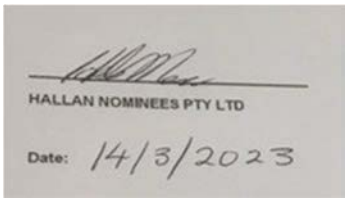
PROPOSAL TO INITIATE AN AMENDMENT TO THE PLANNING AND DESIGN CODE

10-20 HALLS ROAD HIGHBURY

BY HALLAN NOMINEES PTY LTD



HALLAN NOMINEES PTY LTD

Date: 14/03/2023

This proposal to initiate document together with conditions specified by the Minister forms the basis for the preparation of a proposed amendment to the Planning and Design Code for the purpose of section 73(2)(b) of the *Planning, Development and Infrastructure Act 2016*. By signing this Proposal to Initiate, the Proponent acknowledges and agrees that this Proposal to Initiate, and any supporting documents, may be published on the Plan SA portal by the Department for Trade and Investment.

MINISTER FOR PLANNING

DATE: 6/8/23

Proprietary Information Statement

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Document Control

Revision	Description	Author	Date
V1	Draft	MO	21.04.2022
V2	Review	EN	13.07.2022
V3	Review by Proponent	BM	14.03.2023

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APPENDICES

1. INTRODUCTION

Hallan Nominees Pty Ltd (Proponent) is proposing to initiate an amendment (the Code Amendment) to the Planning and Design Code (the Code) as it relates to land described as 10 - 20 Halls Road, Highbury (the Affected Area) on Kaurna Country.

The purpose of this Proposal to Initiate is to seek the approval of the Minister for Planning (the Minister) to initiate the Code Amendment under section 73(2)(b) of the *Planning, Development and Infrastructure Act 2016* (the Act).

The Proponent is the owner of two contiguous allotments which forms the whole of the Area Affected (refer **Appendix 1**).

The Affected Area, together with other land to the south and east is located within the Resource Extraction Zone. The land to the north and west of the Affected Area is located within the General Neighbourhood Zone.

The Proponent is seeking to rezone the land from Resource Extraction to General Neighbourhood, in effect an extension of the adjacent residential area.

This Proposal to Initiate details the scope, relevant strategic and policy considerations, nature of investigations to be carried out and information to be collected for the Code Amendment. It also details the timeframes to be followed in undertaking the Code Amendment, should this Proposal to Initiate be approved by the Minister.

The Proponent acknowledges that the Minister may specify conditions on approving this Proposal to Initiate, under section 73(5) of the Act. In the event of inconsistency between this Proposal to Initiate and any conditions specified by the Minister, the conditions will apply.

1.1 Designated Entity for Undertaking the Code Amendment

In accordance with section 73(4)(a) of the Act, the Proponent (Hallan Nominees Pty Ltd) will be the Designated Entity responsible for undertaking the Code Amendment process. As a result:

1.1.1. The Proponent acknowledges that it will be responsible for undertaking the Code Amendment in accordance with the requirements under the Act; and

1.1.2. The Proponent declares that it has not and does not intend to enter into an agreement with a third party for the recovery of costs incurred in relation to the Code Amendment under section 73(9) of the Act. If the Proponent does enter into such an agreement, the Proponent will notify the Department prior to finalising the Engagement Report under section 73(7) of the Act.

1.1.3. The Proponent's contact person responsible for managing the Code Amendment and receiving all official documents relating to this Code Amendment is:

(a) Name – Belinda Monier (Senior Consultant – Future Urban)

(b) Email - belinda@futureurban.com.au

(c) Phone – (08) 8221 5511

1.1.4. The Proponent intends to undertake the Code Amendment by engaging Future Urban Pty Ltd to provide the professional services required to undertake the Code Amendment. Michael Osborn – Director at Future Urban – will oversee the Code Amendment and has a planning qualification (Graduate Diploma in Urban and Regional Planning – 1992) and

significant experience (25 years) in the areas of planning policy preparation and land use investigations.

In addition, Michael has experience in engagement and the preparation of engagement plans and will ensure engagement accords with the Community Engagement Charter. Michael has prepared numerous engagement plans and undertaken engagement activities for both private developers and state government agencies over the last 16 years. Michael will be assisted by others within the Future Urban team who have IAP2 accreditation.

The Proponent acknowledges that the Minister may, under section 73(4)(b) of the Act, determine that the Chief Executive of the Department will be the Designated Entity responsible for undertaking the Code Amendment. In this case, the Proponent acknowledges and agrees that they will be required to pay the reasonable costs of the Chief Executive in undertaking the Code Amendment.

1.2 Rationale for the Code Amendment

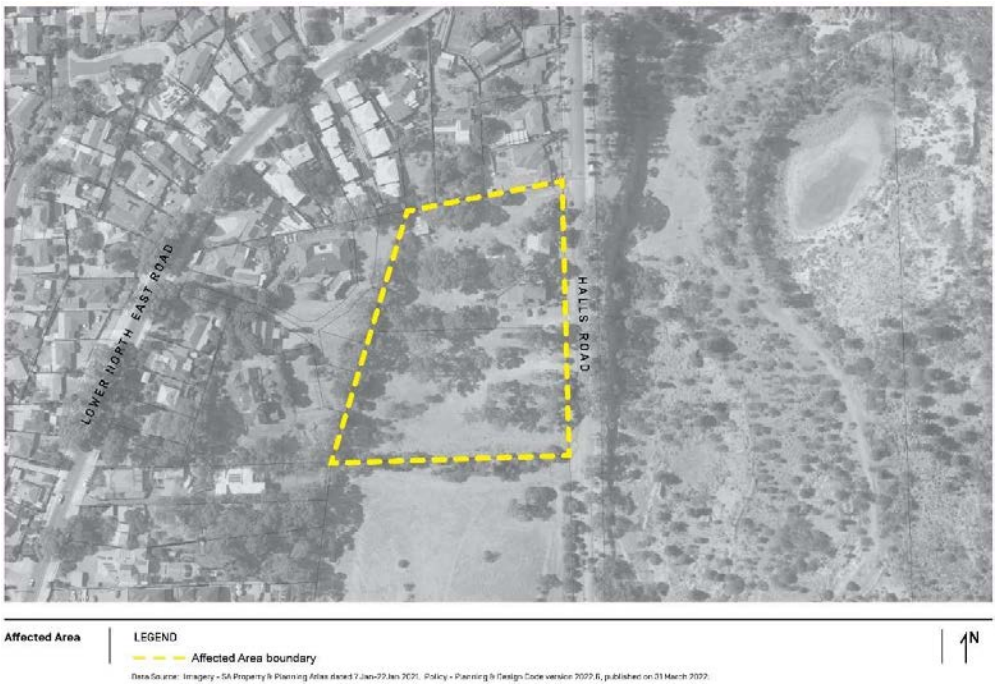
The broader locality has a relatively long history in terms of rezoning proposals. Most notably the Highbury and Open Space Ministerial Development Plan Amendment (DPA) which was initiated in 2008. The Affected Area for the DPA included land which had extensive history of non-residential use, including waste management activities. In 2018, the Minister for Planning at that time, Stephan Knoll determined not to proceed with the DPA on the basis of unresolved matters relating to landfill gas migration.

Whilst this issue may still be relevant to portion of the Affected Area applicable to that DPA, landfill gas migration is understood to be a resolvable issue for the land at 10-20 Halls Road. Accordingly, there is considered to be scope to revisit the rezoning of this land as a stand-alone Code Amendment.

Preliminary investigations undertaken by the Proponent have concluded that residential uses are appropriate for the land if accompanied by mitigation measures. Such measures are not uncommon or unique in such circumstances and development on the site should be possible with appropriate levels of engineering and protection. Further investigations are proposed to determine these, however, these investigations come at significant expense. The Proponent seeks to initiate the Code Amendment in order to obtain some initial agreement that subject to appropriate investigations and management (or remediation), the land could be rezoned for residential purposes.

The rezoning of the Affected Area is envisaged to accommodate low density and low scale residential development, consistent with the established residential area to the north and west.

Figure 1.1 *Code Amendment Context and Affected Area*



In considering the rationale to rezone the Affected Area from Resource Extraction Zone to the General Neighbourhood Zone, there are a number of key influencing factors, including:

- it is understood that the quarrying to the east of Halls Road is no longer active and has not operated as a quarry for some time, nor does the Department for Energy and Mining list it as a strategic mineral resource area;
- it is understood that the land to the south was a former landfill, however the site is being remediated and is presently not used for that purpose;
- on the basis of the above, there is no direct interface issues that impact on the Affected Area;
- a previous Environmental Site Assessment identified that the allotment identified as 16-20 Halls Road, was historically used for crushing of materials (brick and shell grit) and for storage and distribution of coal to a nearby water filtration plant;
- Phase II environmental investigations comprised of a total of 34 grid based and targeted soil investigation locations, three groundwater monitoring wells, and landfill gas monitoring. Of the thirty-four locations sampled, only one location reported a concentration of heavy metal marginally exceeding the NEPM (1999) standard residential MIL guideline and a statistical assessment of the data indicates no remedial action would be required. At five other locations the NEPM (1999) ecological investigation level was exceeded for one or more metals, although these exceedances were minor and are unlikely to warrant further assessment or remedial action;
- the results of the previous groundwater assessment program identified ammonia concentrations marginally exceeding the SA EPA (2003) aquatic ecosystem, fresh water criteria. Selenium levels representative of background concentrations were also identified to exceed the same criteria. These exceedances are not considered to represent an impediment to the development of this site for future residential use;

- landfill gas monitoring undertaken on the three monitoring wells installed on the southern boundary of the site did not identify significant migration of landfill gas from the landfill beneath the Proponent's land. This is consistent with more recent monitoring;
- the rezoning represents an opportunity to better utilise undeveloped land for residential purposes within an established metropolitan Adelaide suburb;
- the rezoning supports the urban regeneration and renewal goals of *The 30-Year Plan for Greater Adelaide 2017* to better utilise established urban areas and encourage economic and population growth; and
- the Affected Area is presently underutilised and is locationally well suited to accommodate the residential form and density anticipated in the General Neighbourhood Zone, noting this zone is already established directly adjacent to the Affected Area.

2. SCOPE OF CODE AMENDMENT

2.1 Affected Area

The proposal seeks to amend the Code for the Affected Area which comprises Allotments 11 and 12 (10-20) Halls Road, Highbury and contained on Certificates of Title Volume 5768 Folios 114 and 115. The Certificates of Title are included in **Appendix 1**.

The Affected Area is located within the suburb of Highbury, which is within the City of Tea Tree Gully (the Council).

The Affected Area has:

- frontage to Halls Road of 164.56 metres; and
- a total area of 1.84 hectares.

With the exception of established vegetation, the existing detached dwelling and associated outbuildings, the Affected Area can be generally described as underutilised land of limited agricultural, horticultural or mining value.

The locality contains the following key land uses:

- established residential development to the immediate north and west;
- former CEMEX Readymix Quarry which previously operated as a quartzite products quarry and now owned by Holcim; and
- two former landfills to the south, the Pacific Waste Management and the Highbury Landfill Authority, formerly the East Waste landfill which closed in 1996.

Refer to **Appendix 2** for a location map, which includes the current zoning identified by the Code (V2022.7, April 28, 2002.

2.2 Scope of Proposed Amendments

The scope of amendments to the Code sought through the Code Amendment are detailed in Table 2.1 below.

Table 2.1 *Scope of proposed amendments*

Current Policy	**Resource Extraction Zone** **Overlays:** • Hazards (Bushfire - Urban Interface) • Hazards (Flooding - Evidence Required) • Prescribed Wells Area • Regulated and Significant Tree • Traffic Generating Development
Amendment Outline	The overall intent of the amendment is to facilitate low density and low scale residential development outcomes.

	This will necessitate the Affected Area being rezoned from the Resource Extraction Zone to an alternate zone, with the General Neighbourhood Zone considered the most appropriate.
Intended Policy	• Rezone the balance of the Affected Area to General Neighbourhood Zone, as shown on the mapping included at **Appendix 3**. • Extend the: » Affordable Housing Overlay » Stormwater Management Overlay; and » Urban Tree Canopy Overlay, over the balance of the Affected Area, as shown on the mapping included in **Appendix 3**. • No changes to existing Overlays.

3. STRATEGIC PLANNING DOCUMENTS

Proposed Code Amendments occur within a state, regional and local strategic setting, which includes:

- Strategic Planning Policies (SPPs);
- Regional Plans; and
- Other relevant strategic documents.

3.1 Summary of Strategic Planning Outcomes

The key strategic planning considerations include (but are not limited to):

- infrastructure and services to support the future residential population;
- potential road upgrades to support the additional traffic movements arising from future development;
- land capability;
- interface with Resource Extraction Zone and any licensed activities; and
- preservation of worthy vegetation including regulated/significant trees.

The investigations to be undertaken for this Code Amendment will address these matters and have regard to the investigations undertaken to inform the other Code Amendments (as applicable).

3.2 Alignment with State Planning Policies

The SPPs set out the State's overarching goals and requirements for the planning system. Under section 66(3)(f) of the Act, the Code must comply with any principle prescribed by the SPPs.

The Code Amendment should be initiated because the strategic planning outcomes sought to be achieved through the Code Amendment align with or seeks to implement the SPPs as outlined in Table 3.1 below.

Table 3.1 *Code Amendment alignment with State Planning Policies (SPPs)*

State Planning Policy (SPP)	Code Amendment Alignment with SPPs
State Planning Policy 1 – Integrated Planning: To apply the principles of integrated planning to shape cities and regions in a way that enhances our liveability, economic prosperity and sustainable future. *(1.1) An adequate supply of land (well serviced by infrastructure) is available that can accommodate housing and employment growth over the relevant forecast period* *(1.2) Provide an orderly sequence of land development that enables the cost-effective and timely delivery of infrastructure investment*	The proposed Code Amendment seeks to deliver the rationalisation of residential growth within Greater Adelaide. The proposal has the potential to yield some 20-30 allotments and will deliver an appropriate and desired offering in the eastern foothills of Metropolitan Adelaide. The proposed Code Amendment will see the logical and orderly delivery of residential growth within the metropolitan Adelaide region, providing for the consolidation of build form. The Affected Area is well serviced and connected by infrastructure and located immediately adjacent the existing built-up residential area.

commensurate with the rate of future population growth. *(1.3) Plan growth in areas of the state that is connected to and integrated with, existing and proposed public transport routes, infrastructure, services and employment lands.* *(1.7) Regenerate neighbourhoods to improve the quality and diversity of housing in appropriate locations supported by infrastructure, services and facilities.*	The Code Amendment will deliver a range of new low-density residential outcomes. The current zoning does not support the redevelopment of the Affected Area in this manner.
State Planning Policy 2 – Design Quality: To elevate the design quality of South Australia's built environment and public realm. *(2.10) Facilitate development that positively contributes to the public realm by providing active interfaces with streets and public open spaces.* *(2.14) Provide public open space that accommodates a range of passive, active and formal sporting opportunities at the state, regional and/or local level*	Since the preparation of the SPPs, Phase 3 of the Code has been introduced. Such contains both General Development and Zone policies which promote design quality through the development application process. On the basis that the General Neighbourhood Zone be applied to the Affected Area, policies relating to design will apply to the Affected Area, which provide a particular focus on building form, setbacks, materiality and landscaping. The future development of the land will deliver public open space in a manner that provides both local amenity and a stormwater management function.
State Planning Policy 6 – Housing Supply and Diversity To promote the development of well-serviced and sustainable housing and land choices where and when required. *(6.1) A well-designed, diverse and affordable housing supply that responds to population growth and projections and the evolving demographic, social, cultural and lifestyle needs of our current and future communities.* *(6.2) The timely supply of land for housing that is integrated with, and connected to, the range of services, facilities, public transport and infrastructure needed to support liveable and walkable neighbourhoods.* *(6.3) Develop healthy neighbourhoods that include diverse housing options; enable access to local shops, community facilities and infrastructure; promote active travel and public transport use; and provide*	The Code Amendment will deliver a zoning environment which supports the growth of Highbury that otherwise has little to no available residential growth potential. Development outcomes sought will be well-designed and take into account the Affected Area's characteristics, including topography and natural features. The Code Amendment will deliver the rezoning of some 1.84ha of land to support residential growth. The area in question is well serviced by existing infrastructure and services both existing and proposed. The proximity of the Affected Area to metropolitan Adelaide and existing services offers a unique opportunity to provide a diverse range of housing choice which is not readily found in other locations in the northern residential market. Given the characteristics of the Affected

quality open space, recreation and sporting facilities. *(6.7) Facilitate the provision of Affordable Housing through incentives such as planning policy bonuses or concessions (e.g. where major re-zonings are undertaken that increase development opportunities).*	Area, there is opportunity to integrate natural features into the future design. The Code Amendment seeks to apply the Affordable Housing Overlay to the whole of the Affected Area, which provides incentives for provision of affordable housing.
SPP 10 Mineral and Energy Resources: To protect key resources that contribute to our state's economy and provide valued employment opportunities. *(10.1) Define and protect mineral resources operations, associated infrastructure and undeveloped mineral resources from encroachment by incompatible land uses.*	Preliminary engagement has taken place with the Department for Energy and Mining (DEM) and the Environment Protection Authority (EPA). In addition, contact has been made with the owners of the former quarry to the east and the former landfills to the south. Arising from this engagement, it has been identified: • no resource extraction activity is likely to occur from the land to the south or east; and • the location is not considered to be a strategic resources area. Engagement with DEM, EPA and the various landowners adjacent will continue throughout this Code Amendment process. Consideration of the potential impacts that may arise from the interface shared between the existing Resource Extraction Zone and Affected Area will form an integral part of the investigations.
SPP 15: Natural Hazards: To build the resilience of communities, development and infrastructure from the adverse impacts of natural hazards. *(15.1) Identify and minimise the risk to people, property and the environment from exposure to natural hazards including extreme heat events; bushfire; terrestrial and coastal flooding; soil erosion; drought; dune drift; acid sulfate soils; including taking into account the impacts of climate change.*	The Affected Area is located within the: • Hazards (Bushfire - Urban Interface) Overlay; and • Hazards (Flooding - Evidence Required) Overlay. These Overlay's provide clear guidance on matters related to natural hazards. Notwithstanding, detailed investigations will be undertaken to understand the likely impact of these Overlay's and ensure appropriate measures are taken for future development to mitigate against risk.

3.3 Alignment with Regional Plans

As with the SPPs, the directions set out in Regional Plans provide the long-term vision as well as setting the spatial patterns for future development in a region. This includes consideration of land use integration, transport infrastructure and the public realm.

The *30 Year Plan for Greater Adelaide – 2017* (30 Year Plan) is relevant for this Code Amendment. The Code Amendment aligns with a number of the priorities and targets in the 30 Year Plan as outlined in Table 3.2 below.

Table 3.2 *Code Amendment alignment with Regional Plan (30 Year Plan)*

Regional Plan identified priorities or targets	Code Amendment Alignment with Regional Plan
Transit corridors, growth areas and activity centres	
P1 Deliver a more compact urban form by locating the majority of Greater Adelaide's urban growth within existing built-up areas by increasing density at strategic locations close to public transport. **P4** Ensure that the bulk of new residential development in Greater Adelaide is low to medium rise with high rise limited to the CBD, parts of the Park Lands frame, significant urban boulevards, and other strategic locations where the interface with lower rise areas can be managed. **P11** Ensure new urban fringe growth occurs only within designated urban areas and township boundaries and outside the Environment and Food Production Areas, as shown on Map 3. **P12** Ensure, where possible, that new growth areas on the metropolitan Adelaide fringe and in townships are connected to, and make efficient use of, existing infrastructure, thereby discouraging "leapfrog" urban development.	The Affected Area is located within the planned urban lands to 2045 as contained in the 30-Year Plan. The Code Amendment seeks to provide an area for low density/ low scale residential development which is connected/accessible to existing infrastructure. The Affected Area is contiguous with the existing built-up residential area and represents a logical expansion of the urban area and associated infrastructure. The Code Amendment will not result in any changes to the boundaries of the EFPA.
Design Quality	
P26 Develop and promote a distinctive and innovative range of building typologies for residential housing which responds to metropolitan Adelaide's changing housing needs, reflects its character and climate, and provides a diversity of price points.	The proposed Code Amendment is expected to introduce an appropriate zone (General Neighbourhood Zone) which will facilitate residential development and a form of low density, low scale housing which is expected to be in high demand in this location.

P29 Encourage development that positively contributes to the public realm by ensuring compatibility with its surrounding context and provides active interfaces with streets and public open spaces.	The General Development Policies contained in the Code, including those under the heading *Design in Urban Areas,* provide sufficient guidance to ensure design quality is achieved.
Housing Mix, affordability and competitiveness	
P36 Increase housing supply near jobs, services and public transport to improve affordability and provide opportunities for people to reduce their transport costs. **P42** Provide for the integration of affordable housing with other housing to help build social capital.	It is expected that the Code Amendment will introduce the General Neighbourhood Zone which facilitates residential development. This zone is considered sufficiently flexible to enable the ultimate developer(s) to deliver allotments (and associated housing product) which responds to market preference and choice in this location. An increase in the supply of residential zoned land will increase competition in the north-eastern residential land markets and therefore assist in controlling pricing pressures. Affordable housing outcomes will be attainable.
Health, Wellbeing and Inclusion	
P47 Plan future suburbs and regenerate and renew existing ones to be healthy neighbourhoods that include: • diverse housing options that support affordability • access to local shops, community services and facilities • access to fresh food and a range of food services • safe cycling and pedestrian-friendly streets that are tree-lined for comfort and amenity • diverse areas of quality public open space (including local parks, community gardens and playgrounds) • sporting and recreation facilities • walkable connections to public transport and community infrastructure.	The proposed rezoning will facilitate an orderly and economic extension of the adjacent residential area. In connecting to existing residential development, future allotments will enjoy access to the variety of facilities which have been established in the locality. The ultimate increase in the number of dwellings arising from the rezoning (less than 30) will have minimal impact on the demand for local services.

P49 Encourage more trees (including productive trees) and water sensitive urban landscaping in the private and public realm, reinforcing neighbourhood character and creating cooler, shady and walkable neighbourhoods and access to nature.	These outcomes are supported by relevant policies of the Code that would apply to the Affected Area through the rezoning and therefore would be key assessment criteria for any future land division and residential development application.
Infrastructure	
P86 Ensure that new urban infill and fringe and township development are aligned with the provision of appropriate community and green infrastructure, including: • walking and cycling paths and facilities • local stormwater and flood management including water sensitive urban design • public open space • sports facilities • street trees • community facilities, such as childcare centres, schools, community hubs and libraries **P86** Design and locate community infrastructure to ensure safe, inclusive and convenient access for communities and individuals of all demographic groups and levels of ability.	The proposed Code Amendment will include a review of service infrastructure provision in order to identify existing capacity and the potential need to augment services. Connection to existing infrastructure established to the north is anticipated. Relevant infrastructure agreements (as required) can be entered into should the need for augmentation be identified.
Biodiversity	
P93 Ensure that greenways are landscaped with local indigenous species where possible to contribute to urban biodiversity outcomes. **P99** Ensure quality open space is within walking distance of all neighbourhoods to: • link, integrate and protect biodiversity assets and natural habitats • provide linkages to encourage walking and cycling to local activities • incorporate the principles of Crime Prevention Through Environmental Design for safety and amenity	Environmental investigations will inform potential development opportunities and constraints. The Code includes policies which will encourage appropriate outcomes in respect to any land identified to be of biodiversity value and identify the health and condition of any regulated/significant tree. The proposed Code Amendment will support a compact urban form with the Affected Area located within a designated urban area.

Climate Change	
P105 Deliver a more compact urban form to: • protect valuable primary production land • reinforce the Hills Face Zone, character preservation districts and Environment and Food Production Areas • conserve areas of nature protection areas • safeguard the Mount Lofty Ranges Watershed • reduce vehicle travel and associated greenhouse gas emissions.	The proposed Code Amendment will support a compact urban form with the Affected Area located within a designated urban area and adjacent to existing residential development in the General Neighbourhood Zone.
Water	
P115 Incorporate water-sensitive urban design in new developments to manage water quality, water quantity and water use efficiency and to support public stormwater systems.	The Code includes policies which are instructive in respect water quality, use and management. Engineering investigations will ensure that the proposed urban development will not be contrary to the relevant water policies.
Emergency Management and Hazard Avoidance	
P118 Minimise risk to people, property and the environment from exposure to hazards (including bushfire, terrestrial and coastal flooding, erosion, dune drift and acid sulphate soils) by designating and planning for development in accordance with a risk hierarchy of: • avoidance • adaptation • protection	The Affected Area is subject to the following Overlays: • Hazards (Bushfire - Urban Interface) Overlay; and • Hazards (Flooding - Evidence Required) Overlay. These Overlay's provide clear guidance on matters related to natural hazards. Notwithstanding, detailed investigations will be undertaken to understand the likely impact of these Overlay's and ensure appropriate measures are taken to mitigate against risk.

