habitat planning

Planning Proposal

26 Gol Gol North Road, Gol Gol

Rezone land from RU1 to RU5

March 2020

TOWN PLANNING + URBAN DESIGN CONSULTANTS

Prepared for

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Document Control			
Version	Date	Purpose	Author
A	24/07/18	Draft for client review	WH
B	19/09/18	Final for lodgement	WH
C	07/01/19	Revised final	WH
D	06/03/20	Revised to exclude packing shed	WH
E	19/03/20	Revised to remove packing shed	WH
F	26/03/20	Revised for subdivision plan	WH

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Contents

Attachments

Introduction

This is a Planning Proposal seeking an amendment to the *Wentworth Local Environmental Plan 2011* (WLEP) to rezone land in Gol Gol to RU5 Village with no minimum lot size. The proposal represents an extension of the zone and minimum lot size applied to land adjoining to the west.

The 3.16 hectares of land is described as Lots 216 and 217 in DP756946, and Lot A and B in DP402812 ("the subject land"). It is located on the south east corner of Gol Gol North and Kingfisher Roads and situated on the north eastern fringe of the Gol Gol township. The context of the subject land is shown in Figures 1 and 2.

The Planning Proposal has been structured and prepared in accordance with the Department of Planning and Environment's (DPE) *A guide to preparing planning proposals* ("the Guide").

PART 1. Intended outcomes

The intended outcome of the Planning Proposal is to allow the subject land to be developed for residential purposes at a density similar to that on adjoining land (see Figure 2).

The existing packing shed will be removed from the subject land prior to development being undertaken and the site remediated in accordance with the recommendations of the Environmental Site Assessment (see Attachment 'E').

PART 2. Explanation of the provisions

The intended outcomes of the Planning Proposal will be achieved by:

- amending the Land Zoning Map Sheet LZN_004G in the WLEP to show the subject land zoned as RU5 Village (see Figure 3); and
- amending the Minimum Lot Size Map Sheet LSZ_004G in the WLEP to show the subject land having no minimum lot size for subdivision (see Figure 4).

PART 3. Justification

This section of the Planning Proposal sets out the justification for the intended outcomes and provisions, and the process for their implementation. The questions to which responses have been provided are taken from the Guide.

Section A. Need for the planning proposal

Q1. Is the planning proposal a result of any strategic study or report?

No.

Q2. Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

The subdivision of the land for residential purposes cannot be achieved under the current planning regime because it would be inconsistent with the objectives of the RU1 Primary Production zone and the 10 hectare minimum lot size for subdivision is too large. Consequently the intended outcome can only be achieved through an amendment to the WLEP via a planning proposal.

Section B. Relationship to strategic planning framework

Q3. Is the planning proposal consistent with the objectives and actions of the applicable regional, sub-regional or district plan or strategy (including any exhibited draft plans or strategies)?

The *Far West Regional Plan 2036* (RMRP) was adopted by the NSW government in 2017. The Minister's foreword to the document states that the RMRP "*encompasses a vision, goals and actions geared towards delivering greater prosperity in the years ahead for those who live, work and visit this important region*."

An assessment against the goals and directions of the RMRP is undertaken in Attachment 'C'. This assessment concludes a consistency with those matters relevant to the proposal with the exception of that for protecting agricultural land. This inconsistency is justified on the basis of the circumstances of the subject land being located abutting the township of Gol Gol and the land use conflicts this creates, particularly for intensive plant agriculture.

Q4. Is the planning proposal consistent with a council's local strategy or other local strategic plan?

Council's *Community Strategic Plan 2017-2027* identified the following issues relevant to the proposal:

- *Create a place where people want to come and live.*
- *Encourage more housing development.*
- *Flexibility of zoning and development.*

The proposal is an appropriate response to these issues by rezoning land to facilitate urban residential development.

Q5. Is the planning proposal consistent with applicable State Environmental Planning Policies?

Attachment 'A' provides an assessment of the Planning Proposal against all State Environmental Planning Policies (SEPP's). In summary, many of the SEPP's are not applicable to the Wentworth local government area and even less are applicable to the circumstances of the Planning Proposal.

The assessment concludes that the Planning Proposal is not inconsistent with any of the relevant SEPP's.

Q6. Is the planning proposal consistent with applicable Ministerial Directions (s.117 directions)?

