations and recommendations.

10.2 REPRESENTATION FROM DEPARTMENT OF MINES AND ENERGY (DME)

The representation from the Department of Mines and Energy focusses on the proximity and emission concerns associated with the proposed Residential Park area. It raises these concerns in a subjective nature regarding land use conflicts and does not provide any quantitative data to support the planned 500m buffer that is mentioned for mining tenure boundaries.

This is somewhat at odds with SA EPA policies where site-specific conditions require evaluation to determine the nature of the buffer to be applied. While a 500m buffer may be appropriate where mining operations require regular blasting, which combined with specific topographic settings (e.g. hilltop) and wind speeds and directions apply, it may not be required where operations are less intrusive beyond the mining tenement boundary. This variance in settings is the basis to site-specific evaluations design to investigate impacts and determine potential health risks from dust emissions and the application of suitable remedial measures as may be required.

I note that the DME provided comment that the application lacked more detailed evaluation and the provision of this report may aid in addressing that concern.

11 ASSESSMENT OF THE PROPOSAL AGAINST THE PLANNING AND DESIGN CODE PROVISIONS.

Relevant module: General Development Policies – Interface between Land Uses

Performance Outcome 1.1

Sensitive receivers are designed and sited to protect residents and occupants from adverse impacts generated by lawfully existing land uses (or lawfully approved land uses) and land uses desired in the zone.

Response

This performance outcome seeks to ensure that adjacent site uses do not impact on the proposed development including health and amenity concerns of future occupant on the proposed development site.

This report addresses a range of air quality impact concerns based on an extensive evaluation of the quarry emissions during the Golden Grove Neighbourhood Code Amendment investigations and considers potential management of quarry emissions via accepted and validated methods. This is designed to help in addressing potential land use conflict. On the basis of the data and information presented in this report and also from the GGEIZ investigation outcomes I am satisfied the proposed Residential Park can be designed and sited to protect residents and occupants from adverse air quality impacts associated with current and future GGEIZ activities associated with PM₁₀, PM_{2.5} and RCS.

Performance Outcome 10.1

Sensitive receivers are separated from existing mines to minimise the adverse impacts from noise, dust and vibration.

Note that PO 10.1 has an allied Designated Performance Feature such that PO 10.1 will be taken to be met where "Sensitive receivers are located no closer than 500m from the boundary of a Mining Production Tenement under the Mining Act 1971". As this separation distance is not met, an assessment against the Performance Outcome is required.

Response

As the proposed development is within 500m of the quarry an assessment of impacts is required consistent with Performance Outcome 1.1. This has been evaluated for air quality impacts associated with quarry emissions in this report. It is based on extrapolation of data from the Golden Grove Neighbourhood Zone investigations that were based on extensive monitoring over a period of 12 months which captured spatial and temporal change. In addition a nearby HiVol sampling station located to the west of the proposed Residential Park has provided proximity data over 12 months of monitoring. This provides information on air quality matters and how remedial measures can be applied to ensure concerns are addressed.

Based on the data and information presented in this report and from the GGEIZ investigation outcomes I am satisfied the proposed Residential Park will be separated from current and future GGEIZ activities in order to minimise air quality impacts from PM₁₀, PM_{2.5} and RCS.

12 CONCLUDING COMMENTS

This report sought to provide an assessment of potential air quality impacts associated with PM₁₀, PM_{2.5} and RCS based on extrapolation of data from an extensive air monitoring program undertaken for the Golden Grove Neighbourhood development to the north and north-east of the quarry site. This program also used a HiVol sampler for 12 months (HVt4) on a site to the immediate west, some 500m west of the current proposed Residential Park.

The conclusions associated with the Golden Grove Neighbourhood development investigations were as follows:

- ***“RCS and PM_{2.5} concentrations remained below annual health-based guideline values, indicating no significant health risk to future populations.***
- ***PM₁₀ exceedances at this site were consistent with those experienced across South Australia at all SA EPA monitoring sites when frequency and magnitude of the exceedances were considered. This includes those associated with winds from the quarry but also from other sources.***
- ***Directional analysis and statistical evaluation support the conclusion that multiple sources, not solely the quarry, contribute to observed particulate levels. These will be mitigated as the development progresses.***
- ***The implementation of vegetative buffers and surface treatments will provide additional confidence in mitigating potential dust impacts, including nuisance dust for the potential minor exceedances or unexpected events that may occur.”*** (HRS 2025, p10).

The evaluations across HVt4 are consistent with observations from the northern monitoring stations in that PM₁₀ reported limited exceedances of the daily guidance values for non-quarry stations, compliance with the annual average guidance value for PM₁₀ and compliance with the interim annual average value for RCS.

Taking into consideration all the information that is available regarding quarry impacts from recent monitoring investigations, the data supports the fact that the most hazardous substances, RCS and PM_{2.5} as not exceeding annual levels of health concern based on current regulatory guidelines. Furthermore, PM₁₀ level exceedances where they were identified, were comparable to SA EPA levels when the magnitude of exceedances was considered. This means that potential population health risks associated with the most hazardous contaminants are within current acceptable parameters and for larger particles are comparable to SA EPA monitoring results.

The assessments against quarry operational activities and atmospheric dust burdens reported that PM₁₀ and PM_{2.5} concentrations at the closest boundary monitoring station were not affected by quarry operations. In other words, the concentrations of PM_{2.5} and PM₁₀ remain consistent regardless of whether the quarry was operational. This location in terms of proximity is equivalent to the proposed Residential Park location and implies that for current and future activities air quality impacts will not be influenced by operational activities.

In addition, evaluation of mitigation measures suggested that suitably designed vegetation buffers can be applied to provide additional confidence to mitigate any potential dust generation. The peer-reviewed literature supports the ability of greening buffers to capture and retain particulate matter including PM₁₀ and PM_{2.5}. Furthermore, there is local research information across the types of trees,

shrubs and low vegetation that provides efficacy data across particulate mitigation enabling the most effective site-specific vegetation to be identified. This subsequently provides a precautionary approach to unforeseen atmospheric dust emissions from the quarry or surrounds noting also that the proposed Residential Park itself will suppress non-quarry dust due to the presence of handstand, lawns, paving, footpaths and verges and other surface encapsulation methods.

Overall, the findings associated with air quality impacts from PM₁₀, PM_{2.5} and RCS can be adequately managed at the proposed Residential Park development.

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