3.4 Alignment with Other Relevant Documents

Additional documents may relate to the broader land use intent within the scope of this proposed Code Amendment (or directly to the Affected Area) and therefore are identified for consideration in the preparation of the Code Amendment.

Table 3.3 below identifies other documents relevant to this proposed Code Amendment.

Table 3.3 *Other strategic documents relevant to the Code Amendment*

Other Relevant Documents	Code Amendment Alignment with Other Relevant Documents
Strategic Plan 2025 (City of Tea Tree Gully)	Key indicators from the Strategic Plan that are relevant to this Code Amendment are: • Community Wellbeing – creating a sense of belonging, inclusion and connection • Environment – creating environmentally valuable places and reducing the carbon footprint • Places – well designed housing, sustainable practices and neighbourhoods are easy to move around, and safe • Leadership – focused on the longer-term interests of the community The Code Amendment will investigate to ensure that the Affected Area is suitable for residential purposes, with the resulting Zone supporting an urban from and density consistent with the Council's Strategic Plan.

4. INVESTIGATIONS AND ENGAGEMENT

4.1 Investigations already Undertaken

The table below identifies what investigations have already been undertaken in support of the proposed Code Amendment.

Investigation/s Undertaken	Summary of Scope of Investigations	Summary of Outcome of Recommendations
Search of the Taa wika - Aboriginal Sites and Objects Register	To confirm if the Affected Area is subject to any registered Aboriginal sites or objects.	No known Aboriginal sites or objects were identified as a result of this search.
Preliminary site investigations (PSI) – LWC	To consider suitability of the Affected Area for residential land use.	There are six potentially significant contaminant linkages/exposure pathways associated with a sensitive land use that are unresolved since the previous Site assessment program undertaken in 2008-2010 – these would need to be further assessed/resolved prior to residential rezoning/development of the Site. The most significant of these is the proximity of the Site to a former landfill (a Class 1 activity undertaken within 60 m) but there are, in fact, two former landfills within 500 m of the Site. It is therefore considered that a site contamination audit is likely to be required, in addition to the recommendations presented below. It was recommended that further monitoring of the landfill gas regime was undertaken.
*In Situ Ground Gas Assessment – LWC (supplied in **Appendix 4**)*	LWC were subsequently re-engaged to undertake further monitoring of the landfill gas regime to assess its current status beneath the Site and assess potential regime changes under varying atmospheric conditions.	The current ground gas regime is dominated by caron dioxide with some elevated carbon monoxide. Methane was not identified as being above machine limit of reporting except some marginal volume of 0.2 %v/v in one location. This accords with data obtained from the operator of the landfill (Veolia) in May 2022 which recorded high carbon dioxide but no methane. The Characteristic Situation (CS) is driven by carbon dioxide and is calculated as CS4 – where

		considering low density residential building categorisation, the NSW EPA gas protection guidance value is 6. This means building protection measures must add up to six points as provided in NSW EPA guidance. However, NSW EPA guidance notes that residential development is not recommended at CS4 and above without pathway intervention for example source depressurisation or control of lateral migration external to the buildings and a high level of management – these requirements necessarily preclude low density residential development. Given the ambiguous gas generation phase of the landfill (i.e. current and future gas composition) and the CS4 determination, any future dwellings would require building envelope ground gas protection measures and source depressurisation or control of lateral migration from the source. Such measures are not uncommon or unique in such circumstances and development on the Site should be possible with appropriate levels of engineering and protection.
Development Plan Amendment, Environmental Investigations Executive Summary - Highbury Residential and Open Space Development – SKM	Environmental investigations undertaken included grid and targeted soil investigation programs, sediment sampling, groundwater quality assessments and landfill gas investigations.	The Phase I environmental site assessment identified a low to moderate potential for historical use of the site to cause contamination of soil and/or groundwater. The potential range of contamination sources investigated were predominantly related to the previous commercial practices associated with crushing and storage activities at the site. The Phase II environmental investigations comprised of a total of 34 grid based and targeted soil investigation locations, three groundwater

		monitoring wells, and landfill gas monitoring. Of the thirty-fdur locations sampled, only one location reported a concentration of heavy metal marginally exceeding the NEPM (1999) standard residential MIL guideline and a statistical assessment of the data indicates no remedial action would be required. At five other locations the NEPM (1999) ecological investigation level was exceeded for one or more metals, although these exceedences were minor and are unlikely to warrant further assessment or remedial action. The results of the groundwater assessment program identified ammonia concentrations marginally exceeding the SA EPA (2003) aquatic ecosystem, fresh water criteria. Selenium levels representative of background concentrations were also identified to exceed the same criteria. These exceedences are not considered to represent an impediment to the development of this site for future residential use. Landfill gas monitoring undertaken on the three monitoring wells installed on the southern boundary of the site did not identify significant migration of landfill gas from the landfill beneath the Hallan Nominees land.
Additional Landfill Gas Monitoring and Soil Investigation Program - 10-14 and 16-20 Halls Road, Highbury – SKM	Sinclair Knight Merz Pty Ltd (SKM) was engaged by Hallan Nominees Pty Ltd (Hallan) to undertake additional landfill gas monitoring and intrusive soil works at the 10-14 and 16-20 Halls Road, Highbury,	Delineation bores drilled in the north western corner of the site to vertically delineate heavy metal contamination reported heavy metal concentrations below laboratory limits of reporting or adopted guidelines with the exception of one surficial sample which exceeded NEPM (HIL) A guideline criteria for lead. It is considered unlikely that elevated heavy metal concentrations are present within the natural soil profile.

		Aesthetically impacted fill material was estimated to be approximately 4,700 m_3 for the central and southern portions of the site. Delineation soil bores installed in the vicinity of groundwater monitoring well MW1_001 to assess whether soil beneath the site is acting as a source of ammonia to groundwater indicated that it is unlikely that N identified in the surficial soil would impact groundwater quality beneath the site. It is considered that the marginally elevated ammonia concentration reported in groundwater is indicative of minor diffusion of ammonia from the landfill area to the south. The monitoring of landfill gas over six events reported no significant concentrations of methane. However, significant carbon dioxide was reported above guideline criteria in three of the six events. No elevated concentrations of gas were reported in Event 6, when gas extraction was not occurring. The gas monitoring results were used to calculate a gas screening value of 0.24 l/hr; which is deemed a Low Risk with respect to end site use, with the CO_2 source potentially being attributable to natural soil organic content. It is therefore considered that the concentrations of CO_2 reported on site represent a low risk to future site users based on the current ground gas regime.

4.2 Further Investigations Proposed

Table 4.1 below outlines what investigations that will be undertaken to support the Code Amendment.

Table 4.1 *Investigations to be undertaken for the Code Amendment*

Investigations Proposed	Explanation of how the further investigations propose to address an identified issue or question
Detailed Site Investigations, including Site Contamination Audit	Prepare detailed environmental site investigation for the Affected Area to determine the level of mitigation measures required for residential land use.
Infrastructure and Servicing Report	Prepare infrastructure and servicing investigations for the Affected Area. Identify any stormwater capacity constrains appurtenant to the Area Affected and options to manage stormwater in terms of both quantity and quality. Identify any infrastructure capacity issues having regard to the development potential arising from the Code Amendment. Identify any need for augmentation and associated responsibilities.
Traffic Advice	Prepare traffic investigations to ensure that existing and future road network can accommodate anticipated traffic associated with future development.
Vegetation and Fauna Investigations	To determine if any of the existing vegetation on the Affected Area is protected and/or should be retained. Consider whether existing vegetation provides habitat for any fauna on the Affected Area. Understand how this may impact future redevelopment of the Affected Area.

There is low probability that new infrastructure agreement(s) will be required to be entered in connection with the Code Amendment process.

4.3 Engagement already Undertaken

Initial high-level engagement has occurred on the proposed Code Amendment with the following stakeholders:

- City of Tea Tree Gully
- Environment Protection Authority (EPA)
- Department for Energy and Mining (DEM)
- PLUS, Department for Trade and Investment
- Holcim, the adjoining land owner and tenement holder to the east of the Affected Area
- Highbury Landfill Authority

A copy of the letter from the City of Tea Tree Gully acknowledging our engagement with them is contained in **Appendix 5**. Correspondence from the Environment Protection Authority and Department for Energy and Mining is also attached in **Appendix 5**.

In addition, the following engagement has also occurred on the proposed Code Amendment:

- Engagement with Hon. John Gardner MP, Member for Morialta.

4.4 Further Engagement Proposed

In addition to the engagement already undertaken and identified above, a draft Engagement Plan has been prepared and is enclosed (**Appendix 6**).

5. CODE AMENDMENT PROCESS

5.1 Engagement Plan

The Code Amendment process will occur in accordance with the Community Engagement Charter and Practice Direction 2 – Consultation on the Preparation or Amendment of a Designated Instrument.

The Proponent has prepared an Engagement Plan (**Appendix 6**) which includes the following mandatory consultation requirements (which may be in addition to the engagement outlined in this Proposal to Initiate):

- The Local Government Association must be notified in writing of the proposed Code Amendment;
- If the Code Amendment has a specific impact on 1 or more particular pieces of land in a particular zone on subzone (rather than more generally), the Designated Entity must take reasonable steps to give a notice in accordance with Regulation 20 of the *Planning, Development and Infrastructure (General) Regulations 2017* (Regulations), to:
  - » the owners or occupiers of the land; and
  - » owners or occupiers of each piece of adjacent land;
- Consultation must also occur with any person or body specified by the State Planning Commission under section 73(6)(e) of the Act.

5.2 Engagement Report

Once engagement on the Code Amendment is complete, the Designated Entity will prepare an Engagement Report under section 73(7) of the Act.

The Designated Entity will ensure that a copy of the Engagement Report is furnished on the Minister and also published on the SA Planning Portal. This will occur in accordance with Practice Direction 2.

The Engagement Plan and the Engagement Report will also be considered by the State Planning Commission during the final stages of the Code Amendment process. The Commission will provide a report to the Environment, Resources and Development Committee of Parliament under section 74(3) of the Act. The Commission's report will provide information about the reason for the Code Amendment, the consultation undertaken on the Code Amendment and any other information considered relevant by the Commission.

5.3 Code Amendment Timetable

The Proponent (where it is also the Designated Entity) commits to undertaking the Code Amendment in line with the timeframe outlined in **Appendix 7**. If a timeframe is exceeded (or expected to be exceeded) the Proponent agrees to provide an amended timetable to the Department with an explanation of the delay, for approval by the Minister of an extension of time for the Code Amendment. The timetable is attached in **Appendix 7**.

APPENDIX 1. CERTIFICATE OF TITLE

REAL PROPERTY ACT, 1886
South Australia

The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.

Certificate of Title - Volume 5768 Folio 115

Parent Title(s) CT 4265/751

Creating Dealing(s) CONVERTED TITLE

Title Issued 04/05/2000 **Edition** 2 **Edition Issued** 24/06/2008

Estate Type

FEE SIMPLE

Registered Proprietor

HALLAN NOMINEES PTY. LTD. (ACN: 007 785 720)
OF LOT 47 LOWER NORTH EAST ROAD HOUGHTON SA 5131

Description of Land

ALLOTMENT 12 DEPOSITED PLAN 17357
IN THE AREA NAMED HIGHBURY
HUNDRED OF YATALA

Easements

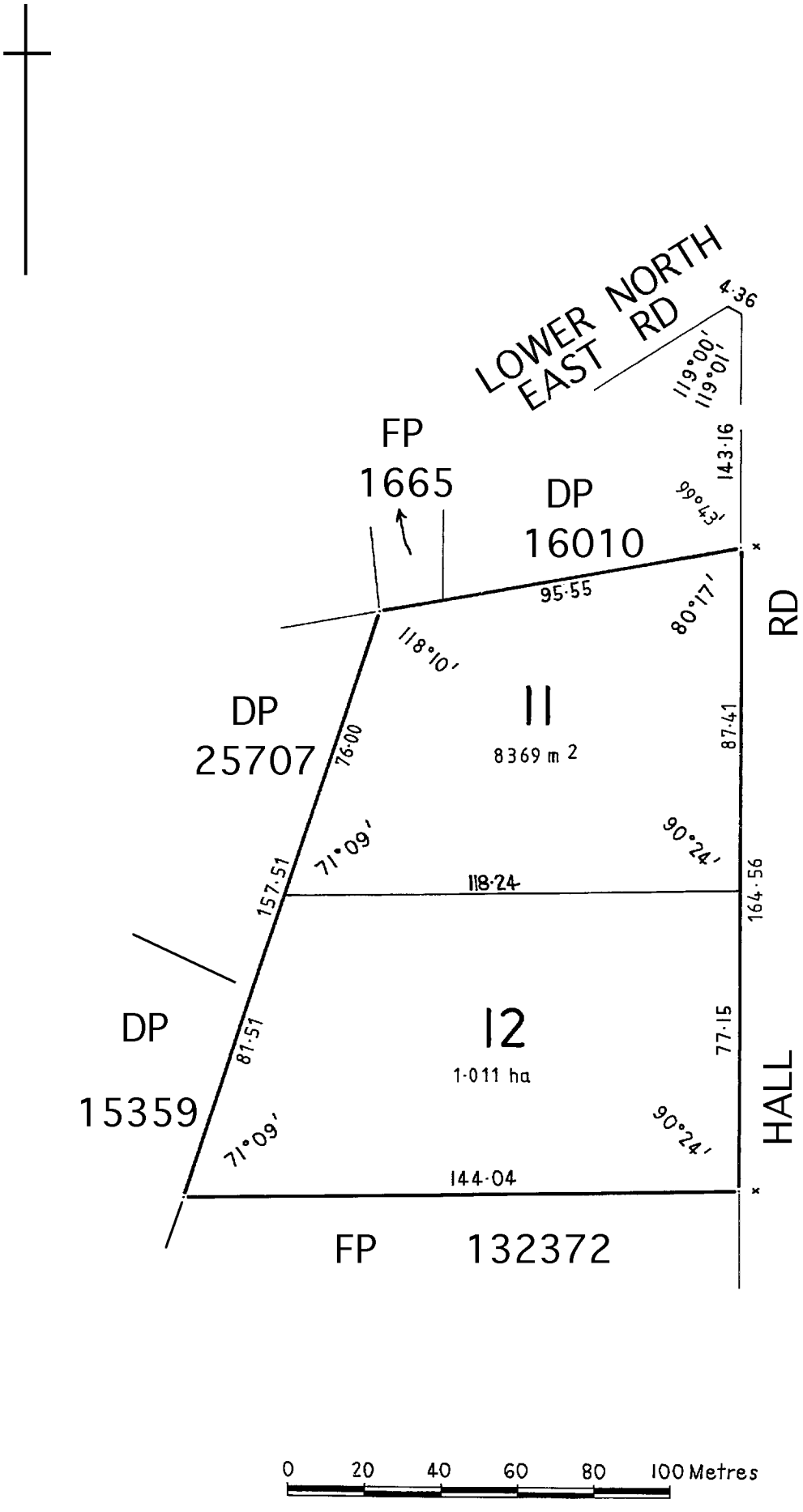
NIL

Schedule of Dealings

NIL

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



REAL PROPERTY ACT, 1886
South Australia

The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.

Certificate of Title - Volume 5768 Folio 114

Parent Title(s) CT 4265/750

Creating Dealing(s) CONVERTED TITLE

Title Issued 04/05/2000 **Edition** 2 **Edition Issued** 24/06/2008

Estate Type

FEE SIMPLE

Registered Proprietor

HALLAN NOMINEES PTY. LTD. (ACN: 007 785 720)
OF LOT 47 MAIN ROAD HOUGHTON SA 5131

Description of Land

ALLOTMENT 11 DEPOSITED PLAN 17357
IN THE AREA NAMED HIGHBURY
HUNDRED OF YATALA

Easements

NIL

Schedule of Dealings

NIL

Notations

Dealings Affecting Title NIL

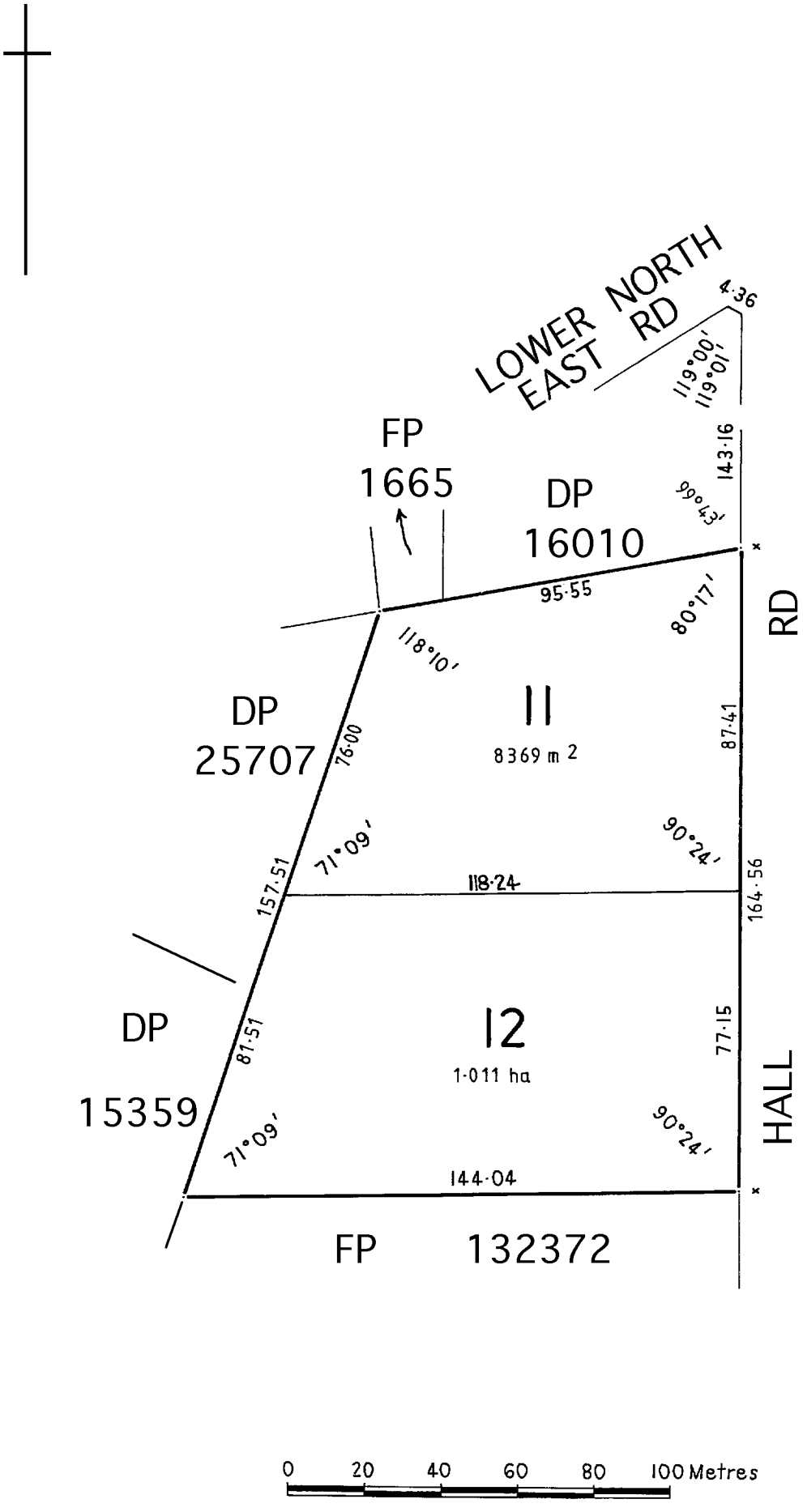
Priority Notices NIL

Notations on Plan NIL

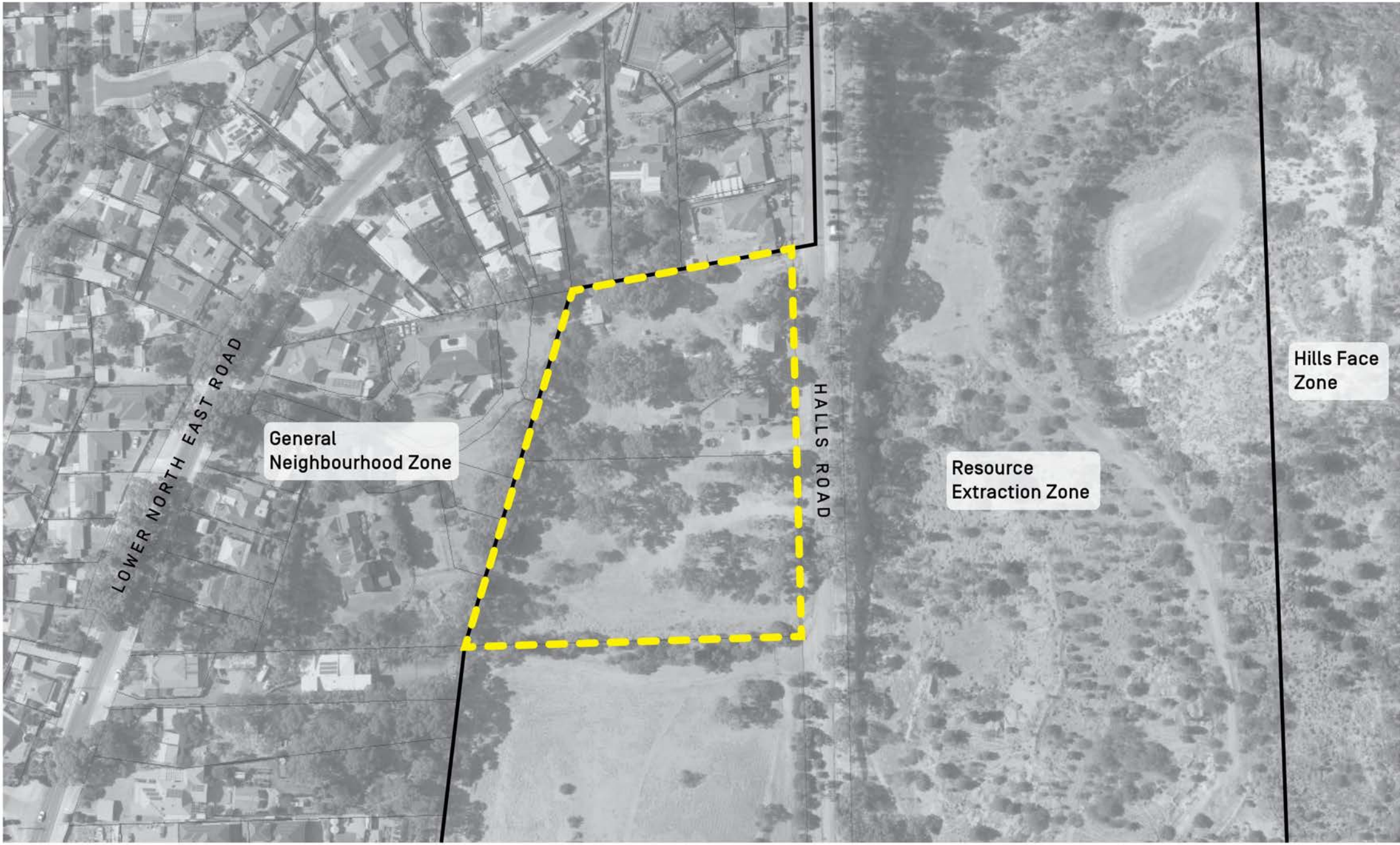
Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G237/1986

Administrative Interests NIL



APPENDIX 2. LOCATION PLAN AND CURRENT ZONE



Current Zone

LEGEND

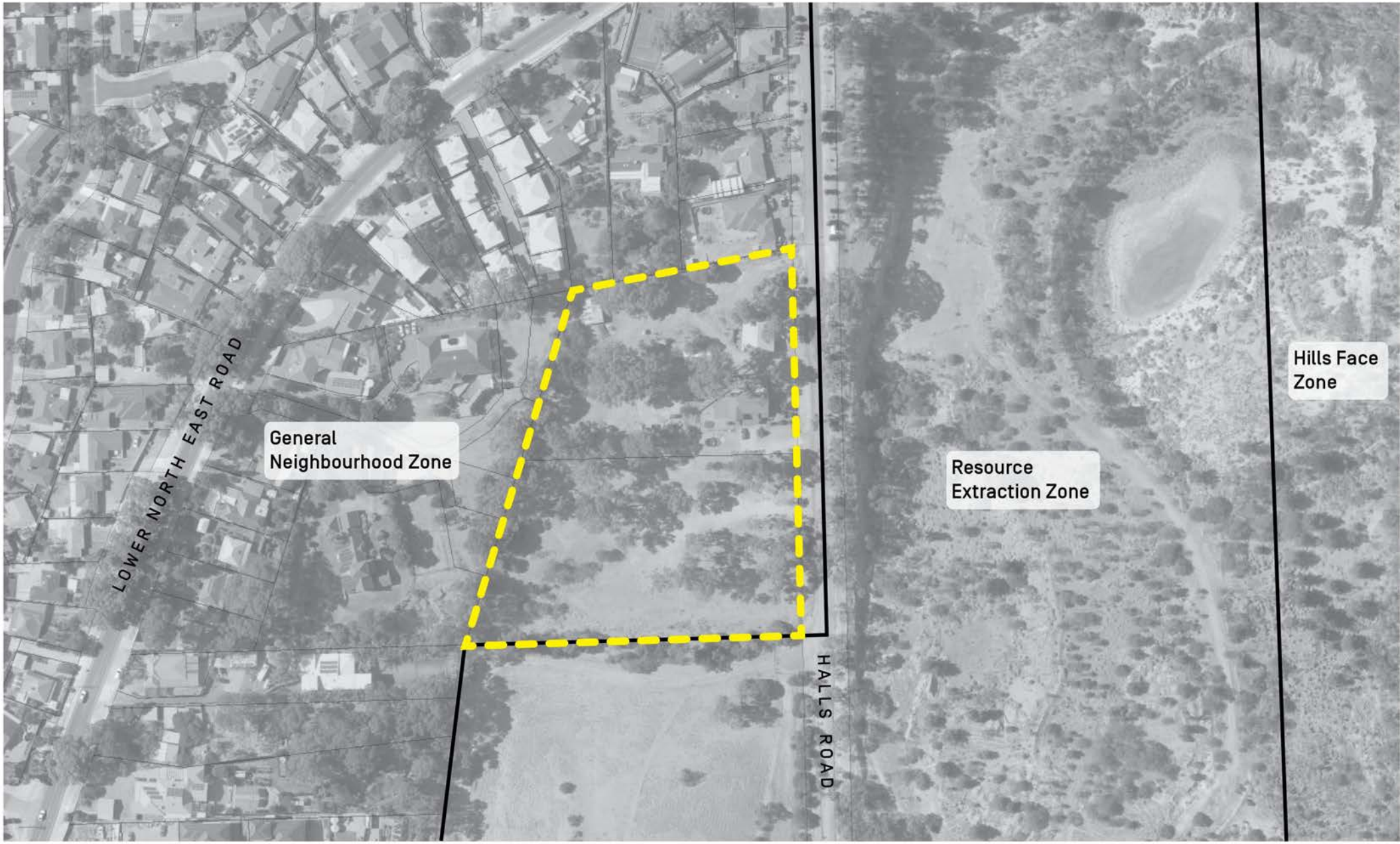
Affected Area boundary

Zone boundary

N

Data Source: Imagery - SA Property & Planning Atlas dated 7 Jan-22Jan 2021. Policy - Planning & Design Code version 2022.6, published on 31 March 2022.