Section 117 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) provides for the Minister for Planning to give directions to Councils regarding the principles, aims, objectives or policies to be achieved or given effect to in the preparation of LEP's. A Planning Proposal needs to be consistent with the requirements of the Direction but in some instances can be inconsistent if justified using the criteria stipulated such as a Local Environmental Study or the proposal is of "*minor significance*".

An assessment of all S117 Directions is undertaken in Attachment 'B'. In summary, the Planning Proposal is either consistent or has some minor inconsistencies with the relevant Directions. Where there is an inconsistency, it has been justified utilising the provisions within each of the Directions.

Section C. Environmental, social & economic impact

Q7. Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

The Planning Proposal relates to a small parcel of land located adjoining the town boundary of Gol Gol. The land currently exists in a highly modified natural environment having been used for intensive agriculture and is devoid of remnant vegetation. Consequently, there are no threatened species or their habitat that can be affected by the proposal.

Q8. Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

The subject land adjoins the Gol Gol Creek and consequently any future development has the potential to impact on this environment. The creek (between the banks) is mapped as 'watercourse' on the Natural Resources – Watercourse Map.

The existing packing shed on the subject land is to be removed prior to subdivision to remove any land use conflicts.

Figure 5 shows an indicative lot layout for the future subdivision of the subject land with lots adjoining the creek fronting an internal cul-de-sac. Stormwater from these lots would be directed to drainage infrastructure in the cul-de-sac and then conveyed to a point of pre-treatment for discharge. This controlled drainage will result in a net benefit to the creek environment as stormwater is currently uncontrolled on land used for intensive agriculture. It is expected this will be a requirement of Council when determining a development application for the subdivision. The objectives of clause 7.7 in the WLEP relating to land mapped as 'watercourse' are therefore met by the proposal.

Q9. Has the planning proposal adequately addressed any social and economic effects?

There will be a positive social and economic effect for the Gol Gol community stemming the Planning Proposal through the development of the land for residential purposes and the resulting increase in population.

Section D. State & Commonwealth interests

Q10. Is there adequate public infrastructure for the planning proposal?

Being located adjacent to serviced urban residential development, the subject land has access to all urban infrastructure (including reticulated sewerage). There is capacity within this infrastructure to accommodate the demands created by the future development of the subject land.

Q11. What are the views of state and Commonwealth public authorities consulted in accordance with the Gateway determination?

No public authorities have been consulted prior to submitting the Planning Proposal to Council for support and subsequent request for a Gateway Determination.

PART 4. Mapping

The following maps and figures are provided in support of the Planning Proposal.