APPENDIX 3. PROPOSED ZONE



Proposed Zone

LEGEND

Affected Area boundary

Zone boundary

N

Data Source: Imagery - SA Property & Planning Atlas dated 7 Jan-22Jan 2021. Policy - Planning & Design Code version 2022.6, published on 31 March 2022.

APPENDIX 4. PRELIMINARY SITE INVESTIGATIONS

In Situ Ground Gas Assessment

10-20 Halls Road, Highbury, South Australia

Future Urban/Hallan Nominees

March 2023

Document Status

Version	Doc type	Reviewed by	Approved by	Date issued
DR001	Draft	Dr James Fox	Dr James Fox	10 March 2023
DR002	Draft	Dr James Fox		14 March 2023

Project Details

Project Name	10-20 Halls Road, Highbury, South Australia
Client	Future Urban/Hallan Nominees
Client Project Manager	Ms Belinda Monier
LWC Project Manager	James Fox
LWC Project Director	Emily Picken
Authors	Alistair Vaughan
File Reference	LWC OO 01 ISGG Assessment DR002

Land & Water Consulting
4 – 8 Goodwood Road, Wayville SA 5034
Telephone (08) 8271 5255
www.lwconsulting.com.au

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EXECUTIVE SUMMARY

Background & Objectives

Land and Water Consulting (LWC) was previously engaged by Future Urban/Hallan Nominees to undertake a Preliminary Site Investigation (PSI) of the property located at 10-20 Halls Road, Highbury, South Australia (the Site).

The Site is situated within the Torrens River Catchment, approximately 14 km north-east of the Adelaide CBD, and comprises an area of approximately 1.85 hectares.

The northern portion of the Site (Allotment 11) is currently in use for residential purposes whereas the southern portion is vacant and undeveloped – with respect to Table 1 of *State Planning Commission Practice Direction 14 (Site Contamination Assessment 2022*) ("Practice Direction 14"), the current use of the northern portion is aligned with *Item 1: Residential Class 1 – Domestic Residential* (defined as a sensitive land use in the *Environment Protection Act 1993*).

Despite its current use, the land is zoned as Extractive Industry – it is understood that Future Urban plan to apply for residential rezoning of the Site.

The objective of the PSI was to identify potential sources of contamination and associated contaminants of potential concern arising from current and historical activities undertaken on the Site, and/or within its immediate vicinity, that may give rise to site contamination (as defined in Section 5B of the *Environment Protection 1993*) with respect to a proposed rezoning of the Site for residential land use – the objectives of this assessment accord with Practice Direction 14.

The PSI concluded that there are six potentially significant contaminant linkages/ exposure pathways associated with a sensitive land use that are unresolved since the previous Site assessment program undertaken in 2008-2010 – these would need to be further assessed/ resolved prior to residential rezoning/development of the Site. The most significant of these is the proximity of the Site to a former landfill (a Class 1 activity undertaken within 60 m) but there are, in fact, two former landfills within 500 m of the Site. It was therefore considered that a site contamination audit would likely be required, in addition to the recommendations presented below.

1. Undertake further monitoring of the landfill gas regime to assess its current status beneath the Site and confirm that the regime will not change under seasonal conditions.
2. Undertake groundwater monitoring, particularly in the vicinity of the southern Site boundary, to assess the current state of the uppermost aquifer beneath the Site, the groundwater depth and flow direction and any potential seasonal variations (i.e. in depth, flow and/or chemical status).
3. Prepare a Site Remediation Plan (SRP) to render the site suitable for the proposed residential rezoning/development (i.e. with reference to the north-western area of elevated soil metal concentrations and the south-eastern area of aesthetically unacceptable fill).
4. Prepare a report to detail the additional assessment/remediation work and assess the potential risks to the environment and human health under a sensitive land use scenario.

LWC were subsequently re-engaged to Undertake further monitoring of the landfill gas regime to assess its current status beneath the Site and assess potential regime changes under varying atmospheric conditions.

The current ground gas regime is dominated by caron dioxide with some elevated carbon monoxide. Methane was not identified as being above machine limit of reporting except some marginal volume of 0.2 %v/v in one location. This accords with data obtained from the operator of the landfill (Veolia) in May 2022 which recorded high carbon dioxide but no methane.

It is not clear as to whether the landfill has entered or exhausted the methane generation phase, and so there is some possibility that methane may be generated in the future.

The Characteristic Situation (CS) is driven by carbon dioxide and is calculated as CS4 – where considering low density residential building categorisation, the NSW EPA gas protection guidance value is 6. This means building protection measures must add up to six points as provided in NSW EPA guidance.

However, NSW EPA guidance notes that residential development is not recommended at CS4 and above without pathway intervention for example source depressurisation or control of lateral migration external to the buildings and a high level of management – these requirements necessarily preclude low density residential development.

Given the ambiguous gas generation phase of the landfill (i.e. current and future gas composition) and the CS4 determination, any future dwellings would require building envelope ground gas protection measures and source depressurisation or control of lateral migration from the source. Such measures are not uncommon or unique in such circumstances and development on the Site should be possible with appropriate levels of engineering and protection.

As per EPA guidance note EPA 969/12, a site contamination auditor would need to be engaged to audit further assessment and design and implementation of management measures.

Refer also to the Statement of Limitations presented in Appendix S.

Definition of Acronyms

ACM	Asbestos Containing Material
AHD	Australian Height Datum
ARMCAZ	Agriculture and Resource Management Council of Australian and New Zealand
ASRIS	Australian Soil Resource Information System
AS	Australian Standard
ASS	Acid Sulfate Soil
ASC	Assessment of Site Contamination
BGL	below ground level
BTEX	benzene, toluene, ethylbenzene and xylenes (total)
CBD	Central Business District
COPC	Contaminants of Potential Concern
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CRC CARE	Cooperative Research Centre for Contamination Assessment and Remediation of the Environment
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CT	Certificate of Title
DEW	Department of Environment and Water
DIT	Department of Infrastructure and Transport
DR	Draft Report
EPA	Environment Protection Authority
EP	Environment Protection
EPP	Environment Protection Policy
EPR	Environment Protection Regulations
FR	Final Report
GDA	Geocentric Datum of Australia
ha	hectares
IEI	Issue of Environmental Interest
km	kilometres
LWC	Land and Water Consulting
m	metres
m^2	square metres
m^3	square cubic metres
mg/kg	milligrams per kilogram
µg/kg	micrograms per kilogram
mg/L	milligrams per litre
µg/L	micrograms per litre
MAH	Monocyclic Aromatic Hydrocarbons
µg/m^3	micrograms per cubic metre
NHMRC	National Health and Medical Research Council
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
OCP	Organochlorine Pesticide
OPP	Organophosphorus Pesticide
PACM	Potential Asbestos Containing Material
PASS	Potential Acid Sulfate Soil
PAH	Polycyclic Aromatic Hydrocarbons
PCA	Potentially Contaminating Activity
ppm	parts per million
PSI	Preliminary Site Investigation
SA EPA	South Australian Environment Protection Authority
SAQP	Sampling and Analysis Quality Plan
SAR	Site Assessment Report
SCAR	Site Contamination Audit Report
SVOC	Semi-volatile Organic Compound
SV	Soil Vapour
SWL	Standing Water Level
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons
UBD	Universal Business Directory
USC	Unified Soil Classification

UST	Underground Storage Tank
VOC	Volatile Organic Compound
WQEPP	Environment Protection (Water Quality) Policy

CONTENTS

APPENDICES

LIST OF FIGURES (ATTACHED)

LIST OF FIGURES (IN TEXT)

LIST OF TABLES (IN TEXT)

1 INTRODUCTION

1.1 OVERVIEW

Land and Water Consulting (LWC) was engaged by Future Urban/Hallan Nominees to undertake an in-situ ground gas assessment following the completion of a Preliminary Site Investigation (PSI [1]) of the property located at 10-20 Halls Road, Highbury, South Australia (the Site – refer to Table 1-1). A site plan is attached.

The Site is situated within the Torrens River Catchment, approximately 14 km north-east of the Adelaide CBD, and comprises an area of approximately 1.85 hectares.

Table 1-1 Site Details

Parcel Identifier	Certificate of Title	Property Number	Street Name	Suburb
D17357A11	CT 5768/114	10-14	Halls Road	Highbury
D17357A12	CT 5768/115	16-20	Halls Road	Highbury

It is understood that the northern portion of the Site (Allotment 11) is currently in use for residential purposes whereas the southern portion is vacant and undeveloped – with respect to Table 1 of *State Planning Commission Practice Direction 14 (Site Contamination Assessment 2022)* ("Practice Direction 14"), the current use of the northern portion is aligned with *Item 1: Residential Class 1 – Domestic Residential* (defined as a sensitive land use in Section 3-1 of the *Environment Protection Act 1993*).

Despite its current use, the land is zoned as Extractive Industry – it is understood that Future Urban plan to apply for residential rezoning of the Site.

A closed landfill owned and managed by Veolia is present on the immediate southern boundary of the Site and a further larger landfill owned and managed by the Highbury Landfill Authority (HLA) is present to the south of this.

The PSI identified potentially contaminating activities (PCA) associated with the Site – these were largely assessed in a extensive soil investigation/delineation program undertaken 2008 – 2010, as well as limited groundwater and landfill gas investigations at such time. However it has been ~12 years since this work was completed but both the aerial imagery and the recent site inspection observations indicate that no major changes have occurred with respect to the layout and use of the Site. The previous assessment programs did identify the following:

1. localised surficial heavy metal contamination in the north-western corner;
2. aesthetically impacted fill material in the south-eastern corner; and
3. the presence of a former landfill immediately adjacent to the southern Site boundary where the concentrations of CO_2 in landfill gas may present a risk with respect to a sensitive land use.

Although two groundwater monitoring events were undertaken in 2008-09 (with respect to a single well located on the southern Site boundary), and there was some indication of ammonia impacts potentially associated with the adjacent landfill, the current status of groundwater beneath the Site is unknown.

[1] in accordance with Schedule B2 of the *National Environment Protection (Assessment of Site Contamination) Measure* (1999 as amended 2013) – the ASC NEPM (1999)

The most potentially limiting environmental factor on any future development is likely to be the gas associated with landfilling activities to the south of the Site.

1.2 OBJECTIVE

The objective of the assessment was to assess the ground gas regime on the Site in relation to the landfilling activities undertaken south of the Site with respect to a potential future sensitive use of the Site (residential development).

1.3 SCOPE OF WORKS

The in-situ ground gas assessment was prepared with reference to:

- *Card G, Wilson S & Mortimer S 2012, 'A Pragmatic Approach to Ground Gas Risk Assessment', CL:AIRE Research Bulletin, RB17, CL:AIRE, London, UK, www.claire.co.uk/component/phocadownload/category/11-research-bulletins?download=312: research-bulletin-17.*
- *CIRIA 1995, R152, Methane and Associated Hazards to Construction: Risk Assessment for Methane and Other Gases from the Ground, CIRIA, London, UK.*
- *CIRIA 2007, C665, Assessing Risks Posed by Hazardous Ground Gases to Buildings, CIRIA, London, UK.*
- *NSW EPA (2020) Assessment and management of hazardous ground gases Contaminated Land Guideline*
- Schedule B(2) – 'Guidelines on Site Characterisation' outlined in the *National Environment Protection (Assessment of Site Contamination) Measure 1999*;
- SA EPA (2019a) – *Guidelines for the Assessment and Remediation of Site Contamination*; and

The scope of works was as follows:

1. Advance
2. Install three GasCLam 2 ('GasClam) constant gas logging units along the southern boundary i.e. screening the waste mass in the Veolia landfill (and the HLA landfill located further south). Monitoring for 30 days.
3. Check parameters on installation and recovering of GasClams (flow, gases, atmospheric pressure).

2 SITE DETAILS

2.1 IDENTIFICATION

A summary of Site particulars is presented as Table 2-1.

Table 2-1 Summary of Site Particulars

Site Location	10-14 and 16-20 Halls Road, Highbury, South Australia 5089
Property Description	The subject area of the Site is defined by the following Certificate of Titles: ▪ D17357AL11 Volume 5768 Folio 114 ▪ D17357AL12 Volume 5768 Folio 115 In the Area Named Highbury Hundred of Yatala Copies of the current CT are provided in Appendix B of the PSI.
Area of Site	Approximately 18,500 m^2 (1.85 hectares)
Local Government Authority	City of Tea Tree Gully
Zoning	Resource Extraction (RE)
Current Site Usage	Northern portion – residential (sensitive land use) Southern portion – vacant
Ownership	*Hallan Nominees Pty Ltd*
Proposed Land Use	Re-zone to Residential

2.2 SITE SETTING

The current surrounding land uses are detailed in Table 2-2**.** Generalised land use is shown in Appendix C.

Table 2-2 Surrounding Land Uses

Boundary	Description of Surrounding Land Use
North	Residential properties
East	Former quarry, across Halls Road
South	Former landfills to immediate south (SITA/Veolia) and approximately 230 m south (Highbury Landfill Authority)
West	Residential properties

2.3 SITE DESCRIPTION

The Site comprises two allotments and slopes towards the south. Halls Road, to the east, provides access to the Site and is quite steep (refer also to Section 3.1).

Northern Allotment 11 hosts the following infrastructure:

- a two storey dwelling with garden areas that include children's outdoor play equipment;
- sheds;
- general inert materials associated with farming or earthmoving;
- two aboveground storage tanks (ASTs) understood to have been used as water tanks for dust suppression etc.; and
- an old caravan.

Southern Allotment 12 has not been subjected to any development/improvements and hosts heathy vegetation (grass, bushes, trees).

3 REGIONAL SETTING

3.1 TOPOGRAPHY & HYDROLOGY

As shown on the plans in Appendix D, the survey marks dataset (detailed on The Atlas of South Australia database) indicates that the northern boundary of the Site is located at an elevation of approximately 190 m Australian Height Datum (AHD) and the southern boundary is approximately 170 m AHD – i.e. a 1 in 8 gradient, decreasing from north to south across the Site. The land to the west is generally of similar elevation whereas, to the east, the land surface falls away sharply due to the presence of a former quarry. Further to the east, the land elevation increases due to the Adelaide Hills. The land surface in general decreases to around 140 m AHD at the bottom of Halls Road.

The nearest fresh surface water body to the Site is an unnamed creek to the north which flows from east to west, down through Anstey Hill and parallel with Barracks Road. This creek would be located hydraulically up-gradient of the Site, given the reasonably sharp fall in elevation from north to south. The former quarry to the east and south-east of the Site contains various water bodies that have accumulated within the open pits.

The closest marine surface water body to the Site is Gulf St Vincent, located over 20 km to the west.

3.2 GEOLOGY

The Department of Environment, Water and Natural Resources (DEWNR) surface geological map (1:100,000), indicates that the Site is underlain by undifferentiated Tertiary rocks (refer to Appendix E and Table 3-1). The upper lithology is known to comprise sands (refer to Figures 3-1 and 3-2) that were excavated for a sand and gravel business along Halls Road, resulting in excavations which were then sold off for use as landfills.

The Atlas of Australian Soils classifies these sands as Tc1, being:

- Hilly to steep hilly, small valley plains: hard acidic yellow mottled soils (Dy3.61) with shallow grey-brown sandy soils (Uc6.11) and rock outcrops in association with variable areas of (Dy3.41 and Dy3.42), (Dy3.22), (Dr2.12 and Dr2.22) on hills and hill slopes, and minor areas of (Dy3.61) containing ironstone gravel in the A horizons on some ridge tops; unclassified alluvial soils, peats (0), and acid swamp soils (0) in the wetter valleys.

As also included in Appendix E, the CSIRO Atlas of Australian Acid Sulfate Soils indicates that there is an extremely low probability (1-5%) of occurrence of acid sulfate soils.

Table 3-1 Geology of the Site and Surrounding Area

Name	Description	Parent Name	Province	Age	Distance (m)	Direction
Unnamed	Undifferentiated Tertiary rocks		Unknown	Tertiary	0	On-site
Stonyfell Quartzite	Quartzite, feldspathic, with shale interbeds; silty sandstone in part schistose and calcareous	Bungarider Subgroup	Adelaide Geosyncline	Neoproterozoic	306	East
Unnamed	Undifferentiated calcrete	Unnamed	Unknown	Pleistocene	769	West
Keswick Clay	Clay, smectite-rich, grey-green, with red or yellow mottling and rare sand lenses	Unnamed	St Vincent Basin	Pleistocene	833	West

Name	Description	Parent Name	Province	Age	Distance (m)	Direction
Woolshed Flat Shale	Shale, black; dolomitic siltstone; dolomite; grey laminated siltstone	Bungarider Subgroup	Adelaide Geosyncline	Neoproterozoic	901	East
Unnamed	Undifferentiated Quaternary rocks		Unknown	Pleistocene-Holocene	932	South-west

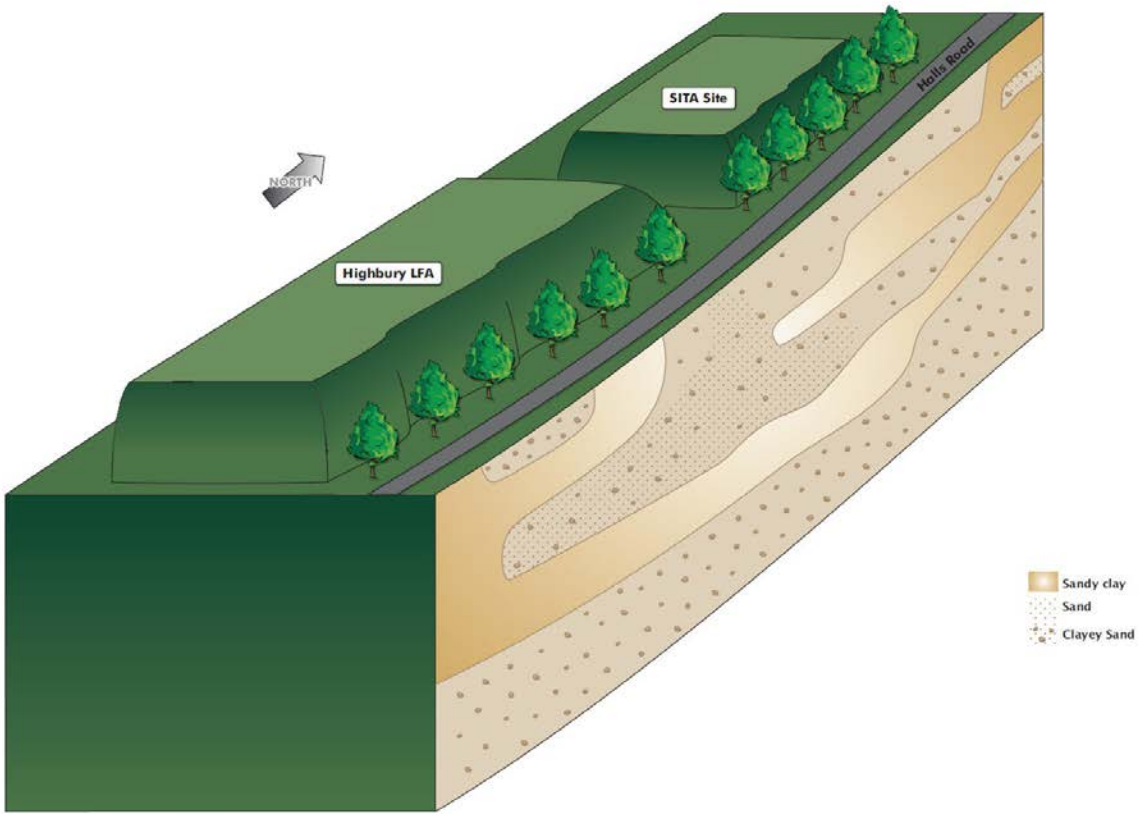

Figure 3-1 Conceptual Lithology (from SKM (2010)) – the Site is located to the immediate north of the "SITA site" (refer also to Figure 4-2)

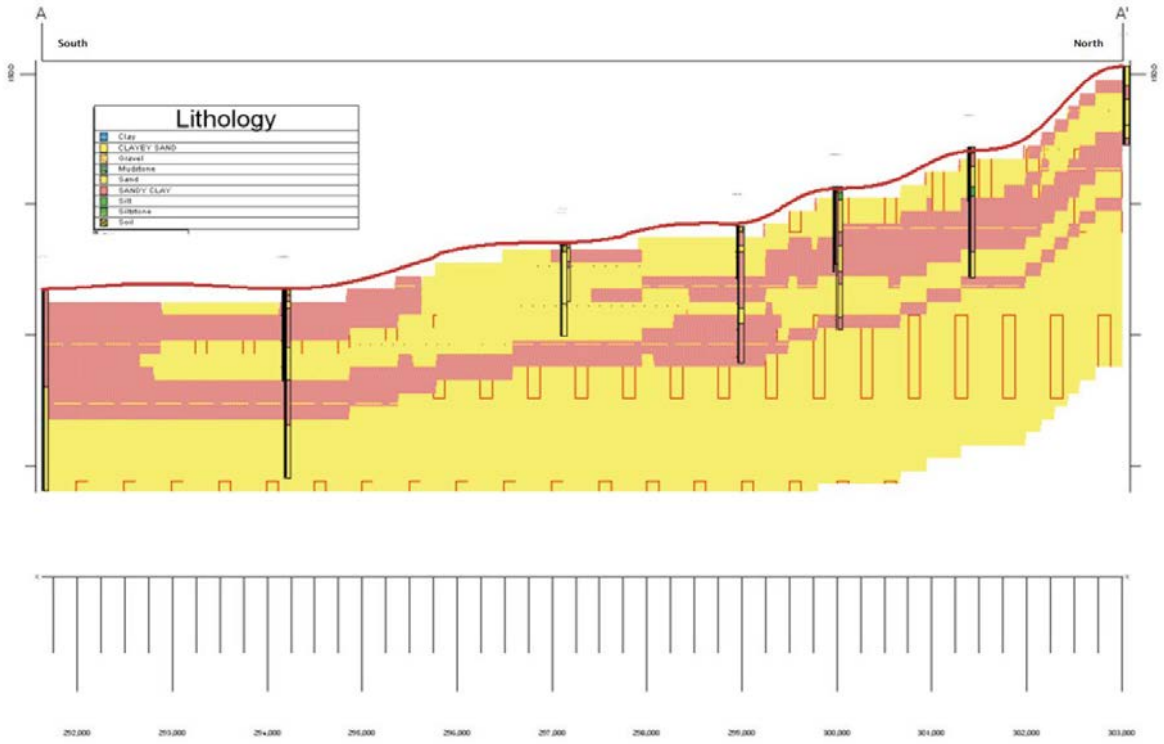

Figure 3-2 Geological Cross-Section from South to North (from SKM (2010))

3.3 HYDROGEOLOGY

The uppermost groundwater aquifer beneath the site comprises sedimentary rock basins, including cavernous limestone, sandstone, sand, shale and clay. Groundwater is expected to flow in a west to north-westerly direction, towards *Gulf St Vincent,* though there may be local complexities due to the quarrying activities in the area.

With reference to the DEW (2022) *WaterConnect* records (refer to Appendix F), the depth to the uppermost aquifer within the vicinity of the Site is expected to be ≥20 m below ground level (BGL). On-site monitoring well MW1_001 reported a depth to water of 27.568 m below the top of the PVC casing (BTOC – corresponding to 132.159 m AHD) in May 2008 and 27.625 m BTOC (132.102 m AHD) in November 2009.

The DEW (2022) *WaterConnect* database for a 2 km radius around the Site indicates that there are 227 registered bores, for which:

- recorded depths range from ~1 to 203.7 m BGL;
- standing water levels (SWLs) range from 1.2 to 103 m BGL;
- salinity values range from 171 to 7,479 mg/L total dissolved solids (TDS); and
- listed purposes (for groundwater bores) include:
  - domestic
  - domestic/stock
  - environmental, investigation, observation and monitoring
  - irrigation

- managed aquifer recharge;
- the closest domestic bore, listed as being 137 m south-west of the Site and installed to a depth of 50 m BGL in 1999, has a SWL of 38 m BGL and a salinity value of 1,434 mg/L TDS.

In addition to the above, there is one on-site monitoring well (MW01_001), drilled as part of a 2008 environmental investigation (refer to Section 4.6.2), that does not appear to be included in the *WaterConnect* database.

4 METHODOLOGY

4.1 MONITORING WELLS

A total of six new ground gas monitoring wells (MW1 – MW6, Figure 4-1) were installed on 13 – 14 January 2023, to a depth of 6 m BGL on Site (4 m screen) so as to screen the approximate depth of the waste mass in the Veolia landfill. The distribution of wells was based on broad front to screen the landfill (MW04 – MW06) with depth into the Site (MW01).

Figure 4-1 Well locations

Construction logs are held on file. Wells were capped with metal gatic lids (Figure 4-2).

Figure 4-2 MW02 post install

Three GasClam continuous gas monitors were installed in locations MW04, MW05 and MW06 along the southern boundary of the Site screening the Veolia landfill. Calibration certificates for these units are presented in Appendix B.

Deployment commenced on 18 January 2023 and recovered on 16 February 2023, i.e. a deployment duration of approximately 30 days.

The GasClams obtained the following parameters per hour over the deployment period:

- Gas concentrations – Methane (CH_4), Carbon Dioxide (CO_2), Oxygen (O_2), Hydrogen Sulphide (H_2S), Carbon Monoxide (CO).
- Borehole pressure.
- Atmospheric pressure.

- Temperature.

For data quality assurance measures ensuring calibration to the environment, recording of these parameters was undertaken separately using a supplier calibrated GA5000 Landfill Gas unit at deployment and recovery of the GasClam i.e., to “book end” the recording period. Readings were taken on deployment on 18 January 2023 and mid cycle on 27 January 2023.

The parameters recorded were as follows:

- Weather conditions at the Site, including atmospheric barometric pressure, were recorded at the start and end of monitoring.
- Concentrations of methane, carbon dioxide and oxygen (%v/v) reported by the gas analysers were recorded at 3 minutes of pumping until parameters were steady. Any higher gas concentrations observed during the 3-minute period were noted for reporting the maximum values observed.
- Data was recorded consistently in the following order of measurement in accordance with BS8576:2013:
    - Pressure in and gas flow from the well.
    - Ambient gas concentrations (‘zeroed’).
    - Gas concentrations – Methane (CH_4), Carbon Dioxide (CO_2), Oxygen (O_2), Hydrogen Sulphide (H_2S), Carbon Monoxide (CO).
    - Ambient temperature.
    - Atmospheric pressure.

4.2 ASSESSMENT CRITERIA

The trigger levels for landfill gas in monitoring bores at the boundary of a landfill facility or within the structures located on or off the Site are defined by the EPA as greater than 1% methane (v/v) and greater than 1.5% carbon dioxide (v/v) (EPA 2007 (updated 2019)). However this assessment was not designed or required to assess or address gas potentially associated with the landfill relative to EPA 2007 (updated 2019).

The following guidance was consulted and adopted:

- Wilson, S; Oliver, S; Mallett, H; Hutchings, H; Card, G (2007) Assessing risks posed by hazardous ground gases to buildings CIRIA C665, London, UK
- British Standard BS 8485:2015+A1:2019 (outlines a process for ground gas characterisation and hazard assessment that is substantially derived from CIRIA C665. While there are differences in emphasis (for example, with respect to using Data Quality Objectives (DQOs) and the centrality of a risk-based approach) these guidelines and BS8485:2015+A1:2019 are consistent in all significant areas).
- NSW EPA (2020) Assessment and management of hazardous ground gases - Contaminated Land Guideline

5 RESULTS

5.1 GROUND CONDITIONS

The ground conditions observed on 18 January 2023 are listed in Table 5-1. No indication of landfilled waste (putrescible) was encountered in any locations.

Table 5-1 Ground conditions encountered on boreholes for well installations

Location	Fill	Natural
MW01	Light brown gravelly silt to 0.5 m BGL	Gravelly sand/ sand grading from light brown to orange/ yellowish. White silt at 5 m BGL
MW02	Dark brown sand/ light brown gravelly silt with quartz fragments to 1.5 m BGL.	Sand, grading between yellow/ orange/ grey and white at depth. White silt at 5 m BGL
MW03	N/A	Cream sand/ gravelly sand. Brown, low plasticity clay at 2.0 m BGL with silty sand/ clayey sand at depth.
MW04	N/A	Fine to medium grain sand, grading from cream to brown/ orange. Brown/ orange silt at 3.5 m BGL becoming clayey sand at 4.0 m BGL.
MW05	Grey/ light brown gravelly silt to 3.0 m BGL.	Clay/ gravelly clay from 3.0 m BGL, becoming orange silt at 4.0 m BGL. Brown/ orange clayey sand/ sand at depth.
MW06	Cream/ blue gravel down to 1.0 m BGL. Becoming gravelly sandy clay with low to moderate plasticity down to 2.5 m BGL.	Gravelly sand/ sand clay/ clayey gravelly sand natural soils.

5.2 STATIC MONITORING

A calibrated GA5000 gas monitoring unit was used to record gas parameters on installation and mid cycle when checking GasClam batteries (Table 5-2). The results report no significant methane though carbon dioxide is prevalent, notably in two locations adjacent the landfill (MW05 and MW06) and also MW02; the

latter possibly being associated with buried fill on the Site rather than landfill, as MW02 is located back up the hill away from the landfill.

Maximum reported flow rate was 0.4 L/ hour.

Table 5-2 GA5000 check on MW01-MW06

Parameter	MW01	MW02	MW03	MW04	MW05	MW06
Install Atmospheric Pressure (mbar)	1000	1000	1000	1000	1000	1000
Battery Check Pressure	993	993	993	993	993	993
Retrieval Atmospheric Pressures (mbar)						
Install CH_4 (%vol.vol)	0.0	0.0	0.0	0.0	0.0	0.0
Battery Check (%vol.vol)	0.0	0.0	0.0	0.0	0.0	0.0
Retrieval CH_4 (%vol.vol)						
Install CO_2 (%vol.vol)	2.6	12.1	3.0	1.7	9.0	6.2
Battery Check CO_2 (%vol.vol)	4.6	12.3	6.6	2.9	10	9.2
Retrieval CO_2 (%vol.vol)						
Install O_2 (%vol.vol)	7.7	10.1	18.5	19.6	12.8	16.1
Battery Check O_2 (%vol.vol)	6.7	8.2	13.6	16.6	9.9	10.5
Retrieval O_2 (%vol.vol)						
Install H_2S (%vol.vol)	1	0	0	0	6	0

Parameter	MW01	MW02	MW03	MW04	MW05	MW06
Battery Check H_2S (%vol.vol)	1	1	2	1	0	0
Retrieval H_2S (%vol.vol)						
Maximum Flow (L/hr)	0.2	0.2	0.2	0.2	0.4	0.3

5.3 GASCLAM LOGGING DATA

A summary of the GasClam results is presented as Table 5-3.

Table 5-3 GasClam parameters and maximum/ minimum values

Parameter	MW04	MW05	MW06
Installation Date	18 January 2023	18 January 2023	18 January 2023
Retrieval Date	16 February 2023	16 February 2023	16 February 2023
Deployment Duration			
No. of Data Points	961	961	961
Calibrated by Supplier (Airmet)	Yes	Yes	Yes
Maximum Atmospheric Pressure (mbar)	1001	1001	1001
Average Atmospheric Pressure (mbar)	991.5	991.5	991.5
Lowest Atmospheric Pressures (mbar)	981	981	981
Maximum CH_4 (%vol.vol)	0.1	0.0	0.2
Lowest CH_4 (%vol.vol)	0.0	0.0	0.0
Maximum CO_2 (%vol.vol)	6.0	13.7	15.6
Lowest CO_2 (%vol.vol)	0.0	0.0	0.1
Maximum O_2 (%vol.vol)	20.4	20.8	20.3
Lowest O_2 (%vol.vol)	15.3	0.0	0.0
Maximum H_2S (ppm)	0.0	0.9	0.3
Lowest H_2S (ppm)	0.0	0.0	0.0
Maximum CO (ppm)	0.0	43.3	4.8
Lowest CO (ppm)	0.0	0.0	0.0

Parameter	MW04	MW05	MW06
Maximum Temperature °C	28		
Lowest Temperature °C	19.3		

Graphical representation of the GasClam data is presented in Figures 5-1 to 5-3. The data from MW04 (Figure 5-1) shows a distinct inverse relationship between carbon dioxide and atmospheric pressure: when the pressure increases, the CO_2 decreases and vice versa. This phenomenon is often observed in gases associated with landfill sources. When the atmospheric pressure is high the gas is pushed back or closer into the ground/ source, and when the pressure reduces the gas moves up or away from source.

A similar association is evident in MW06 (Figure 5-3) though less so in MW05 (Figure 5-2).

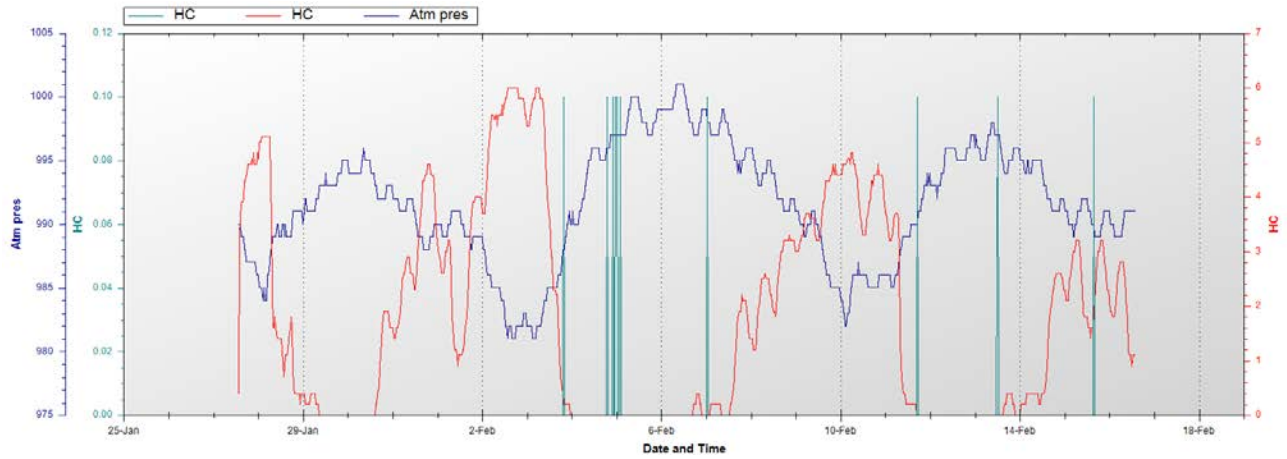

Figure 5-1 MW04 (HC Red = Carbon Dioxide, HC Green = Methane, Atm Blue = Atmospheric Pressure):

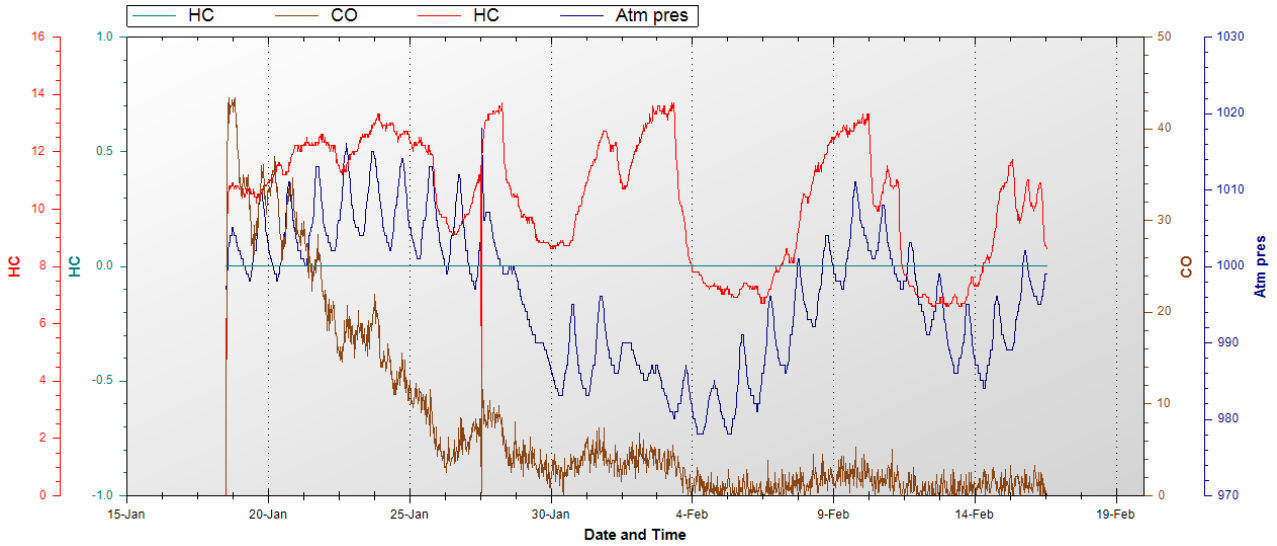

Figure 5-2 MW05 (HC Red = Carbon Dioxide, HC Green = Methane, CO Brown = Carbon monoxide, Atm Blue = Atmospheric Pressure)

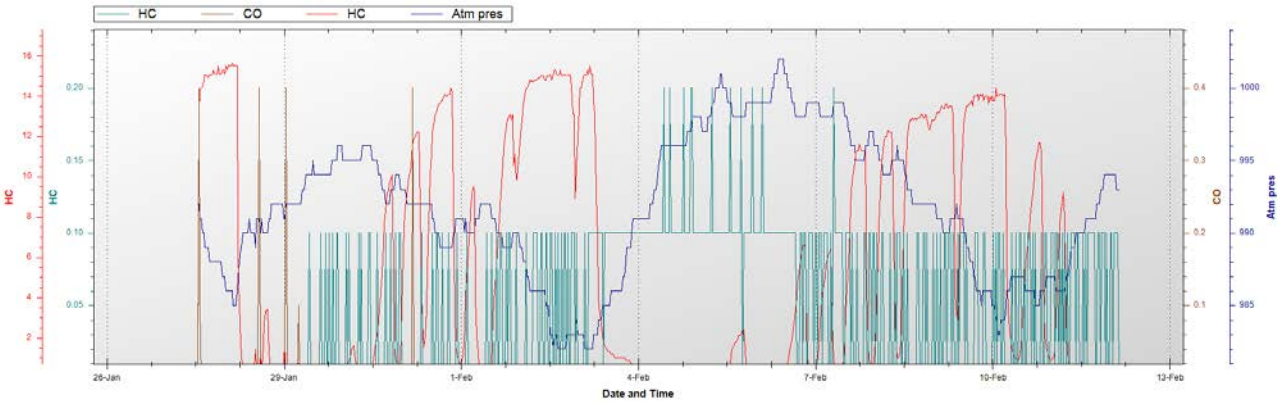

Figure 5-3 MW06 (HC Red = Carbon Dioxide, HC Green = Methane, CO Brown = Carbon monoxide, Atm Blue = Atmospheric Pressure):

6 LANDFILL DATA

Landfill gas data for the landfill immediately south was obtained from Veolia for May 2022 (Appendix C). The results are spot checks using a GA5000 or similar. The results for May 2022 do not show any methane, though carbon dioxide is significant and reported up to 22.3 %v/v around the periphery of the landfill.

Fow rate was not reported. Atmospheric pressure was not reported.

7 RISK ASSESSMENT

7.1 REVIEW OF NATURE OF DEVELOPMENT

Presumed proposed occupied spaces would be residential in nature.

Schedule B7 of the National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM) describes four generic land-use scenarios (Health Investigation Level (HILs) A, B, C and D) that form the basis for the HILs and Health Screening Levels (HSLs) developed for soil and soil vapour contamination. These are:

HIL A – residential with a garden or accessible soil; childcare centres and primary schools

HIL B – residential with minimal opportunities for soil access; secondary schools

HIL C – public open spaces and recreation areas

HIL D – commercial and industrial premises.

HILs A, B and D are generally relevant to buildings, with construction of buildings (such as clubhouses and toilets) within an HIL C scenario being a special case. The risks associated with direct exposure to contaminated soil were a primary consideration in the definition of the HIL scenarios; there is a partial but not full correlation with the risks due to exposure to ground gases. BS 8485:2015+A1:2019 describes four building types (types A, B, C and D) that form the basis for selecting ground gas protection measures in the UK. These are:

Type A building – private ownership with no building management controls on alterations to the internal structure, the use of rooms, the ventilation of rooms or the structural fabric of the building; some small rooms present.

Type B building – private or commercial properties with central building management control of any alterations to the building or its uses but limited or no central building management control of building maintenance, including the gas protection measures; multiple occupancy; small- to medium-sized rooms with passive ventilation of rooms and other internal spaces throughout ground floor and basement areas.

Type C building – commercial buildings with central building management control of any alterations to the building or its uses and central building management control of building maintenance, including the gas protection measures; single occupancy of ground floor and basement areas; small- to large-sized rooms with active ventilation or good passive ventilation of all rooms and other internal spaces throughout ground floor and basement areas.

Type D building – industrial-style buildings having large volume internal space(s) that are well ventilated; corporate ownership with building management controls on alterations to the ground floor and basement areas of the building and on maintenance of ground gas protective measures.

Australia has developed styles of building construction, occupancy and use that accord with the local climate and lifestyles, which differ in some respects from those common in the UK. For the purpose of the NSW EPA (2020) guidelines, five types of building have been defined. These are:

Low-density residential – usually but not exclusively single-storey dwellings on a separate land title (commonly Torrens title) with single occupancy; no building management and no post-occupancy controls on room use, ventilation or alterations to the internal structure; limited controls on building design and construction due to exempt and complying development provisions in NSW; construction for new buildings is predominantly slab-on-ground, but also suspended floors with crawl space and partial or full basements, particularly on

sloping sites; correlates closely with residential component of HIL A and with BS 8485:2015+A1:2019 Type A, but the median size (footprint area) of new houses in Australia is significantly larger than in the UK.

medium- and high-density residential – multiple-occupancy low-, medium- or high-rise townhouses and apartments; usually on a strata title and subject to by-laws, with maintenance of the external structure of the building and common areas managed and controlled by an owner's corporation; includes some public housing and some mixed-occupancy developments, and developments with commercial occupancy of the ground floor; frequently includes basement or undercroft car parking; may involve ground-bearing or piled foundations; usually air-conditioned, with active ventilation of basement car parking; correlates reasonably well with HIL B and partially with BS 8485:2015+A1:2019 Type B.

public buildings, schools, hospitals and shopping centres – similar in many respects to standard commercial buildings; generally low- to medium-rise rather than high-rise; particular constraints regarding building evacuation in an emergency; frequently includes basement or undercroft car parking; may involve ground-bearing or piled foundations; almost always air-conditioned, with active ventilation throughout (does not apply to many existing schools); correlates generally with HIL D but includes primary schools and childcare centres, which are HIL A; correlates partially with BS 8485:2015+A1:2019 Type C.

standard commercial buildings – includes offices and some shops, industrial subdivisions and smaller showrooms; building management control of any alterations to the building or its uses and central building management control of building maintenance, including gas protection measures; single or multiple occupancy of ground floor and basement areas; frequently includes basement or undercroft car parking; may involve ground-bearing or piled foundations; small to large-sized rooms with active ventilation or air-conditioning in all buildings, except those on industrial subdivisions, which will have good passive ventilation; correlates generally with HIL D and BS 8485:2015+A1:2019 Type C.

large commercial and industrial buildings – includes warehouses, most factories, big-box retail stores, large showrooms, and hardware or garden centres; characterised by large, open, high-volume buildings; often single-storey; may have basement, roof, or exterior parking; corporate ownership, owner-occupied or leased; generally easy evacuation; may involve ground-bearing or piled foundations; correlates well with HIL D and BS 8485:2015+A1:2019 Type D.

For the purposes of this assessment, we consider that future development would comprise BS 8485:2015+A1:2019 Type A (**low density residential in NSW EPA 2020**).

7.2 DETERMINING THE GAS SCREENING VALUE

For bulk ground gases, the approach to Level 2 risk assessment is based on the method proposed by Wilson and Card (1999) and outlined in CIRIA C665 and BS 8485:2015+A1:2019. The objective is to assess risks to buildings (and their occupants) constructed, or intended to be constructed, on the site; the approach applies regardless of the gas source, but the results must be interpreted in the context of the CSM.

The Wilson and Card method uses both gas concentrations and borehole flow rates to define a characteristic situation (CS) for a site based on the limiting borehole gas volumetric flow for methane and carbon dioxide, as measured in the gas monitoring boreholes on the site. The measured borehole flow rates represent gas flow through the surface of the site, forming the basis for this approach. The gas flow from a 50-mm borehole is, very conservatively, assumed to represent the upward flow of gas through soil across a site surface area of 10 square metres (m^2) (Pecksen 1986).

CIRIA C665 and BS 8485:2015+A1:2019 use the term 'gas screening value' (GSV) for the site representative value assessed from the set of limiting borehole gas volumetric flow measurements. GSV is also used in these guidelines. GSV uses units of litres of gas per hour (L/hr).