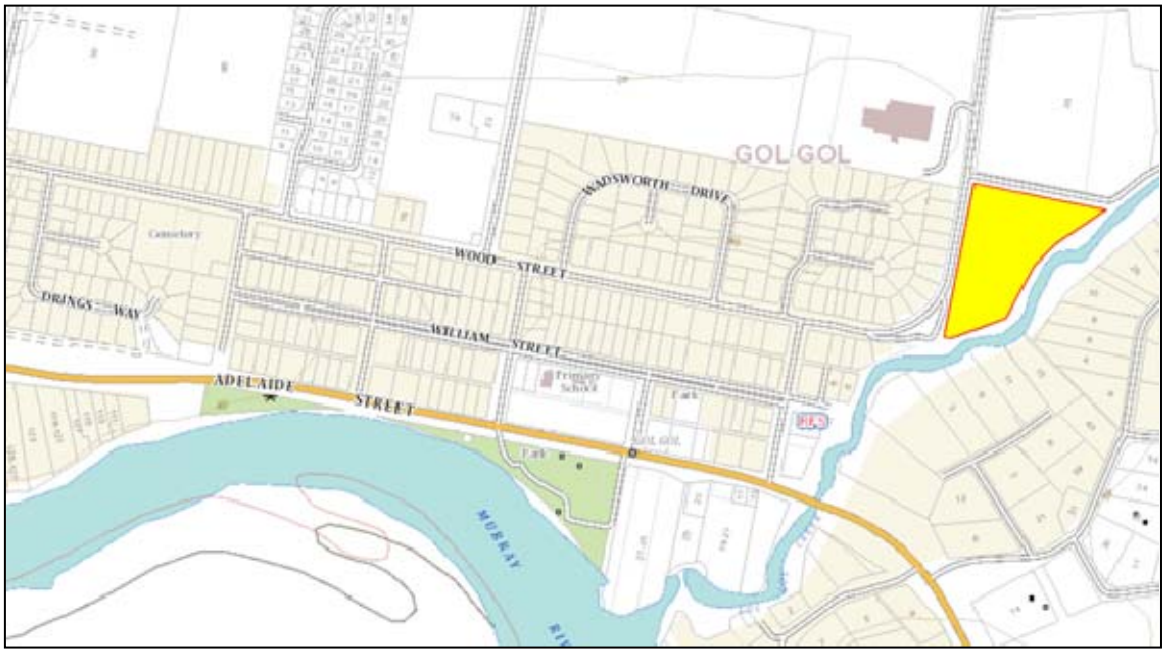

FIGURE 1: Location of subject land within the context of the Gol Gol township (Source: SIX Maps)

FIGURE 2: The subject land within the context of its immediate surrounds (Source: nearmap)

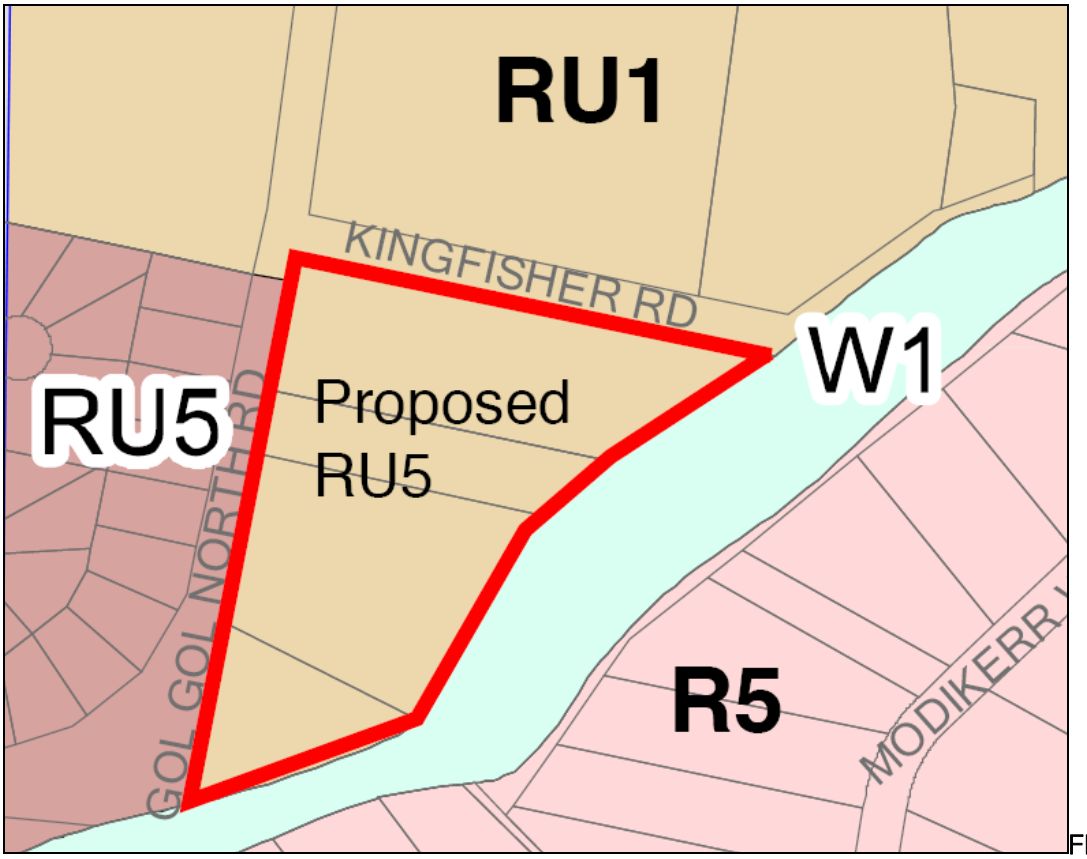

FIGURE 3: Existing and proposed land use zones (Source: WLEP)