GSV = maximum borehole flow rate (L/hr) × maximum gas concentration (% v/v)

For example, if data from site monitoring indicated a maximum flow rate of 3.5 L/hr and a maximum methane concentration of 20% v/v, the site would have a methane GSV of 0.7 L/hr (20/100 × 3.5).

The GSV is an overall site value, not an individual borehole value or an event value. As is the case for other aspects of contaminated land assessment and management, a large site may be stratified (subdivided) where it is appropriate to do so and the rationale underpinning the stratification is explained. A GSV may then be calculated for each subdivision. The rationale must reflect the gas regime and engineering considerations.

The calculation is carried out for both methane and carbon dioxide, and the worst-case value is adopted.

The assumption of equivalence between methane and carbon dioxide is made on the basis that the LEL for methane in air is similar to the concentration at which carbon dioxide becomes acutely toxic in air (5% v/v). Because ground gas with a high carbon dioxide content is denser than air and may remain segregated at low points, particularly in basements and other in-ground structures, this is a reasonable precautionary approach. However, experience in NSW has indicated that it may sometimes produce over-conservative outcomes, as has been the case elsewhere. It is, therefore, appropriate to review the outcome of a Level 2 risk assessment against the CSM, taking into account source and pathways factors, and the details of the current or proposed development.

7.3 DETERMINING THE CHARACTERISTIC SITUATION (CS)

The CS classification was derived by Wilson and Card and is determined directly from the GSV – it is used in NSW EPA (2020) (Table 10-4).

Where the CS is 1, no further action is required.

Where the CS is 2 or 3, gas protection measures are required. Appropriate gas protection measures for the site should be selected as outlined in Section 5 of these guidelines.

Where the CS is 4, gas protection measures are required, and the need for a Level 3 risk assessment should be considered. If a Level 3 risk assessment is not considered necessary, the reasons for this decision should be documented, and appropriate gas protection measures for the site should be selected, as outlined in Section 5 of these guidelines.

Where the CS is 5 or 6, gas protection measures are required, and a Level 3 risk assessment must be carried out to assess the maximal risk, inform the design of gas protection measures and determine the residual risk following implementation of those measures.

If it is considered appropriate to modify the CS based on a weight-of-evidence approach, an initial CS should be determined in the usual way. That value should then be adjusted based on the evidence presented, ensuring the adjustment is fully justified. It is not expected that the CS would be adjusted up or down by more than one unit (NSW EPA, 2020).

Table 7-1 Copy of Table 7 from NSW EPA (2020)

Table 7 Modified Wilson and Card classification

	GSV threshold (L/hr)	CS	Risk classification	Additional factors	Typical sources
	<0.07	1	Very low risk	Typically, methane <1% v/v and/or carbon dioxide <5% v/v; otherwise consider increase to CS 2	Natural soils with low organic content Typical fill
	<0.7	2	Low risk	Borehole flow rate not to exceed 70 L/hr; otherwise consider increase to CS 3	Natural soils with high organic content Recent deep fill
	<3.5	3	Moderate risk		Old inert waste landfill Flooded mine workings
	<15	4	Moderate to high risk	Consider need for Level 3 risk assessment	Mine workings susceptible to flooding Closed putrescible waste landfill
	<70	5	High risk	Level 3 risk assessment required	Shallow, unflooded abandoned mine workings
	>70	6	Very high risk		Recently used putrescible waste landfill

1. Site characterisation should be based on monitoring of gas concentrations and borehole flow rates for the minimum periods defined in Section 3.4.
2. The CSM must identify the source of gas and its generation potential.
3. Soil gas investigations should be conducted in accordance with the guidance provided in Section 3.4.
4. Where there is no detectable flow, the lower measurement limit of the instrument should be used.
5. To determine a GSV of <0.07, instruments capable of accurately measuring concentration to 0.5% v/v and flow to 0.1 L/hr are recommended.

The onsite ground gas comprises carbon dioxide at a maximum volume of 15.6 % vol.vol with a maximum flow rate of 0.4 L/hr. This provides a GSV of 6.2.

Methane was reported at a maximum of 0.2% and so carbon dioxide takes precedent in the GSV calculations.

These GSV correspond to (lower range) CS 4 (moderate to high risk).

7.4 GAS PROTECTION VALUES

The CS obtained on site (CS4), and the maximum and average CS obtained offsite (CS4) and the nature of the existing buildings or proposed development on the site can be used to obtain an appropriate gas protection guidance value from Table 8 of NSW EPA (2020) (reproduced as Table 7-2 below).

Table 7-2 Copy of Table 8 from NSW EPA (2020)

Table 8 Guidance values for gas protection

CS	Required gas protection guidance value				
	Low-density residential	Medium-to high-density residential (strata title)	Public buildings, schools, hospitals and shopping centres	Standard commercial buildings (offices, etc.)	Large commercial (warehousing) and industrial buildings
1	0	0	0	0	0
2	3	3	3	2	1[a]
3	4	3	3	2	2
4	6[b]	5[b]	5	4	3
5	-[b]	6[b]	6[c]	5	4
6	-[d]	-[d]	6[c]	6	6

(a) If maximum measured methane concentration exceeds 20% v/v, increase to CS 3.

(b) Residential development is not recommended at CS 4 and above without pathway intervention (for example, source depressurisation or control of lateral migration) external to the buildings and a high level of management. These requirements necessarily preclude low-density residential (NEPM HIL A residential) development.

(c) Evacuation issues and social risks must be considered.

(d) Level 3 risk assessment is required.

Assuming CS4, and low density residential building categorisation, the gas protection guidance value is 6, though NSW EPA guidance notes that residential development is not recommended at CS4 and above without pathway intervention for example source depressurisation or control of lateral migration external to the buildings and a high level of management – these requirements necessarily preclude low density residential development.

7.4.1 PROTECTION MEASURES

When a guidance value has been obtained from Table 8 of NSW EPA (2020), proposed gas protection measures, and combinations of measures, may be evaluated using the scores listed in Table 9 of NSW EPA (2020). A combination of two or more protection measures (no more than one of each type) that are appropriate for the site conditions must be selected so that the combined score equals or exceeds the required guidance value.

NSW EPA (2020) notes that at a minimum, it is good practice to install ventilation in all foundation systems to relieve pressure. Breaches in floor slabs, such as joints, have to be effectively sealed against gas ingress to maintain performance.

A range of protection measures can be considered however NSW EPA guidance notes that residential development is not recommended at CS4 and above without pathway intervention for example source depressurisation or control of lateral migration external to the buildings and a high level of management – these requirements necessarily preclude low density residential development.

Source depressurisation or control of lateral migration would need to be considered also and this may take the form of a series of vertical bores screening the site from the landfill, to vent ground gas preferentially along the boundary.

Noting the results of MW02, the fill here could be removed to reduce overall CO_2 loading beneath the Site.

Table 7-3 Copy of Table 9 from NSW EPA (2020) – scores for protection measures

Measure or system element	Score	Comment
Venting or dilution measures		
Passive sub-floor ventilation with very good performance – the steady-state concentration of methane over 100% of the ventilation layer remains below 1% v/v at a wind speed of 0.3 metres per second (m/s) [(a)]	2.5	The design of the venting layer (i.e. granular medium with inlet/outlet pipes versus open-void or modular drainage system)(b) must be considered when modelling steady-state concentrations
Passive sub-floor ventilation with good performance – the steady-state concentration of methane over 100% of the ventilation layer remains below 1% v/v at a wind speed of 1 m/s and below 2.5% v/v at a wind speed of 0.3 m/s)[(a)]	1.5	If post-installation testing of passive ventilation indicates that it cannot meet this requirement, inlets and outlets must be upgraded. If this is unsuccessful, it will be necessary to retrofit an active system
Sub-floor ventilation with active abstraction or pressurisation	2.5	Not appropriate for NEPM HIL A residential settings because robust management systems, including alarms, must be in place to ensure long-term operation and maintenance.,. Achieving the full score requires a design with adequate redundancy and full coverage of the building footprint.
Ventilated car park (basement or undercroft)	4.0 (d)	Assumes that the car park is vented to deal with exhaust fumes in accordance with BCA[(c)] requirements. The design of a car-park and the specifications of its ventilation system need to be considered in assigning an appropriate score of up to four.
Horizontal soil barriers beneath building footprint		
Horizontal clay or amended soil barriers designed to achieve defined permeability and diffusivity of the gases of concern placed, compacted and tested under appropriate engineering supervision	(d)	Requires appropriate engineering input and integration with the building design from the earliest possible stage. This must consider the effects of any proposed piling on the gas regime
Floor Slabs		
Reinforced concrete ground-bearing floor slab or waffle pod slab	0.5	At a minimum, it is good practice to install ventilation in all foundation

Measure or system element	Score	Comment
Reinforced concrete ground-bearing foundation raft slab with limited service penetrations cast into slab	1.0	systems to relieve pressure. Breaches in floor slabs, such as joints, have to be effectively sealed against gas ingress to maintain performance.
Reinforced concrete cast in situ or post-tensioned suspended slab with minimal service penetrations and water bars around all penetrations and at joints	1.5	
Fully tanked basement	2.0	The design of a basement and the specifications of its ventilation system need to be considered in assigning an appropriate score. Fully tanked means designed to be waterproof under the range of groundwater conditions likely at the site, to the extent that supplementary internal drainage is not required.
Membranes		
Proprietary gas-resistant membrane with a gas transmission rate for the gases of concern on the site that is certified and appropriate to the overall design of the gas protection system. It should be installed by a specialist to an appropriate level of workmanship with documented internal CQC, including integrity testing (e.g. tracer gas or smoke testing), under independent CQA carried out by a certified specialist(e) or appropriately qualified and experienced professional with independent verification of the entire process[(f)]	2.0	Membrane performance depends on the membrane material and thickness specified, design and quality of the installation, protection from and resistance to damage after installation, and the integrity of joints in membranes that require joints. Materials that offer some degree of self-sealing and repair are preferred. Long term performance depends on the durability of the material, including its resistance to chemical degradation in the environment in which it is installed.
Monitoring and detection		
Intermittent monitoring using hand-held equipment	0.5	Monitoring and alarm systems are only valid as part of a combined gas protection system. Where fitted, permanent systems should be installed in the underfloor venting system but can also be provided in the occupied space as a back-up
Permanent monitoring system installed in the occupied space of the building	1.0	
Permanent monitoring system installed in the underfloor venting or dilution system	2.0	

Measure or system element	Score	Comment
Pathway intervention external to building footprint		
Vertical barriers	(g)	Required for residential and public buildings at CS 4 and above
Vertical venting system	(g)	

(a) Verified by post construction monitoring

(b) Refer Appendix 6 of NSW EPA (2020)

(c) Building Code of Australia

(d) Score depends on site specific conditions and design

(e) For example, Geosynthetic Certifiation Institute

(f) Refer Appendix 7 of NSW EPA (2020)

(g) Score depends on site specific conditions and design, but scores of 4.0+ should be achievable

8 DISCUSSION AND CONCLUSIONS

8.1 GROUND GAS CHARACTERISATION

The objective of the in situ ground gas assessment was to characterise the ground gas at the Site in association with varying atmospheric pressures. This was achieved using GasClam continuous ground gas loggers. The ground gas does show variability as a function of atmospheric pressure. The lowest pressure recorded was 981 mb – this is considered a suitably low pressure to represent a worst case ground gas regime.

The characteristic situation (CS) for ground gas beneath the Site is driven by carbon dioxide – the 2023 monitoring plus previous 2008-2010 data and data obtained from Veolia for May 2022 regarding landfill monitoring bores (around the periphery of the landfill) indicates methane is not present – it is not clear as to whether the landfill is in Phase II or has passed Phase IV based on carbon dioxide being dominant. If in Phase II then methane may start to be generated at some point in the future (Figure 8-1).

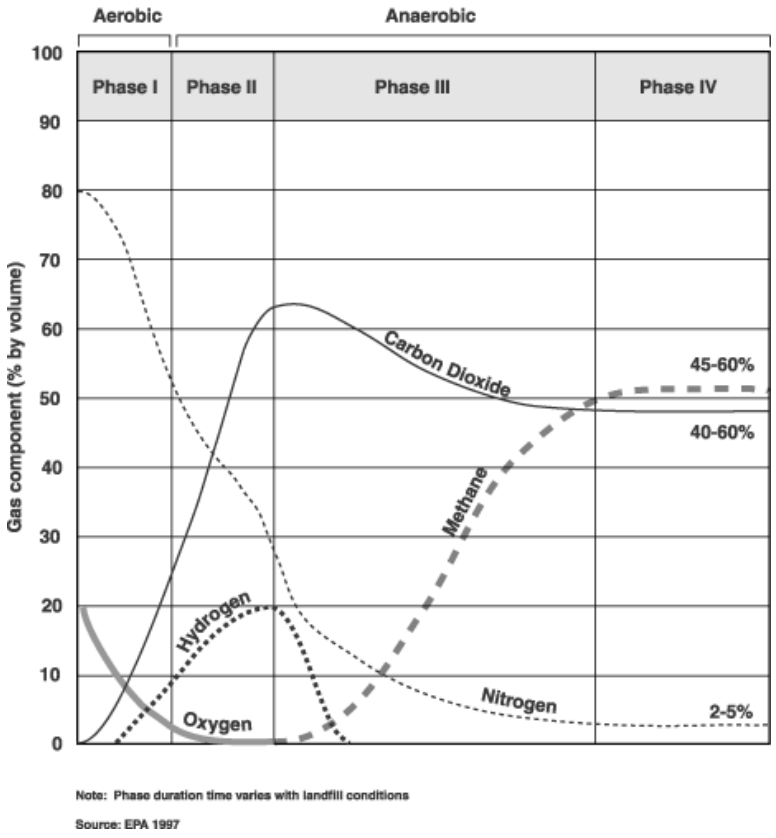

Figure 8-1 Production phases of typical landfill gas (ATSDR 1998)

The rate and volume of landfill gas produced at a specific site depend on the characteristics of the waste (e.g., composition and age of the refuse) and a number of environmental factors (e.g., the presence of oxygen in the landfill, moisture content, and temperature).

Waste composition. The more organic waste present in a landfill, the more landfill gas (e.g., carbon dioxide, methane, nitrogen, and hydrogen sulfide) is produced by the bacteria during decomposition. The more chemicals disposed of in the landfill, the more likely NMOCs and other gases will be produced either through volatilization or chemical reactions.

Age of refuse. Generally, more recently buried waste (i.e., waste buried less than 10 years) produces more landfill gas through bacterial decomposition, volatilization, and chemical reactions than does older waste (buried more than 10 years). Peak gas production usually occurs from 5 to 7 years after the waste is buried.

Presence of oxygen in the landfill. Methane will be produced only when oxygen is no longer present in the landfill.

Moisture content. The presence of moisture (unsaturated conditions) in a landfill increases gas production because it encourages bacterial decomposition. Moisture may also promote chemical reactions that produce gases.

Temperature. As the landfill's temperature rises, bacterial activity increases, resulting in increased gas production. Increased temperature may also increase rates of volatilization and chemical reactions. The box on the following page provides more detailed information about how these variables affect the rate and volume of landfill gas production.

These are all variable that will affect the type and magnitude of gas generated and emitted by the landfill over time.

8.2 CHARACTERISTIC SITUATION

The CS if calculated as CS4 – where considering low density residential building categorisation, the NSW EPA gas protection guidance value is 6, though NSW EPA guidance notes that residential development is not recommended at CS4 and above without pathway intervention for example source depressurisation or control of lateral migration external to the buildings and a high level of management – these requirements necessarily preclude low density residential development.

8.3 LIKELY REQUIREMENTS

Given the ambiguous phase determination possible on the landfill, as to current and future gas composition and the CS4 determination, further risk assessment is likely required coupled with ground gas protection measures when considering a residential development. Control measures would likely need to include:

- source depressurisation or control of lateral migration;
- building specific protection measures such as under-slab venting, membranes, risers etc.

As per EPA guidance note EPA 969/12, a site contamination auditor would need to be engaged to audit further assessment and design and implementation of management measures.

Refer also to the Statement of Limitations presented in Appendix S.

9 REFERENCES

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SITE PLAN

Site Diagram

10-20 Halls Road, Highbury, SA 5089

Legend

- Site Boundary
- Internal Parcel Boundaries

Total Area: 18428m²

Total Perimeter: 560m

Scale: 0 20 40 Meters

Data Source Aerial Imagery: © Aerometrex Pty Ltd

Disclaimers:

Measurements are approximate only and may have been simplified or smaller lengths removed for readability.

Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.

Coordinate System: GDA 1994 MGA Zone 54

Date: 24 May 2022

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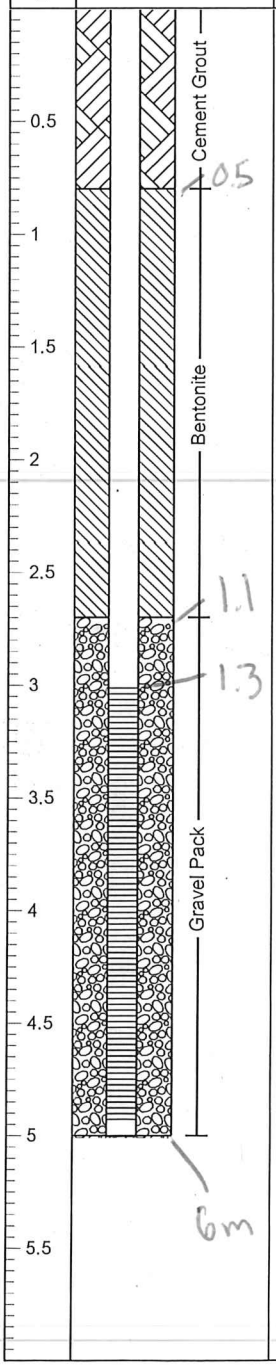
APPENDIX A
GEOLOGICAL & SOIL INFORMATION

GAS MONITORING WELL CONSTRUCTION LOG - MW06

LWC Land & Water Consulting

PROJECT NUMBER 00-01	DRILL RIG	GRAVEL PACK 1.1-6.0m
PROJECT NAME	DRILLING METHOD Solid Auger	CASING 0-1.3
CLIENT	TOTAL DEPTH 6m BGL	SCREEN 1.3-6.0m
DRILLING DATE 13/1/23	DRILL DIAMETER 120mm	STICK UP N/A (Lathic)
DRILLING COMPANY A&S	CASING DIAMETER 50mm	COORDINATES
DRILLER Andrew and Jeff	SLOT APERTURE	COORD. SYS.
		LOGGED BY A Vaughan



Lithology	Samples	Moisture	Consistency	PID	Comments
F 0 Gravel, cream/blue, gravels up to 30mm in d (angular), some clays stuck to gravels, no odour or staining	0-0.5	D	L		
	1.0		L		
	1.5		L		
	2.0		L/S		
-1.0	2.5		L		
Gravelly Sandy clay, low-med plast, dark brown, gravels up to 10mm ind, some fine sands, no o/s	3.0		L		
	3.5		L/F		
	4.0		L		
N -1.5 gr sa clay, l-m plast, brown, fine gr sa, gr up to 10mm in d, no o/s	4.5				
	5.0				
↓	5.5				
Grading slightly lighter w/ depth + mod plast clay	6.0				
N -2.5 Gr Sand, orange, f-m gr, gr < 5mm ind, some mod plast clay content, no o/s					
-3.5 Sa clay, l-m plast, d brown, f gr sa, no o/s					
-4.0 Cl gr sand, br, f-c grain, l-m plast clays, gr up to 10mm in d, no o/s					
-less gravel content and mod plast clays @5m BGL					
↓ EOH @ 6m BGL					

GAS MONITORING WELL CONSTRUCTION LOG - MW05

LWC Land & Water Consulting

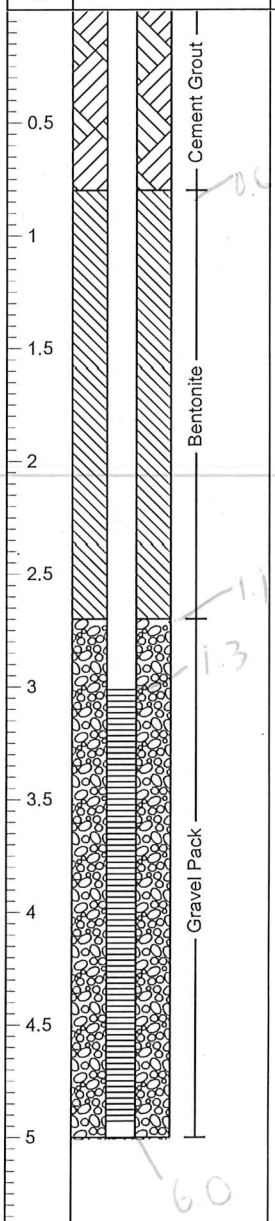
PROJECT NUMBER	00-01	DRILL RIG	Excavator	GRAVEL PACK	0-1.1
PROJECT NAME	Highbury	DRILLING METHOD	Solid Augers	CASING	0-1.3
CLIENT		TOTAL DEPTH	6 m BGL	SCREEN	1.3-6.0
DRILLING DATE	13/1/23	DRILL DIAMETER	120 mm	STICK UP	N/A
DRILLING COMPANY	ARS	CASING DIAMETER	50 mm	COORDINATES	
DRILLER	Andrew and Jeff	SLOT APERTURE		COORD. SYS.	
				LOGGED BY	A Vaughan

Depth (m)	Well Installation	Graphic Log	Lithology	Samples	Moisture	Consistency	PID	Comments
0	Cement Grout	F	0 Gravelly SILT, grey, gravel up to 8 mm in ø, no o/s	0	D	L		
0.5				0.5				
1	Bentonite	N	1.0 gr SILT, light grey, gr up to 10 mm in ø, no o/s - cracking to light brown @ 2.5 m BGL	1.0				
1.5				1.5				
2				2.0				
2.5				2.5				
3				3.0				
3.5		N	3.0 clay, orange/brown, L-m plast, no o/s	3.5		L/F		
4				4.0		L		
4.5			3.5 gr clay, orange/brown plast, some quartz, fine gr, no o/s (10 mm in ø)	4.5				
5				5.0				
5.5			4.0 SILT, orange/light brown, no o/s	5.5				
				6.0		L/S		
			4.5 Clayey Sand, brown, f-m gr, moderate plast clay, no o/s - some round gravels					
			5.5 Sand, orange/light br, f-m grain, no o/s - some clay content					
			EOH @ 6.0 m BGL					

1.1 1.3 6.0

GAS MONITORING WELL CONSTRUCTION LOG - MW04

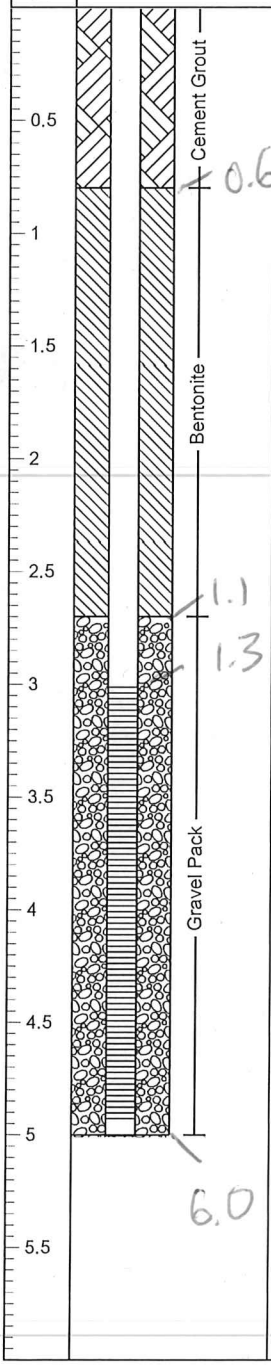
PROJECT NUMBER 00-01	DRILL RIG EZY-Probe	GRAVEL PACK 1.1 - 6.0
PROJECT NAME Highbury	DRILLING METHOD Solid Auger	CASING 0 - 1.1
CLIENT	TOTAL DEPTH 6m	SCREEN 1.3 - 6.0
DRILLING DATE 13/1/23	DRILL DIAMETER 120mm	STICK UP N/A Gatic
DRILLING COMPANY ARS	CASING DIAMETER 50mm	COORDINATES
DRILLER Andrew and Jeff	SLOT APERTURE	COORD. SYS.
		LOGGED BY A Vaughan