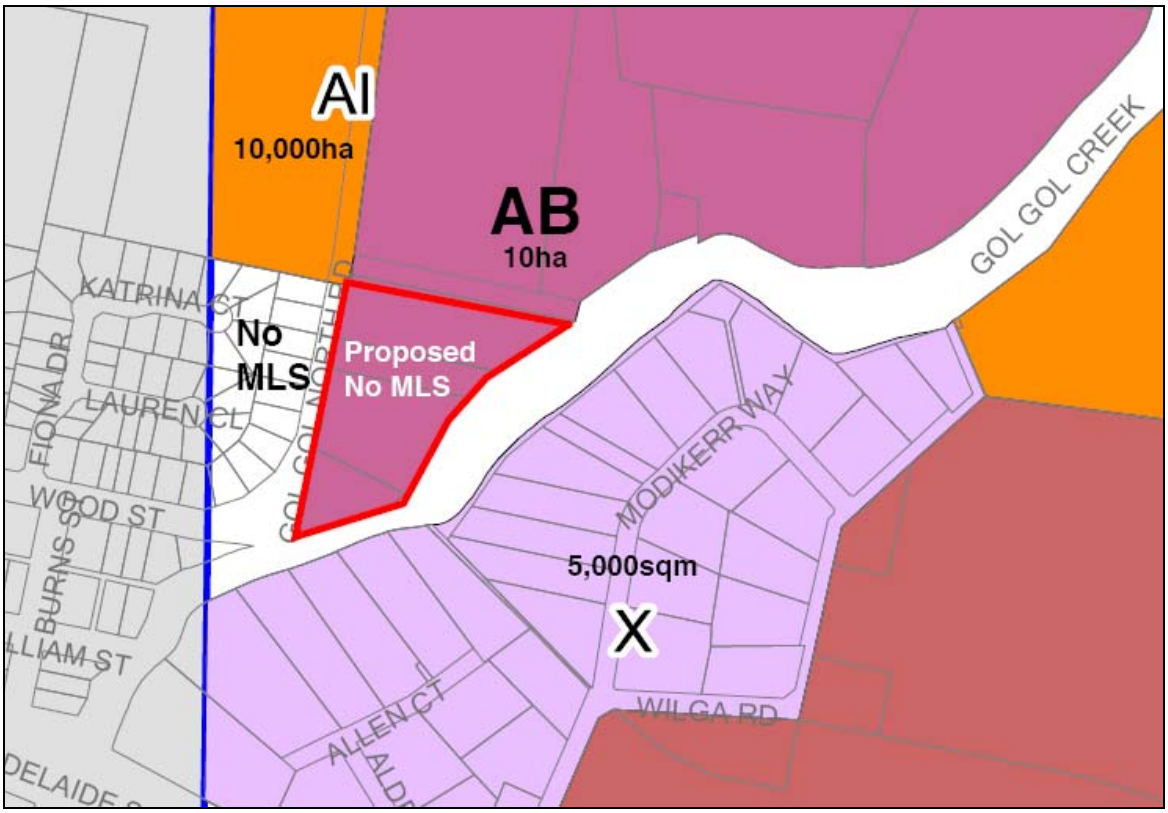

FIGURE 4: Existing and proposed Minimum Lot Sizes (Source: WLEP)

FIGURE 5: Concept plan for future subdivision of the subject land

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 216, DP:DP756946 with a Buffer of 50 meters, conducted by Jarrod Roberts on 12 September 2018.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

FIGURE 6: Results of AHIMS search (Source: OEH)

PART 5. Community consultation

The Planning Proposal will be subject to public exhibition following the Gateway process. The Gateway determination will specify the community consultation that must be undertaken for the Planning Proposal, if any. As such, the exact consultation requirements are not known at this stage.

This Planning Proposal will be exhibited for a period of 28 days in accordance with the requirements of Part 1 Division 1 Clause 4 of Schedule 1 of the EP&A Act and the Guide. At a minimum, the future consultation process is expected to include:

- written notification to landowners adjoining the subject land;
- consultation with relevant Government Departments and agencies, service providers and other key stakeholders, as determined in the Gateway determination;
- public notices to be provided in local media, including in a local newspaper and on Councils' website;
- static displays of the Planning Proposal and supporting material in Council public buildings; and
- electronic copies of all documentation being made available to the community free of charge (preferably via downloads from Council's website).

At the conclusion of the public exhibition period Council staff will consider submissions made with respect to the Planning Proposal and prepare a report to Council.