Lithology	Samples	Moisture	Consistency	PID	Comments
0 Sand, cream, f-m gr, no o/s	0	D	L		
	0.5				
	1.0				
-2.5 Sand, brown/orange, f-m gr, no o/s	1.5				
	2.0				
-3.5 SILT, brown/orange, no o/s	2.5				
	3.0				
-4.0 Clayey sand, brown/orange, f-m gr, l-m pl plast clays, no o/s	3.5				
	4.0				
	4.5				
EOH @ 6m BGL	5.0				
	5.5				
	6.0				

GAS MONITORING WELL CONSTRUCTION LOG - MW03

PROJECT NUMBER	DRILL RIG	GRAVEL PACK 1.1 - 6.0
PROJECT NAME	DRILLING METHOD	CASING
CLIENT	TOTAL DEPTH 6m BGL	SCREEN
DRILLING DATE	DRILL DIAMETER	STICK UP
DRILLING COMPANY	CASING DIAMETER	COORDINATES
DRILLER	SLOT APERTURE	COORD. SYS.
		LOGGED BY

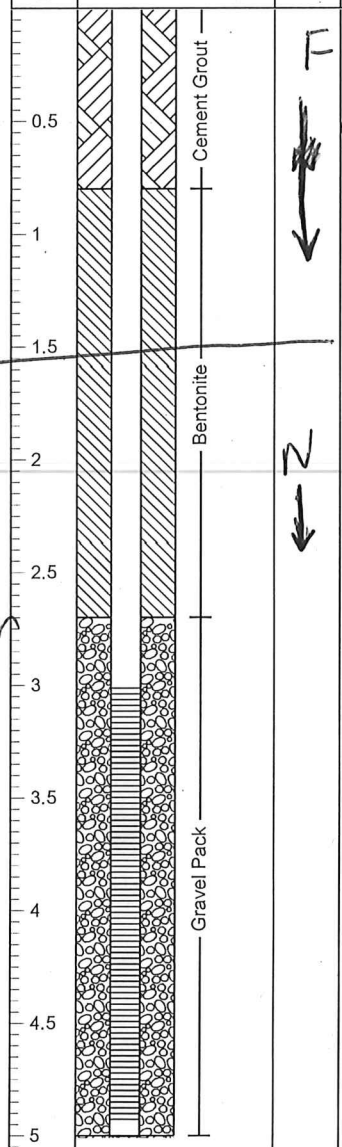


Graphic Log	Lithology	Samples	Moisture	Consistency	PID	Comments
	0 Sand, cream, f-m grain, no o/s	0	D	L		
	-1.0 gravelly sand, cream, f-m gr, gravels up to 10 mm ind, some clay fragments present, no o/s	0.5, 1.0, 1.5, 2.0, 2.5		L/F		
	Grading darker w/ depth @ 1.5m BGL	3.0, 3.5, 4.0		L		
	-2.0 Clay, brown, L-m plast, some gr up to 5mm ind present, no o/s	4.5, 5.0				
	- Grading to red w/ depth / dark brown	5.5, 6.0				
	-3.5 Si, sand, light br/cream, f-m gr, some clay content present, no o/s					
	-5.0 Clayey Sand, brown, f-m gr, L-m plast clays, no o/s					
	EOH @ 6.0m BGL					

GAS MONITORING WELL CONSTRUCTION LOG - MW0 2

LWC Land & Water Consulting

PROJECT NUMBER	DRILL RIG	GRAVEL PACK
PROJECT NAME	DRILLING METHOD	CASING
CLIENT	TOTAL DEPTH 6 m	SCREEN
DRILLING DATE	DRILL DIAMETER	STICK UP
DRILLING COMPANY	CASING DIAMETER	COORDINATES E:
DRILLER	SLOT APERTURE	COORD. SYS. N: GDA 2020
		LOGGED BY S Hilcock



Graphic Log	Lithology	Samples	Moisture	Consistency	PID	Comments
F	Sand, dk brown, f grain trace gravels <5mm, no o/s	0	D	S		Constructed as per BH01
	0.5	0.5				
	Gravelly ~~Sand~~, Silt, light brown ~~grading orange with depth~~ quartz fragments ~~f-m grain~~ no o/s	1.0				
		1.5				
		2.0		L		
		2.5				
		3.0				
N	1.5 Sand, yellow grading orange then light grey @ 3m m-c grain (no o/s) trace clay at 2.5 becoming orange again at 3.5 with grey ~~sand~~ sand nodules some finer grains at 3.5m ~~trace~~ trace mica at 4.0m grading light brown with white sand pockets at 4.5	3.5		S		
		4.0				
		4.5				
		5.0				
		5.5		L		
		6.0				
	5.0 Silt, white, no o/s brown sand nodules					
	~~Continued~~ 5.5 sand, orange, m-c grain no o/s					

1.0 Natural Gravelly Sand Orange f-m grain no o/s

EOH @ 6m

GAS MONITORING WELL CONSTRUCTION LOG - MW01

LWC Land & Water Consulting

PROJECT NUMBER	DRILL RIG Explorobe	GRAVEL PACK 1.1 - 6m	
PROJECT NAME	DRILLING METHOD SOLIDS	CASING 0 - 1.3 m	
CLIENT	TOTAL DEPTH 6m	SCREEN 1.3 - 6m	
DRILLING DATE 12.1.23	DRILL DIAMETER 120mm	STICK UP Gatic	
DRILLING COMPANY A&S Drilling	CASING DIAMETER 50mm	COORDINATES E: 291512	
DRILLER Andrew Watt	SLOT APERTURE 0.5mm	COORD. SYS. GDA 2020 N: 6141832	
		LOGGED BY S Wilcock	

Depth (m)	Well Installation	Graphic Log	Lithology	Samples	Moisture	Consistency	PID	Comments
0								
0.5	Cement Grout	F	Gravelly Silt, light brown, gr up to 5mm, no ols	0 - 0.5	D	L		Some water added during drilling
0.6				0.5 - 1.0	↓	S		
1			0.5			L		
1.5	Bentonite	N	Gravelly Sand, light brown, f-m grain gr up to 25mm	1.5		↓		
2		↓		2.0				
2.5			becoming no ols coarser grain	2.5				
1.1		N	1.0	3.0				
1.3			Gravelly Sand, orange, gr <5mm c grain, no ols some clay content at 2m	3.5				
3		↓		4.0				
3.5	Gravel Pack			4.5				
4				5.0				
4.5			2.5 SAND, light brown f-m-c grain, grading yellowish, ~~becoming white at 5m~~ no ols	5.5				
5				6.0				
5.5			5m Silt, white, no ols f-m grain sand grading light brown at depth					
6			EOH @ 6.0m					

APPENDIX B GAS CLAM CALIBRATION

CALIBRATION CERTIFICATE

Date of Calibration: - 19th October 2022

Certificate Number: - 262534

Calibrated by: - T.Payne

Signed: -

Customer: - Air-Met Scientific Pty Ltd

Description: - GasClam2

Manufacturer: - Elok - Opava

Type Number: - Version 8.0

Serial Number: - 000051/02/20

Service Due date: - October 2023

This instrument has been factory calibrated to fully documented procedures in accordance with our ISO 9001:2015 Quality Management System.
Measurement standards are derived from volumetric and time sources which have been calibrated at an accredited laboratory traceable to National or International standards. The following list indicates the serial numbers of equipment used during the calibration procedure.

BAR02	PRESS06	C9625 / A14784[1]	C9124 / A14783[1]	C9673 / A15012[1]

[1] Gas mixtures prepared using equipment traceable to N.P.L. standards against Suppliers Certificate No.

The instrument has been calibrated at a temperature of 21.3°C ± 0.25°C and a barometric pressure of 1025.0 mbar ± 2 mbar.

ION Science hereby certify that on the day of calibration the instrument was working according to the manufacturer's original sales specification as checked by the calibration procedure, unless otherwise stated.
Copies of this certificate may only be reproduced in full.
Calibrations are valid as certified only on date of Calibration. For correct instrument operation please see the User Manual.

RESULTS ON DESPATCH

Applied Concentration		Instrument Indication	
Isobutylene	102 ppm	N/A	VOC
Hydrogen Sulphide	20 ppm	19.6 ppm	Hydrogen Sulphide
Carbon Monoxide	40 ppm	39 ppm	Carbon Monoxide
Oxygen	20.9 % O_2	20.9 %	Oxygen
Methane	59.82 % CH_4	60 %	Methane
Carbon Dioxide	40.18 % CO_2	39.7 %	Carbon Dioxide
Barometric Pressure	1025.0 mbar	1024	mbar
Borehole Pressure	1025.0 mbar	1025	mbar

The estimated applied gas uncertainty is ± 2.0%

Comments: -

PD-FM-077-08

CHECKLIST FOR GASCLAM

KIT CONTENTS

GasClam	✓	Filters x 3	✓
Communication Cable	✓	O-Ring (Bottom) x 5	✓
Start Cable	✓	O-Ring (Top) x 5	✓
Gasclam Snorkel Assembly	✓	Moisture Filter x 3	✓
Box Spanner	✓	Hose Barb (for vent)	✓
Allen Key x 2	✓	Sensor Blanks x 3	✓
Safety Notice	✓	Charger	✓
		Battery Pack (x2)	✓

QUALITY CHECK

Software version:	6.1.11
Firmware version:	08.04

Final instrument inspection date:		26/10/22

PD-FM-073-07

Unrivalled Gas Detection.
ION Science Ltd, The Hive, Butts Lane, Fowlmere, Cambs, SG8 7SL, UK
T +44 (0)1763 208503 E info@ionscience.com W ionscience.com

CALIBRATION CERTIFICATE

Date of Calibration: - 19th October 2022

Certificate Number: - 262535

Calibrated by: - T.Payne

Signed: -

Customer: - Air-Met Scientific Pty Ltd

Description: - GasClam2

Manufacturer: - Elok - Opava

Type Number: - Version 8.0

Serial Number: - 000052/02/20

Service Due date: - October 2023

This instrument has been factory calibrated to fully documented procedures in accordance with our ISO 9001:2015 Quality Management System.
Measurement standards are derived from volumetric and time sources which have been calibrated at an accredited laboratory traceable to National or International standards. The following list indicates the serial numbers of equipment used during the calibration procedure.

BAR02	PRESS06	C9625 / A14784[1]	C9124 / A14783[1]	C9673 / A15012[1]

[1] Gas mixtures prepared using equipment traceable to N.P.L. standards against Suppliers Certificate No.

The instrument has been calibrated at a temperature of 21.0°C ± 0.25°C and a barometric pressure of 1016.7 mbar ± 2 mbar.

ION Science hereby certify that on the day of calibration the instrument was working according to the manufacturer's original sales specification as checked by the calibration procedure, unless otherwise stated.
Copies of this certificate may only be reproduced in full.
Calibrations are valid as certified only on date of Calibration. For correct instrument operation please see the User Manual.

RESULTS ON DESPATCH

Applied Concentration		Instrument Indication	
Isobutylene	102 ppm	N/A	VOC
Hydrogen Sulphide	20 ppm	20 ppm	Hydrogen Sulphide
Carbon Monoxide	40 ppm	41.5 ppm	Carbon Monoxide
Oxygen	20.9 % O_2	20.9 %	Oxygen
Methane	59.82 % CH_4	58.7 %	Methane
Carbon Dioxide	40.18 % CO_2	40.1 %	Carbon Dioxide
Barometric Pressure	1016.7 mbar	1016	mbar
Borehole Pressure	1016.7 mbar	1016	mbar

The estimated applied gas uncertainty is ± 2.0%

Comments:-

PD-FM-077-08

CHECKLIST FOR GASCLAM

KIT CONTENTS

GasClam	✓	Filters x 3	✓
Communication Cable	✓	O-Ring (Bottom) x 5	✓
Start Cable	✓	O-Ring (Top) x 5	✓
Gasclam Snorkel Assembly	✓	Moisture Filter x 3	✓
Box Spanner	✓	Hose Barb (for vent)	✓
Allen Key x 2	✓	Sensor Blanks x 3	✓
Safety Notice	✓	Charger	✓
		Battery Pack (x2)	✓

QUALITY CHECK

Software version:	6.1.11
Firmware version:	08.04

Final instrument inspection date:		25/10/22

PD-FM-073-07

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T +44 (0)1763 208503 E info@ionscience.com W ionscience.com

GasClam Calibration Results

Serial Number: SN000038-09-14
Gasclam Name: GA21-BH423
Software Version: 6.1.11
Firmware Version: 8.4

12 January 2023 14:44

Sensor Type: Hydrogen Sulphide (200ppm)

Offset:	-8267	*Enter Values 1:*	0 ppm	*Enter Values 2:*	25 ppm
Slope:	3.9922	*AD Values 1:*	2071	*AD Values 2:*	2199
Calibration:	12.01.2023	**Instalation:**	13.09.2022	*Pumping Time:*	256
Units:	ppm	*Error:*	0 mV	*Calibration Type:*	Two-point
Decimal Places:	1	*Warm Up Time:*	1	*User:*	1
Range:	200	*Response Time:*	30	*Location:*	1

Sensor Type: Carbon Monoxide (500ppm)

Offset:	-5918	*Enter Values 1:*	0 ppm	*Enter Values 2:*	100 ppm
Slope:	2.7669	*AD Values 1:*	2139	*AD Values 2:*	2435
Calibration:	12.01.2023	**Instalation:**	13.09.2022	*Pumping Time:*	256
Units:	ppm	*Error:*	0 mV	*Calibration Type:*	Two-point
Decimal Places:	1	*Warm Up Time:*	1	*User:*	1
Range:	500	*Response Time:*	30	*Location:*	1

Sensor Type: Methane (100%)

Offset:	-928	*Enter Values 1:*	0 %	*Enter Values 2:*	60 %
Slope:	1.4032	*AD Values 1:*	662	*AD Values 2:*	2413
Calibration:	12.01.2023	**Instalation:**	13.09.2022	*Pumping Time:*	256
Units:	%	*Error:*	30 mV	*Calibration Type:*	Two-point
Decimal Places:	1	*Warm Up Time:*	30	*User:*	1
Range:	100	*Response Time:*	30	*Location:*	1

Sensor Type: Carbon Dioxide (100%)

Offset:	-1446	*Enter Values 1:*	0 %	*Enter Values 2:*	40 %
Slope:	2.2046	*AD Values 1:*	656	*AD Values 2:*	1399
Calibration:	12.01.2023	**Instalation:**	13.09.2022	*Pumping Time:*	256
Units:	%	*Error:*	30 mV	*Calibration Type:*	Two-point
Decimal Places:	1	*Warm Up Time:*	30	*User:*	1
Range:	100	*Response Time:*	30	*Location:*	1

GasClam Calibration Results

Serial Number: SN000052-02-20 Software Version: 6.1.11

Gasclam Name: CMW1 Firmware Version: 8.4

12 January 2023 16:50

Sensor Type: Hydrogen Sulphide (200ppm)

Offset:	-6843	*Enter Values 1:*	0	ppm	*Enter Values 2:*	25	ppm
Slope:	3.3399	*AD Values 1:*	2049		*AD Values 2:*	2202	
Calibration:	12.01.2023	**Instalation:**	01.01.2000		*Pumping Time:*	256	
Units:	ppm	*Error:*	0	mV	*Calibration Type:*	Two-point	
Decimal Places:	1	*Warm Up Time:*	1		*User:*	1	
Range:	200	*Response Time:*	30		*Location:*	1	

Sensor Type: Carbon Monoxide (500ppm)

Offset:	-4173	*Enter Values 1:*	0	ppm	*Enter Values 2:*	100	ppm
Slope:	2.0272	*AD Values 1:*	2059		*AD Values 2:*	2463	
Calibration:	12.01.2023	**Instalation:**	01.01.2000		*Pumping Time:*	256	
Units:	ppm	*Error:*	0	mV	*Calibration Type:*	Two-point	
Decimal Places:	1	*Warm Up Time:*	1		*User:*	1	
Range:	500	*Response Time:*	30		*Location:*	1	

Sensor Type: Oxygen

Offset:	-13078	*Enter Values 1:*	20.9	%	*Enter Values 2:*	21	%
Slope:	5.3333	*AD Values 1:*	3094		*AD Values 2:*	3097	
Calibration:	07.12.2022	**Instalation:**	01.01.2000		*Pumping Time:*	256	
Units:	%	*Error:*	0	mV	*Calibration Type:*	Two-point	
Decimal Places:	1	*Warm Up Time:*	1		*User:*	1	
Range:	25	*Response Time:*	30		*Location:*	1	

Sensor Type: Methane (100%)

Offset:	-759	*Enter Values 1:*	0	%	*Enter Values 2:*	60	%
Slope:	1.1562	*AD Values 1:*	657		*AD Values 2:*	2782	
Calibration:	12.01.2023	**Instalation:**	01.01.2000		*Pumping Time:*	256	
Units:	%	*Error:*	30	mV	*Calibration Type:*	Two-point	
Decimal Places:	1	*Warm Up Time:*	30		*User:*	1	
Range:	100	*Response Time:*	30		*Location:*	1	

Sensor Type: Carbon Dioxide (100%)

Offset:	-1213	*Enter Values 1:*	0	%	*Enter Values 2:*	40	%
Slope:	1.855	*AD Values 1:*	654		*AD Values 2:*	1537	
Calibration:	12.01.2023	**Instalation:**	01.01.2000		*Pumping Time:*	256	
Units:	%	*Error:*	30	mV	*Calibration Type:*	Two-point	
Decimal Places:	1	*Warm Up Time:*	30		*User:*	1	
Range:	100	*Response Time:*	30		*Location:*	1	

GasClam Calibration Results

Serial Number: SN000051-02-20 Software Version: 6.1.11

Gasclam Name: CMW2 Firmware Version: 8.4

12 January 2023 16:08

Sensor Type: Hydrogen Sulphide (200ppm)

Offset:	-7122	*Enter Values 1:*	0	ppm	*Enter Values 2:*	25	ppm
Slope:	3.4762	*AD Values 1:*	2049		*AD Values 2:*	2196	
Calibration:	12.01.2023	***Instalation:***	01.01.2000		*Pumping Time:*	256	
Units:	ppm	*Error:*	0	mV	*Calibration Type:*	Two-point	
Decimal Places:	1	*Warm Up Time:*	1		*User:*	1	
Range:	200	*Response Time:*	30		*Location:*	1	

Sensor Type: Carbon Monoxide (500ppm)

Offset:	-4174	*Enter Values 1:*	0	ppm	*Enter Values 2:*	100	ppm
Slope:	2.0373	*AD Values 1:*	2049		*AD Values 2:*	2451	
Calibration:	12.01.2023	***Instalation:***	01.01.2000		*Pumping Time:*	256	
Units:	ppm	*Error:*	0	mV	*Calibration Type:*	Two-point	
Decimal Places:	1	*Warm Up Time:*	1		*User:*	1	
Range:	500	*Response Time:*	30		*Location:*	1	

Sensor Type: Methane (100%)

Offset:	-790	*Enter Values 1:*	0	%	*Enter Values 2:*	60	%
Slope:	1.2032	*AD Values 1:*	657		*AD Values 2:*	2699	
Calibration:	12.01.2023	***Instalation:***	01.01.2000		*Pumping Time:*	256	
Units:	%	*Error:*	30	mV	*Calibration Type:*	Two-point	
Decimal Places:	1	*Warm Up Time:*	30		*User:*	1	
Range:	100	*Response Time:*	30		*Location:*	1	

Sensor Type: Carbon Dioxide (100%)

Offset:	-1149	*Enter Values 1:*	0	%	*Enter Values 2:*	40	%
Slope:	1.7519	*AD Values 1:*	656		*AD Values 2:*	1591	
Calibration:	12.01.2023	***Instalation:***	01.01.2000		*Pumping Time:*	256	
Units:	%	*Error:*	30	mV	*Calibration Type:*	Two-point	
Decimal Places:	1	*Warm Up Time:*	30		*User:*	1	
Range:	100	*Response Time:*	30		*Location:*	1	

APPENDIX C VEOLIA DATA MAY 2022

Highbury Landfill - SUEZ Landfill Gas Monitoring Wells
Date: 24/05/2022

LOCATION ID	CH_4 Criteria % v/v	CH_4 % v/v	CO_2 % v/v	O_2 % v/v	CO ppm	H_2S ppm	BALANCE %	Magnehelic Kilopascals	Testo mb	REL.PRESSURE mb	DATE	Depth Class	Actual Depth (m)	Screened Interval (m)	Comment
HBYPW002	5.0	0.0	6.4	14.6	0	0	78.9	0.00	0.00	-0.13	24/05/2022	Middle	9.3	2.1 - 9.3	
HBYPW102	5.0	0.0	1.3	19.0	0	0	79.5	0.10	-1.29	-1.20	24/05/2022	Deep	29.9	11.9 - 29.9	
HBYPW009	5.0	0.0	0.1	20.1	0	0	79.7	0.00	0.00	-0.15	24/05/2022	Deep	32.5	2.0 - 32.5	
HBYPW008	5.0	0.2	2.5	17.7	0	1	79.5	0.00	0.10	-0.08	24/05/2022	Deep	31.5	3.0 - 31.5	
HBYPW101	2.5	0.0	11.9	7.8	0	0	80.3	0.00	-0.07	-0.15	24/05/2022	Shallow	3.8	1.8 - 3.8	
HBYPW001	5.0	0.0	5.4	14.7	0	0	79.5	0.00	-0.08	-0.14	24/05/2022	Middle	10.3	2.6 - 10.7	
HBYPW202	2.5	0.0	4.5	15.7	0	0	79.7	0.00	-0.11	-0.12	24/05/2022	Shallow	4.2	2.7 - 4.2	
HBYPW003	5.0	0.0	10.6	7.9	0	0	81.3	0.00	0.00	-0.09	24/05/2022	Middle	9.4	2.6 - 9.4	
HBYPW104	5.0	0.8	2.6	17.8	0	0	78.9	-0.08	-1.06	-1.22	24/05/2022	Deep	27.8	11.8 - 27.8	
HBYPW004	5.0	0.0	4.1	16.7	0	0	79.2	0.00	-0.04	-0.10	24/05/2022	Middle	9.2	2.0 - 9.2	
HBYPW204	2.5	0.0	2.0	18.3	0	0	79.6	0.00	0.00	-0.01	24/05/2022	Shallow	4.0	2.8 - 4.0	
HBYPW005	5.0	0.0	2.8	16.9	0	0	80.2	0.00	0.00	-0.20	24/05/2022	Middle	8.0	2.6 - 8.0	
HBYPW205	5.0	4.8	22.3	2.8	0	0	70.0	0.00	0.00	-0.07	24/05/2022	Shallow	2.5	1.4 - 2.5	
HBYPW206	2.5	0.4	3.9	13.7	0	0	82.0	0.00	-0.03	-0.05	24/05/2022	Shallow	3.0	1.4 - 3.0	
HBYPW106	5.0	0.0	7.5	12.4	0	0	80.0	0.00	0.04	-0.11	24/05/2022	Middle	6.5	3.5 - 6.5	
HBYPW006	5.0	0.0	0.1	20.4	0	0	79.4	0.02	-0.15	-0.15	24/05/2022	Deep	28	9.0 - 28.0	
HBYLB13A	2.5	0.0	8.6	11.5	0	0	79.8	0.00	0.00	-0.08	24/05/2022	Shallow	5.0	2.5 - 5.0	
HBYLB13B	5.0	0.0	8.3	12.4	0	0	79.2	0.00	0.00	-0.11	24/05/2022	Middle	8.5	6.0 - 8.5	
HBYLB12A	2.5	0.0	8.8	13.2	0	0	77.8	0.00	-0.10	-0.02	24/05/2022	Shallow	4.5	2.5 - 4.5	
HBYLB12B	5.0	0.0	17.8	5.2	0	0	76.9	0.00	0.16	-0.04	24/05/2022	Middle	9.5	6.5 - 9.5	
HBYPW11A	2.5	0.0	9.0	12.9	0	0	78.0	0.00	0.00	0.08	24/05/2022	Shallow	5.0	3.0 - 5.0	
HBYPW11B	5.0	0.0	13.0	8.8	0	0	78.1	0.00	0.15	-0.03	24/05/2022	Middle	9.7	8.0 - 9.7	
HBYLB02A	2.5	0.0	4.5	16.5	0	0	78.8	0.00	0.04	0.08	24/05/2022	Shallow	4.1	1.6 - 4.1	
HBYLB02B	5.0	0.0	12.1	9.9	0	0	78.0	0.00	-0.03	-0.08	24/05/2022	Middle	10.0	6.5 - 10.0	
HBYLB10A	2.5	0.0	4.5	16.5	0	0	78.9	0.00	0.08	-0.03	24/05/2022	Shallow	3.8	1.4 - 3.8	
HBYLB10B	5.0	0.0	17.0	5.0	0	0	78.0	0.00	0.02	-0.15	24/05/2022	Middle	10.0	6.5 - 10.0	
HBYLB01A	2.5	0.0	13.5	7.5	0	0	78.9	0.00	0.00	-0.11	24/05/2022	Shallow	6.0	3.5 - 6.0	
HBYLB01B	5.0	0.0	18.0	1.5	0	0	80.5	0.00	-0.40	-0.14	24/05/2022	Middle	10.0	7.5 - 10.0	

APPENDIX D
STATEMENT OF LIMITATIONS

STATEMENT OF LIMITATIONS & IMPORTANT INFORMATION REGARDING YOUR REPORT

INTRODUCTION

This report has been prepared by Land & Water Consulting for you, as Land & Water Consulting's client, in accordance with our agreed purpose, scope, schedule and budget.

The report has been prepared using accepted procedures and practices of the consulting profession at the time it was prepared, and the opinions, recommendations and conclusions set out in the report are made in accordance with generally accepted principles and practices of that profession.

The report is based on information gained from environmental conditions (including assessment of some or all of soil, groundwater, vapour and surface water) and supplemented by reported data of the local area and professional experience. Assessment has been scoped with consideration to industry standards, regulations, guidelines and your specific requirements, including budget and timing. The characterisation of site conditions is an interpretation of information collected during assessment, in accordance with industry practice.

This interpretation is not a complete description of all material on or in the vicinity of the site, due to the inherent variation in spatial and temporal patterns of contaminant presence and impact in the natural environment. Land & Water Consulting may have also relied on data and other information provided by you and other qualified individuals in preparing this report. Land & Water Consulting has not verified the accuracy or completeness of such data or information except as otherwise stated in the report. For these reasons the report must be regarded as interpretative, in accordance with industry standards and practice, rather than being a definitive record.

No warranty or guarantee of the site conditions is intended.

This report was prepared for the sole use of you, the Client and may not contain sufficient information for purposes of other parties or for other uses. Any reliance on this report by third parties shall be at such parties sole risk. This report shall only be presented in full and may not be used to support any other objectives than those set out in the report, except where written approval with comments are provided by Land & Water Consulting.

The report does not include the evaluation or assessment of potential geotechnical engineering constraints of the site.

LIMITATIONS OF THE REPORT

The scope of works undertaken and the report prepared to complete the assessment was in accordance with the information provided by the client and the specifications for works required under the contract. As such, works undertaken and statements made are based on those specifications (such as levels of risks and significance of any contamination) and should be considered and interpreted within this context. The analyses, evaluations, opinions and conclusions presented in this report are based on that purpose and scope, requirements, data or information, and they could change if such requirements or data are inaccurate or incomplete.

Your environmental report should not be used without reference to Land & Water Consulting in the first instance:

- When the nature of the proposed development is changed, for example if a residential development is proposed instead of a commercial one;
- When the size or configuration of the proposed development is altered;
- When the location or orientation of the proposed structures are modified;
- When there is a change in ownership;
- For application to an adjacent site.

In addition, advancements in professional practice regarding contaminated land and changes in applicable statues and/or guidelines may affect the validity of this report. Consequently, the currency of conclusions and recommendations in this report should be verified if you propose to use this report more than 6 months after its date of issue.

ENVIRONMENTAL ASSESSMENT "FINDINGS" ARE PROFESSIONAL ESTIMATES

The information in this report is considered to be accurate with respect to conditions encountered at the site at the time of investigation and considering the inherent limitations associated with extrapolating information from a sample set. Note however that site assessment identifies actual subsurface conditions only at those specific points where samples are taken, when they are taken. Environmental data derived through sampling and analysis are interpreted by consultants who then render an opinion about overall subsurface conditions, the nature and extent of contamination and potential impacts on the use of the land. Actual conditions may differ from those inferred to exist as no professional and no subsurface assessment program can reveal every detail within the ground across a site. Subsurface conditions can vary across a particular site and no practical degree of sampling can ever eliminate the possibility that conditions may be present at a site that have not been represented though sampling.

SUBSURFACE CONDITIONS CAN CHANGE

This report is valid as of the date of preparation. The condition of the site (including subsurface conditions) and extent or nature of contamination or other environmental hazards can change over time, as a result of either natural processes or human influence. Land & Water Consulting should be kept appraised of any such events and should be consulted for further investigations if any changes are noted, particularly during construction activities where excavations often reveal subsurface conditions. Since subsurface conditions (including contamination concentrations) can change within a limited period of time and space, this inherent limitation to the representation of site conditions provided by this report should always be taken into consideration particularly if the report is used after a delay in time.

DATA SHOULD NOT BE SEPARATED FROM THE REPORT

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists or engineers based on their interpretation of field logs, field testing and laboratory evaluation of samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

This report should be reproduced in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

RESPONSIBILITY

Environmental reporting relies on interpretation of factual information using professional judgement and opinion and has a level of uncertainty attached to it, which is much less exact than other design disciplines. As noted earlier, the recommendations and findings set out in this report should only be regarded as interpretive and should not be taken as accurate and complete information about all environmental media at all depths and locations across the site.

APPENDIX 5. CORRESPONDENCE FROM CITY OF TEA TREE GULLY, EPA AND DEM

CITY OF TEA TREE GULLY 571 Montague Rd, Modbury SA 5092
T (08) 8397 7444 W cttg.sa.gov.au S fb.com/teatreegullycouncil ABN 69 488 562 969

CITY OF TEA TREE GULLY
Naturally Better

Emily Nankivell
Associate Director, Future Urban
Level 1, 74 Pirie Street
ADELAIDE SA 5000
Via email: emily@futureurban.com.au

13 July 2022
Our ref: E22/65795

Dear Emily

Proposed Code Amendment 10-20 Halls Road, Highbury

I acknowledge receipt of your email dated 12 July requesting confirmation that you have consulted with me in relation to the above proposed Code Amendment.

I have been advised that while I was on leave in March 2022, Mr Ryan McMahon our Acting Chief Executive Officer (CEO) and Ms Ingrid Wilkshire, Council's Manager City Strategy met with yourself and Mr Michael Osborn to discuss the proposed Code Amendment. Since then our Council staff have had the opportunity to consider the proposal which was also presented to the Elected Members at an Elected Member Workshop on 17 May 2022 at which I was present.

In accordance with clause 7(2) of Practice Direction 2 – Preparation and Amendment of Design Instruments, I can confirm that you have consulted with me (via my senior staff including the Acting CEO) as required on the Proposal to Initiate a Code Amendment and we offer the following comments on the proposal for your consideration. I also note that I was at the above-mentioned Elected Member Workshop.

Please note that the comments below do not represent a formal position of the Council, as the matter has not been formally considered by the Council, but rather they are made by staff and include matters raised at the Elected Member Workshop.

1. Local Government Elections Caretaker period – a reminder that from 6 September to end November 2022, matters requiring a major policy decision such as a Code Amendment will generally not be considered by the Council during this period.
2. Engagement strategy – We understand that engagement would be the responsibility of the developer, however Council's Engagement team can

offer insight in relation to the engagement strategies that work best for our community. Please liaise with Ms Ingrid Wilkshire in relation to this.

3. This land was included in an area proposed for rezoning by the Minister for Planning over 10 years ago but the rezoning did not proceed due to unsatisfactory investigations into the matter of gas migration. Council understands that this risk will be a key matter that will be included in your investigations.

Notwithstanding that the PDI Act enables developers to initiate and lead Code Amendments we welcome the opportunity to be engaged throughout the investigations to achieve the best outcomes for the community.

If you have any questions please contact Ms Ingrid Wilkshire, Manager City Strategy in the first instance on mobile 0408 888 563 or ingrid.wilkshire@cttg.sa.gov.au

Yours sincerely

John Moyle
Chief Executive Officer

From: Bradford, Geoffrey (EPA)
Sent: Thursday, 18 May 2023 11:48 AM
To: Belinda Monier
Cc: Boyce, Wendy (EPA); Hill, Robert (EPA)
Subject: Highbury Code Amendment

OFFICIAL

Dear Belinda,

Thank you for meeting this morning to further discuss the proposed Highbury Code Amendment located at 10-20 Halls Road, Highbury.

As discussed, the EPA's area of interest in relation to the code amendment is site contamination due to the affected area's proximity to the former Veolia landfill immediately to the south and the former Highbury Landfill further to the south again.

Prior to the meeting the EPA reviewed the report, *In situ ground gas assessment: 10-20 Halls Road, Highbury, South Australia* (March 2023), prepared by Land and Water Consulting. The report recommended that a site contamination auditor be engaged to undertake a site contamination audit, including identification of necessary measures to manage site contamination. During our meeting you advised that the site contamination audit would be undertaken as part of the investigations required through the Proposal to Initiate a Code Amendment.

The EPA supports undertaking the site contamination audit during the investigations phase of the code amendment. As part of its administrative processes EPA will be notified when the audit commences and will be provided a copy once it is complete.

If you have any further questions about the code amendment or any other matters, please contact me.

Regards,

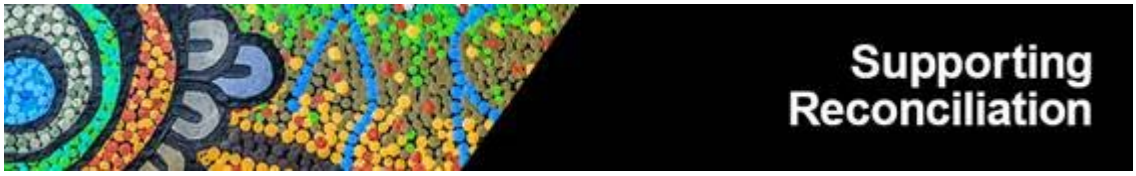
Geoff

Geoffrey Bradford
Senior Planning Officer (Policy and Projects)

Planning and Impact Assessment | Policy, Assessment and Finance

Environment Protection Authority

211 Victoria Square, Adelaide 5000



Belinda Monier

From: Halls, Tony (DEM)
Sent: Thursday, 18 May 2023 2:05 PM
To: Belinda Monier; Andrews, Caroline (DEM)
Subject: RE: Highbury Code Amendment

OFFICIAL

Hi Belinda,
Thanks for your email and for the meeting earlier today engaging with DEM regarding the Proposal to Initiate a code amendment at Highbury.
As discussed, DEM notes that the Code Amendment Area is not subject to any existing mineral tenements, but is adjacent to an active tenement and that the interests and operations of that tenement holder are a relevant consideration for the code amendment. We understand that the tenement holder and the EPA have been consulted regarding the proposed amendment.
DEM understands that it and/or its Minister will be formally consulted should the Proposed Code Amendment process continue past the Proposal to Initiate stage, and reserves its right to provide comment regarding the proposal at the appropriate stage.
Please let me know if you need anything else.
Regards,

Tony Halls (He/Him) | Manager Mineral Tenements

Mining Regulation | DEM - Mineral Resources
Department for Energy and Mining

GPO Box 320, Adelaide, South Australia 5001
11 Waymouth Street 7th Fl

As guests here on Kaurna land, we acknowledge everything this department does impacts on Aboriginal country, the sea, the sky, its people and their spiritual and cultural connection which have existed since the first sunrise. Our responsibility is to share our collective knowledge, recognise a difficult history, respect the relationships made over time, and create a stronger future. We are ready to walk, learn and work together.

APPENDIX 6. ENGAGEMENT PLAN

ENGAGEMENT PLAN

10-20 Halls Road Highbury Code Amendment

By Hallan Nominees Pty Ltd

Date:
16.03.2023

Contact Details
Belinda Monier
Senior Consultant
engagement@futureurban.com.au
8221 5511

Document Control

Revision	Description	Author	Date
V1	Draft	MO	21.04.2022
V2	Review	EN	13.07.2022
V3	Review	BM	14.03.2023
V4	Final		

CONTENTS

APPENDICES

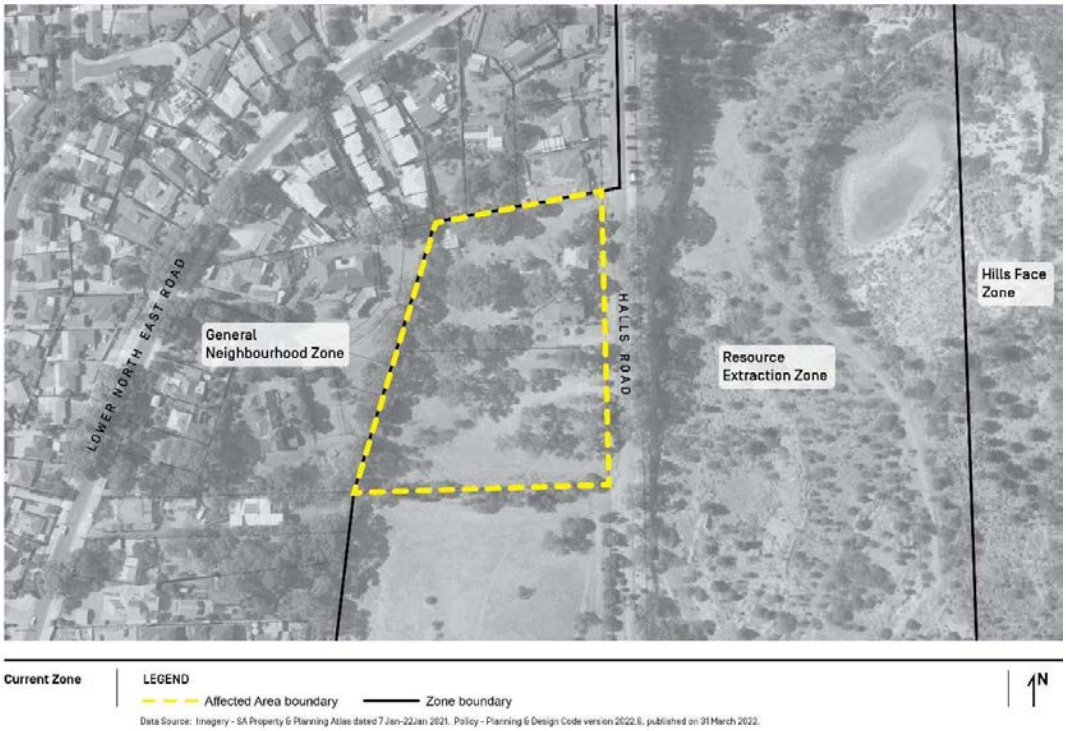
1. BACKGROUND INFORMATION

1.1 What is proposed?

Hallan Nominees Pty Ltd (the Designated Entity) is proposing to initiate an amendment (the Code Amendment) to the Planning and Design Code (the Code) as it relates to land described as 10-20 Halls Road, Highbury, (the Affected Area) and shown in **Figure 1.1** below

The Affected Area adjoins the Resource Extraction Zone to the east and south and the General Neighbourhood Zone to the north and west.

Figure 1.1 *Affected Area and Existing Zone*



1.2 Why is this project being initiated?

The overall intent of the Code Amendment is to enable development of the Affected Area for residential purposes.

The Affected Area is within the Resource Extraction Zone and rezoning to the General Neighbourhood Zone is required to facilitate the future development of the Affected Area with low scale and low-density residential development consistent with the adjoining residential area.

The proposed Code Amendment aligns with a number of State Planning Policies (SPPs) in relation to integrated planning, housing supply and diversity, design quality, mineral and energy resources and natural hazards. The proposed Code Amendment also aligns with a significant number of policies within the 30 Year Plan, as outlined within the Code Amendment Initiation document.

1.3 Investigations already completed

Investigations undertaken to date include a search of the Taa wika - Aboriginal Sites and Objects Register. No known Aboriginal sites or objects were identified as a result of this search.

A significant amount of previous investigations have already been undertaken. These include:

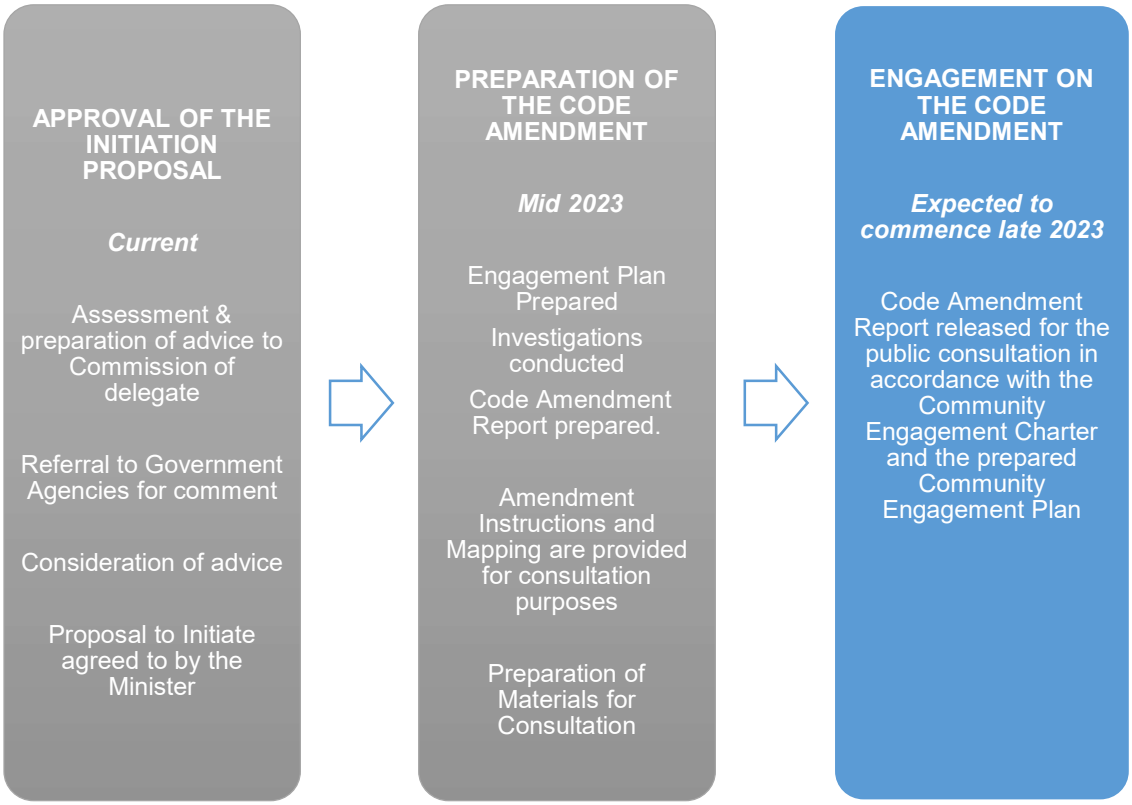
- Preliminary site investigations (PSI) – LWC
- In Situ Ground Gas Assessment – LWC
- Development Plan Amendment, Environmental Investigations Executive Summary - Highbury Residential and Open Space Development – SKM
- Additional Landfill Gas Monitoring and Soil Investigation Program - 10-14 and 16-20 Halls Road, Highbury – SKM

The broader locality has a relatively long history in terms of rezoning proposals. Most notably the Highbury and Open Space Ministerial Development Plan Amendment (DPA) which was initiated in 2008. The Affected Area for the DPA included land which had extensive history of non-residential use, including waste management activities. In 2018, the Minister for Planning at that time, Stephan Knoll determined not to proceed with the DPA on the basis of unresolved matters relating to landfill gas migration. Further investigations have now been completed which have deemed the land suitable for residential development.

2. CODE AMENDMENT PROCESS

The Code Amendment process follows steps which require specific actions at each milestone. The timeframes for each step are outlined within **Figure 2.1**. The steps which are greyed out have already been completed. The steps which are currently being undertaken refer to the 'Engagement on the Code Amendment'.

Figure 2.1 *Status of the Code Amendment*



3. ENGAGEMENT APPROACH

3.1 Purpose

The purpose of the engagement is to inform the rezoning of the Affected Area to enable the future development of the land for residential purposes.

Specifically, the engagement will:

- Communicate to raise awareness that a Code Amendment is being prepared;
- Provide information about what is proposed by the Code Amendment including the location of where the proposed changes will apply;
- Provide the opportunity for stakeholders to identify issues and opportunities early, so that these can be considered in the preparation of the Code Amendment;
- Enable stakeholders and community to provide feedback on the Code Amendment prior to it being finalised and submitted to the Minister for Planning;
- Close the loop with stakeholders and community to inform them of the final version of the Code Amendment;
- Meet statutory requirements as they relate to engagement on a Code Amendment;
- Build relationships and a community of interest to support future activities (i.e. construction); and
- Maximise the opportunity for the media to be well informed, minimising reporting of inaccurate or biased reporting.

3.2 Objectives

The key objectives of the first engagement are to:

- Share information with the public about the Code Amendment.
- Create an understanding of the reasons for the Code Amendment.
- Understand the views of the stakeholders.
- Inform and improve the quality of the policy within the Code Amendment.
- Comply with the Community Engagement Charter and the *Planning, Development and Infrastructure Act 2016* (PDI Act).

3.3 Community Engagement Charter

The preparation of the Code Amendment is required to comply with the principles of the Community Engagement Charter under the *Planning, Development and Infrastructure Act 2016.*

The Community Engagement Charter sets out best practise guidelines for community engagement in relation to the preparation and amendment of planning policies, strategies and schemes.

3.4 Engagement Already Undertaken

Preliminary discussions in respect to the intended Code Amendment have occurred with:

- Planning and Land Use Services (PLUS) staff within the Attorney General's Department;
- Staff and Elected Members of the City of Tea Tree Gully;
- Department for Energy and Mining (DEM);
- Environment Protection Agency (EPA);
- Holcim, the adjoining land owner to the east; and
- Highbury Landfill Authority.

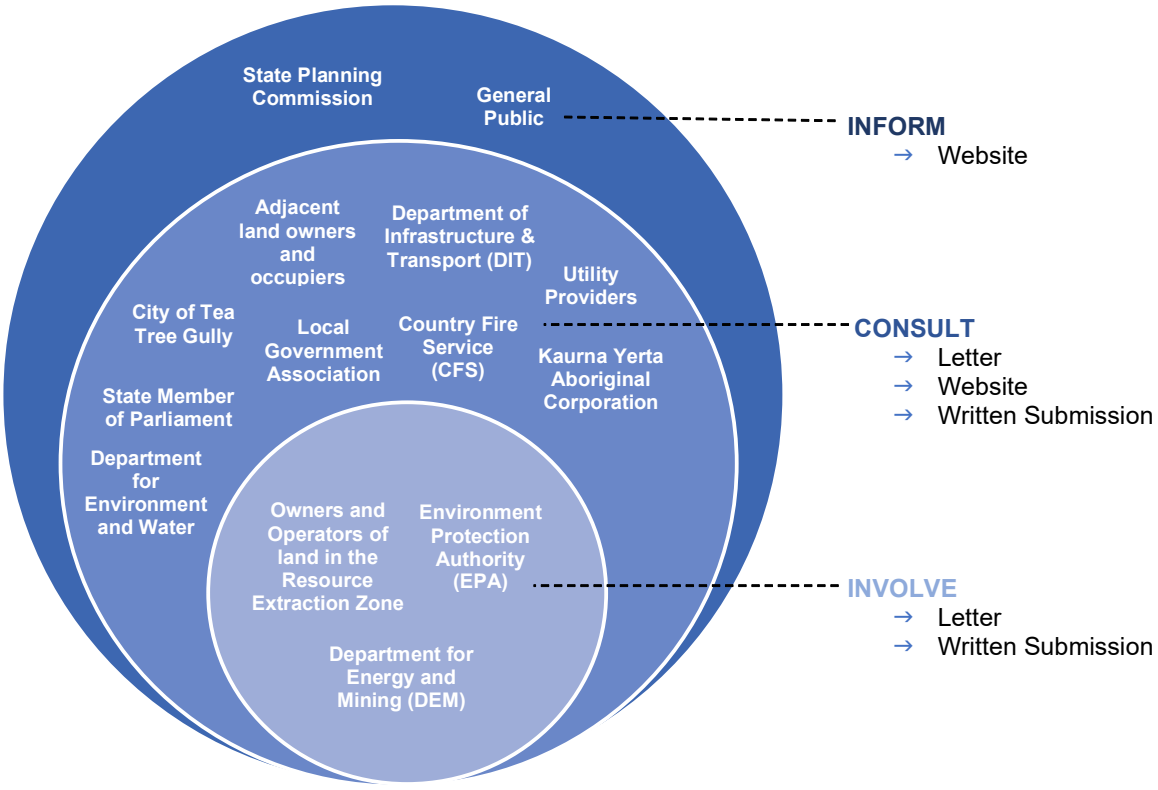
4. STAKEHOLDER IDENTIFICATION AND ANALYSIS

The overall intent of the Code Amendment is to enable low density and low scale residential development to be established on the Affected Area.

The aim of the community engagement is to provide a level of influence which seeks to work directly with the relevant stakeholders throughout the process to ensure that public concerns and aspirations are understood, considered and reflected in the Code Amendment.

A stakeholder identification and analysis has been undertaken and the outcomes of this are provided in **Appendix 1**, with a summary of this analysis provided in **Figure 4.1** below.

Figure 4.1 *Stakeholder Analysis Summary*



The stakeholders which have been determined to influence the proposed Code Amendment are:

- Adjacent land owners and occupiers shown in **Figure 4.2** below;
- City of Tea Tree Gully;
- Local Government Association;
- Department for Energy and Mining (DEM);
- Owners and operators of land in the Resource Extraction Zone;
- Department for Infrastructure and Transport (DIT);
- Environment Protection Authority (EPA);
- Department for Environment and Water (DEW)
- Country Fire Service (CFS);
- Utility providers;
- State Member of Parliament;
- Kaurna Yerta Aboriginal Corporation; and
- General Public.

Figure 4.2 *Extent of adjoining landowners and occupiers to be directly notified*

The level of each stakeholder's interest (low, medium and high), the nature of their interests and their needs and expectations of the engagement process have been identified. Having regard to the level of interest, the potential impact of the project on each of the stakeholders' interests and the potential impact of each stakeholder on the Code Amendment, the level of engagement has been established. The outcomes of this analysis are included in **Appendix 1**.

The levels of engagement are informed by the IAP2 Spectrum of Public Participation and are summarised in **Table 4.1**.

Table 4.1 *IAP2 Spectrum of Public Participation*

	Inform	Consult	Involve	Collaborate	Empower
Participation Goal	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the indentification of the prefered solution.	To place final decision making in the hands of the public.
Promise to Stakeholders	We will keep you informed.	We will keep you informed, listen to and acknolwedge concerns and aspirations, and provide feedback on how public inout influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public inout influened the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

In addition to stakeholder engagement outlined above, the Proponent also intends to engage with and seek the advice of the PLUS Code Control Group, particularly in the preliminary and early stages of drafting the Code Amendment Report and following stakeholder engagement to inform the Code Amendment.

5. SCOPE OF INFLUENCE

The Code is a statutory instrument under the *Planning, Development and Infrastructure Act 2016* (the Act), for the purposes of development assessment and related matters within South Australia.

The Code contains the planning rules and policies that guide what can be developed in South Australia. Planning authorities use these planning rules to assess development proposals.

This Code Amendment is led by a private proponent, Hallan Nominees Pty Ltd. The scope of the Code Amendment is limited to the spatial application of existing policies within the Code. The Code Amendment cannot create additional policies/zones or make changes to existing policy/zone text.

Aspects of the project which stakeholders and the community can influence (i.e. are negotiable) are:

- Whether the General Neighbourhood Zone is the most appropriate Zone for the Affected Area;
- Whether the investigations undertaken as part of the Code Amendment are sufficient to consider the impact of the rezoning on the surrounding area; and
- Whether the Overlays applied address key matters stakeholders would like to see future development meet.

Aspects of the project which stakeholders and the community cannot influence (i.e. are not negotiable) are:

- The geographic extent of the Code Amendment (i.e. the Affected Area);
- The residential intent of the General Neighbourhood Zone; and
- The policy wording within the Planning and Design Code.

6. IMPLEMENTATION PLAN

An implementation plan has been prepared which details the various engagement activities proposed for each engagement level.

Engagement activities have been included to ensure that the method of engagement is appropriate for achieving the objectives and level of influence of the engagement. The engagement activities are summarised in **Table 6.1** below.

Table 6.1 *Engagement Activities*

Stage	Stakeholders/ target audience	Engagement activity	Levels of Engagement
Preliminary Engagement	• City of Tea Tree Gully • Department for Energy and Mining (DEM) • Environment Protection Authority (EPA) • PLUS division of DTI	• Meeting(s) with Council staff and CEO • Meeting with relevant agency staff • Information sharing • Opportunity for written and verbal feedback	Involve
	• State Member for Morialta	• Information sharing • Opportunity for written and verbal feedback	Consult

Stage	Stakeholders/ target audience	Engagement activity	Levels of Engagement
Early Engagement	• City of Tea Tree Gully • Owners and operators of land in the Resource Extraction Zone • Department for Energy and Mining (DEM) • Environment Protection Authority (EPA)	• Information sharing • Opportunity for written and verbal feedback • Meetings • Determine infrastructure capacity	Involve
	• State Member for Morialta	• Information sharing • Opportunity for written and verbal feedback • Meetings	Consult
	• Code Control Group in DTI	• Meeting • Information sharing • Opportunity for written and verbal feedback	Nil
Code Amendment Engagement	• City of Tea Tree Gully	• Letter • Information provided on website • Written submissions	Involve
	• Adjoining landowners and occupiers • Department for Infrastructure and Transport • Department for Environment and Water • Country Fire Service • Utility Providers • Kaurna Yerta Aboriginal Corporation • Environment Protection Authority • State Member for Morialta • Local Government Association • State Planning Commission • Surrounding land owners	• In person questions, answer and feedback sessions offered • Written submissions • Letter • Information provided on website • Meetings offered • Hard copies available at various locations	Consult
	• Local Community • General Public	• Information provided on website • Any member of the public will be able to make a written submission	Inform / Consult

The overall engagement will consist of three stages, which include:

- Preliminary Engagement, undertaken prior to the drafting of the Code Amendment Report;

- Early Engagement, undertaken after the initial draft of the Code Amendment Report is prepared, but allowing for early input and sharing of information before the Code Amendment is publicly available; and
- Code Amendment Engagement, undertaken after the draft of the Code Amendment Report is completed and includes the Report being made available to the public and all stakeholders for review and input.

Within each stage of the engagement, the engagement activities generally include the following three milestones:

- Commencement of engagement;
- Engagement concludes; and
- Report back to the relevant stakeholders and/or the public on the outcomes and next steps.

7. APPLYING THE CHARTER PRINCIPLES IN PRACTICE

The stakeholders have been considered in respect to their needs and requirements to ensure that the design of the engagement allows all stakeholders to contribute equally. Most stakeholders are government bodies or utility providers who have limited needs and are resourced with staff that have the technical expertise to review and respond to Code Amendments.

The adjacent owners and local community include residents within the areas of Highbury and comprises a diverse range of people[1], which include:

- People over 70 years of age, who form 12.1% of the local community (954 people);
- People under 20 years of age, who form 23.9% of the local community (1,724 people);
- People who use a language other than English at home, including:
  - 3.2% of the population speak Italian (225 people);
  - 1.4% of the population speak Mandarin (96 people);
  - 1.1% of the population speak Punjabi (75 people); and
  - 1% of the population speak Arabic (69 people); and
- Households which do not have access to the internet at home[2], who form 9.6% of households in the local community.

While individual data for the suburb was not available it is also assumed that there will be people living in the suburb with a profound or a severe core activity limitation that require assistance in their day to day lives due to a long-term condition, disability or advanced age.

The above groups all have varying needs which have been considered as part of the engagement. **Table 7.1** outlines the characteristics of the stakeholders relevant to this engagement and the needs and / or techniques which have been implemented.

Table 7.1 *Applying the Charter Principles*

Stakeholder	Engagement need or technique

[1] Based on the Australian Bureau of Statistics 2021 Census Data
[2] Based on the Australian Bureau of Statistics 2016 Census Data

English as a second language	• Information that is easily translatable; • Website accessibility and translation services for those who come from non-English speaking backgrounds.
The older population within the community	• Offering different levels of communication via phone and website; • Website accessibility for those with impairments that affect vision, reading ability or physical movement.
Accessibility to information	• Use of technology to increase stakeholder access to information; • Hard copies of documents made available at appropriate locations (i.e. Council civic centre).

The engagement activities have been identified and the relevant charter principles have been addressed which is outlined within **Table 7.2** below.

Table 7.2 *Charter Principles in Practice*

Charter Principles	**How does your engagement approach/activities reflect this principle in action?**
Engagement is genuine	• The engagement activities seek to provide clear and concise information that builds the community capacity to understand planning. • The engagement process provides opportunity for stakeholders and the community to identify their issues and solutions and for these issues to be analysed and considered before finalising the Code Amendment.
Engagement is inclusive and respectful	• Affected and interested people had the opportunity to participate via website, direct letters and social media and are given the opportunity to be heard via written submission.
Engagement is fit for purpose	• Clear and concise information will be publicly available to ensure people understand what is proposed and how to particulate in the engagement.

Engagement is informed and transparent	• Information (online and hard copy via letter-box drop) in basic language clearly articulates the proposal, potential impacts, engagement process and invites feedback/participation; • The community engagement report will summarise the feedback received and how it has been, or will be, used to inform the Code Amendment.
Engagement is reviewed and improved	• Measures of success are identified and measured at the conclusion of the engagement and reported on in the Engagement Report.

8. KEY MESSAGES

The following key messages will underpin the engagement regarding the Code Amendment:

- The Proponent is planning to re-zone the land located at 10-20 Halls Road, Highbury from the Resource Extraction Zone to the General Neighbourhood Zone in order to facilitate the further development of the land for low density low scale residential purposes;
- The reason for this is that residential development represents a more orderly and economic use of the land, which can take advantage of its strategic location adjacent to existing residential development, key transport infrastructure and open space;
- Investigations have been undertaken to determine the land is suitable for residential development;
- An amendment to the Planning and Design Code (i.e. a Code Amendment) is required to enable this rezoning; and
- The Minister for Planning is the decision maker for approval or refusal of the proposed Code Amendment. The Minister will take into account the feedback received during the engagement and whether the engagement was carried out in accordance with the Community Engagement Charter. The Minister may also seek the advice of the State Planning Commission prior to making a decision.

9. EVALUATION

As part of the engagement process, feedback from stakeholders regarding the engagement will be noted to ensure that the project team can:

- Address any changes for the implementation of the Code Amendment;
- Alter the engagement process if needed to respond to feedback and/or mitigate risks to the project; and
- Maintain the quality of the engagement activities.

Appendix 3 includes a table which outlines a summary of measuring the success of the engagement process. Participants are invited to assess the success of the engagement against the criteria. The evaluation will be included in the statutory report required to be prepared by the Designated Entity under section 73(7) of the Act (the Engagement Report).

Following an evaluation of the success of the engagement, a summary of the engagement process will be provided to the participants. The methods for reporting back and closing the loop are outlined within **Appendix 4**.

APPENDIX 1: STAKEHOLDER AND COMMUNITY MAPPING

Stakeholder and community mapping

Stakeholder	Level of interest in the project (i.e. high, medium or low)	Nature of interest in the project and/or the potential impact of the project	Stakeholder needs/expectations for engagement in the project	Level of engagement (i.e. inform, consult, involve, collaborate)
Department for Energy and Mining (DEM)	High	• High level of interest; • The Affected Area is located adjacent to strategic resources and operating mining activities.	That they will be made aware of the Code Amendment, be provided information through the process as part of a process of working through any identified issues and ultimately will have influence on the outcome.	Involve
Owners and Operators of land in Resource Extraction Zone	High	• High level of interest; • The Affected Area is located adjacent to parcels previously used for quarrying and waste management.	That they will be made aware of the Code Amendment, be provided information through the process as part of a process of working through any identified issues and ultimately will have influence on the outcome.	Involve
Environment Protection Authority (EPA)	High	• High level of interest; • The land is located adjacent to strategic resources and operating mining activities.	That they will be made aware of the Code Amendment, be provided information through the process as part of a process of working through any identified issues and ultimately will have influence on the outcome.	Involve

Adjacent landowners and occupiers	High	• High interest in the Code Amendment proposal and impact as the Zone change is located within their locality; • How the Zone change will affect the value of their property; • How the Zone change will affect the general locality.	That they will be made aware of the Code Amendment, have an opportunity to participate, influence the outcome and be kept informed.	Consult
City of Tea Tree Gully	High	• High interest in the Code Amendment proposal as the land proposed to be rezoned is within the City of Tea Tree Gully Council area.	The Council will be made aware of the Code Amendment, have an opportunity to participate, influence the outcome and be kept informed.	Consult
Local Government Association	Medium	• Low level of interest as the Code Amendment is specifically relevant to the City of Tea Tree Gully; • It is a mandatory requirement to notify the Local Government Association in writing and to be consulted in accordance with the Act.	The LGA will be made aware of the Code Amendment, have an opportunity to participate, influence the outcome and be kept informed.	Consult
Department for Infrastructure and Transport (DIT)	Medium	• Medium level of interest; • The Affected Area does not have frontage to a State Maintained Road, but traffic from the Affected Area will flow to Lower North East Road which is a State Maintained Road.	That they will be made aware of the Code Amendment, have an opportunity to participate, influence the outcome and be kept informed.	Consult

Utility Providers	Medium	• Medium level of interest; • The proposed rezoning may generate infrastructure demands which require assessment.	That they will be made aware of the Code Amendment, have an opportunity to participate, influence the outcome and be kept informed.	Consult
State Member of Parliament	High	• High level of interest; • Any rezoning process is likely to engender interest within the local community.	That they will be made aware of the Code Amendment, have an opportunity to participate, influence the outcome and be kept informed.	Consult
Country Fire Service (CFS)	Medium	• Medium level of interest; • The Affected Area is not in a high or medium bushfire risk area, but is identified within the Hazards (Bushfire – Urban Interface) Overlay.	That they will be made aware of the Code Amendment, have an opportunity to participate, influence the outcome and be kept informed.	Consult
Department for Environment and Water (DEW)	Medium	• Medium level of interest; • The Regulated and Significant Tree Overlay applies over the land.	That they will be made aware of the Code Amendment, have an opportunity to participate, influence the outcome and be kept informed.	Consult
Kaurna Yerta Aboriginal Corporation	Medium	• Interest as the Traditional Owners of the Affected Area, and the impacts the change of zone will have on surrounding features.	That they will be made aware of the Code Amendment, have an opportunity to participate, influence the outcome and be kept informed.	Consult

State Planning Commission	Medium	• Medium level of interest.	That they will be made aware of the Code Amendment and kept informed.	Inform
General Public	Low	• To keep informed in the overall process of the Code Amendment and Zone change; • To provide feedback on the Code Amendment.	That they will be made aware of the Code Amendment and kept informed.	Inform

APPENDIX 2: PLANNING YOUR ENGAGEMENT APPROACH

Planning your engagement approach

Stage	Objective	Stakeholders/ target audience	Engagement level	Engagement activity	Timing
Preliminary Engagement	• To Share information about the Code Amendment; • Create an understanding of the reasons for the Code Amendment; • Understand the views of the stakeholders; and • Inform and improve the quality of the policy within the Code Amendment.	• Department of Energy and Mines • Environment Protection Authority • Owners and operators of land in Resource Extraction Zone	Involve	• One-on-one meetings • Presentations • Letter	Preliminary engagement to occur following initiation, but prior to drafting the Code Amendment Report.
		• City of Tea Tree Gully	Consult		
		• Code Control Group	Nil		
Early Engagement	• To Share information about the Code Amendment; • Create an understanding of the reasons for the Code Amendment; • Understand the views of the stakeholders; and • Inform and improve the quality of the policy within the Code Amendment.	• Department of Energy and Mines • Environment Protection Authority • Licensees and operators of land in Resource Extraction Zone	Involve	• One-on-one meetings • Presentations • Letter	Early engagement to occur following initiation and prior to release of the Code Amendment Report for the Code Amendment Engagement.
		• City of Tea Tree Gully	Consult		
		• Code Control Group	Nil		

Stage	Objective	Stakeholders/ target audience	Engagement level	Engagement activity	Timing
Code Amendment Engagement	• Share information with the public about the Code Amendment; • Create an understanding of the reasons for the Code Amendment; • Understand the views of the stakeholders; • Inform and improve the quality of the policy within the Code Amendment; and • Comply with the Community Engagement Charter and the Act.	• Environment Protection Authority (EPA) • Department for Energy and Mining • Licensees and operators of land in the Resource Extraction Zone	Involve	• Letter • Information provided on website • Written submissions	Code Amendment Engagement in anticipated to commence late 2023
		• City of Tea Tree Gully • Department of Infrastructure and Transport (DIT) • Adjacent Land Owners and Occupiers • Utility Providers • Local Government Association • State Member for Parliament • Country Fire Service (CFS) • Department for Environment and Water (DEW) • Kaurna Yerta Aboriginal Corporation	Consult	• Letter • Information provided on website • Written submissions • Meetings on request	
		• General Public • State Planning Commission	Inform	• Information provided on website • Written submissions	

APPENDIX 3: MEASURING SUCCESS

Measuring Success

At the completion of the engagement, all participants will be invited to assess the success of the engagement against performance criteria one to four, below. The project manager, with assistance from communications and engagement specialists, will assess the success of the engagement against criteria five to nine. This evaluation will be included in the statutory report (section 73(7) of PDI Act) that is sent to the State Planning Commission and the Minister for Planning and which details all engagement activities undertaken. It will also be referenced in the Commission Report (section 74 (3)(b) that is issued to the Governor of South Australia and the Environment Resources and Development Committee of Parliament. Any issues raised about the engagement during the engagement process will be considered and action will be taken if considered appropriate.

#	Charter criteria	Charter performance outcomes	Respondent	Indicator	Evaluation tool	Measuring success of project engagement
1	Principle 1: Engagement is genuine	▪ People had faith and confidence in the engagement process.	Community	I feel the engagement **genuinely sought** my input to help shape the proposal	Exit survey / follow-up survey with Likert scale - strongly disagree to strongly agree	Per cent from each response.
2	Principle 2: Engagement is inclusive and respectful	▪ Affected and interested people had the opportunity to participate and be heard.	Community	I am **confident my views were heard** during the engagement	Exit survey / follow-up survey with Likert scale - strongly disagree to strongly agree	Per cent from each response.
			Project Lead	The **engagement reached** those identified as community of interest.	▪ Representatives from most community groups participated in the engagement ▪ Representatives from some community groups participated in the engagement ▪ There was little representation of the community groups in engagement.	Evaluation by Project Lead
3	Principle 3: Engagement is fit for purpose	▪ People were effectively engaged and satisfied with the process. ▪ People were clear about the proposed change and how it would affect them.	Community	I was given sufficient **information** so that I could take an informed view.	Exit survey / follow-up survey with Likert scale - strongly disagree to strongly agree	Per cent from each response.
				I was given an **adequate opportunity to be heard**	Exit survey / follow-up survey with Likert scale - strongly disagree to strongly agree	Per cent from each response.

#	Charter criteria	Charter performance outcomes	Respondent	Indicator	Evaluation tool	Measuring success of project engagement
4	Principle 4: Engagement is informed and transparent	▪ All relevant information was made available and people could access it. ▪ People understood how their views were considered, the reasons for the outcomes and the final decision that was made.	Community	I felt **informed** about why I was being asked for my view, and the way it would be considered.	Exit survey / follow-up survey with Likert scale - strongly disagree to strongly agree	Per cent from each response.
5	Principle 5: Engagement processes are reviewed and improved	▪ The engagement was reviewed and improvements recommended.	Project Lead	**Engagement was reviewed** throughout the process and improvements put in place, or recommended for future engagement	▪ Reviewed and recommendations made ▪ Reviewed but no system for making recommendations ▪ Not reviewed	Evaluation by Project Lead
6	Engagement occurs early	▪ Engagement occurred before or during the drafting of the planning policy, strategy or scheme when there was an opportunity for influence.	Project Lead	Engagement **occurred early enough** for feedback to genuinely influence the planning policy, strategy or scheme	▪ Engaged when there was opportunity for input into scoping ▪ Engaged when there was opportunity for input into first draft ▪ Engaged when there was opportunity for minor edits to final draft ▪ Engaged when there was no real opportunity for input to be considered	Evaluation by Project Lead
7	Engagement feedback was considered in the development of planning	▪ Engagement contributed to the substance of a plan or resulted in changes to a draft.	Project Lead	Engagement **contributed to the substance of the final plan**	▪ In a significant way ▪ In a moderate way ▪ In a minor way ▪ Not at all	Evaluation by Project Lead

#	Charter criteria	Charter performance outcomes	Respondent	Indicator	Evaluation tool	Measuring success of project engagement
	policy, strategy or scheme					
8	Engagement includes 'closing the loop'	▪ Engagement included activities that 'closed the loop' by providing feedback to participants/ community about outcomes of engagement	Project Lead	Engagement **provided feedback to community about outcomes** of engagement	▪ Formally (report or public forum) ▪ Informally (closing summaries) ▪ No feedback provided	Evaluation by Project Lead
9	Charter is valued and useful	▪ Engagement is facilitated and valued by planners	Project Lead	Identify **key strength** of the Charter and Guide Identify **key challenge** of the charter and Guide		Evaluation by Project Lead

APPENDIX 4: CLOSING THE LOOP AND REPORTING BACK

Closing the loop and reporting back

How will you respond to participants?	Who's responsible?	When will you report back?
Keep a contact register of all participants who made a submission during the engagement period to use to provide feedback on the process and outcomes	Future Urban on behalf of the Designated Entity	Ongoing across the engagement period
Prepare an Engagement Report in accordance with section 73 of the PDI Act that includes summary of submissions, amendments to the Code Amendment and evaluation of engagement	Future Urban on behalf of the Designated Entity	As soon as practicable post-engagement
Publish the Engagement Report	Department for Trade and Investment	As soon as practicable post-engagement
Inform stakeholders on the outcome of the Code Amendment	Future Urban on behalf of the Designated Entity	As soon as practicable following a decision on the proposed Code Amendment
Publish the outcome of the Code Amendment	Department for Trade and Investment	As soon as practicable following a decision on the proposed Code Amendment

APPENDIX 7. TIMETABLE FOR CODE AMENDMENT

CODE AMENDMENTS TIMETABLE		
Steps	**Responsibility**	**Timeframes**
Approval of the Proposal to Initiate		
Review of Proposal to Initiate to confirm all mandatory requirements are met (timeframe will be put on hold if further information is required). Referral to the Minister to request advice from the Commission	PLUS	2 weeks *(includes lodgement and allocation + referral to Government Agencies within the first week)*
Minister requests advice from the Commission.	Minister	2 weeks
Referral to Government Agencies for comment (where necessary)	PLUS, Relevant Government Agencies	+ 2 weeks
Consideration of Proposal to Initiate and advice to the Minister.	Commission (Delegate)	3 weeks
	Commission	+ 3 weeks
Proposal to initiate agreed to by the Minister.	Minister	2 weeks
Preparation of the Code Amendment		
Engagement Plan finalised. Investigations conducted; **Code Amendment Report** prepared. The drafting instructions and draft mapping provided to the PLUS.	Future Urban on behalf of the Designated Entity	12 weeks
PLUS prepares Amendment Instructions and Mapping and provides to Council for consultation purposes	PLUS	1 week
Preparation of Materials for Consultation.	Future Urban on behalf of the Designated Entity	2 weeks
Engagement on the Code Amendment		
Code Amendment Report released for public consultation in accordance with the Community Engagement Charter and the prepared **Community Engagement Plan.**	Future Urban on behalf of the Designated Entity	8 weeks
Consideration of Engagement and Finalisation of Amendments		
Submissions summarised, amended drafting instructions provided, **Engagement Report** prepared and lodged with PLUS.	Future Urban on behalf of the Designated Entity	4 weeks

Assess the Amendment and engagement. Prepare report to the Commission or delegate. *(Timeframe will be put on hold if further information is required, or if there are unresolved issues)*	PLUS	4 weeks
Consideration of Advice.	Commission (Delegate)	2 weeks *(includes 1 week to process through Minister's office)*
	Commission	+ 3 weeks
Decision Process		
Minister considers the **Code Amendment Report** and the **Engagement Report** and makes decision.	Minister	3 weeks
Implementing the Amendment (operation of the Code Amendment)		
Go-live / Publish on the PlanSA portal.	PLUS	2-4 weeks
Parliamentary Scrutiny		
Referral of approved **Code Amendment** to ERDC.	PLUS	8 weeks