PART 6. Project timeline

The project timeline for the Planning Proposal is outlined in Table 1. There are many factors that can influence adherence with the timeframe including the cycle of Council meetings, consequences of agency consultation (if required) and outcomes from public exhibition. Consequently the timeframe should be regarded as indicative only.

TABLE 1: – Project timeline

Milestone	Date/timeframe
Anticipated commencement date (date of Gateway determination)	4 weeks following Council resolution to request Gateway determination.
Anticipated timeframe for the completion of required studies	No required studies are anticipated.
Timeframe for government agency consultation (pre and post exhibition as required by Gateway determination)	6 weeks from Gateway determination.
Commencement and completion dates for public exhibition period	6 weeks from Gateway determination.
Dates for public hearing (if required)	At some point within the public exhibition period (if required).
Timeframe for consideration of submissions	2 weeks following completion of exhibition.
Timeframe for the consideration of a proposal post exhibition	4 weeks following completion of exhibition.
Anticipated date RPA will make the plan (if delegated)	To be determined by Gateway determination.
Anticipated date RPA will forward to the department for notification (if delegated).	To be confirmed.

Conclusion

The Planning Proposal is to rezone a small parcel of land on the fringe of the Gol Gol township to facilitate urban residential development. An amendment to the WLEP is necessary to achieve this outcome as the land is currently zoned for rural purposes.

In summary, the Planning Proposal is considered to have merit because:

- the land immediately adjoins developed urban residential land in Gol Gol;
- the land is currently wedged between urban residential and rural residential development;
- the ongoing use rural use of the land for intensive agriculture is now compromised by the proximity of residential development;
- the existing packing shed is to be removed to avoid any potential land use conflicts;
- having regard for the current circumstances, urban residential is now regarded as the highest and best use of the land;
- there is demand for residential lots in Gol Gol evidenced by other subdivisions currently under construction;
- the land can be provided with all urban infrastructure;
- there will be a net social benefit for the Gol Gol community through additional population growth;
- there are no environmental impacts from future development that can't be mitigated; and
- it is generally consistent with the broader strategic planning framework for the Region, Shire and Gol Gol.

Attachment ‘A’

Consistency with State Environmental Planning Policies

No.	Title	Consistency
1	Development Standards	Not applicable since gazettal of WLEP.
14	Coastal Wetlands	Not applicable to the local government area of Wentworth.
19	Bushland in Urban Areas	Not applicable to the local government area of Wentworth.
21	Caravan Parks	The Planning Proposal does not conflict with the aims, development consent requirements, number of sites being used for long term or short term residents, permissibility of moveable dwellings where caravan parks or camping grounds are also permitted, and subdivision of caravan parks for lease purposes as provided in the SEPP.
26	Littoral Rainforests	Not applicable to the local government area of Wentworth.
30	Intensive Agriculture	Not relevant as cattle feedlots and piggeries are prohibited in the RU5 zone.
33	Hazardous & Offensive Development	Whilst the general nature of the RU5 Township zone provides for industry with consent and therefore the possibility of hazardous and offensive development, the purpose of the proposal is for residential development. It is unlikely an application for a hazardous and offensive development would succeed on the subject land due to the size of the parcel and the proximity of existing residential development.
36	Manufactured Home Estate	The Planning Proposal does not conflict with the aims, strategies, development consent, assessment and location provisions as provided in the SEPP.
44	Koala Habitat Protection	Regardless of the zone, this SEPP would apply to any future development of the land for which consent is required as Wentworth is nominated as one of the LGA's to which it applies and the subject land has an area in excess of one hectare.
47	Moore Park Showground	Not applicable to the local government area of Wentworth.
50	Canal Estate Development	The Planning Proposal does not conflict with the aims and canal estate development prohibitions as provided in the SEPP.
52	Farm Dams and Other Works in Land and Water Management Plan Areas	Not applicable as the subject land is not within any of the nominated irrigation areas or districts.
55	Remediation of Land	As the Planning Proposal will create the opportunity for residential development, Clause 6 of this SEPP requires Council to consider whether the subject land is potentially contaminated. An Environmental Site Assessment (ESA) has been prepared as part of the Planning Proposal and identified a number of small locations containing contaminants. The ESA concludes that none of these were outside of the packing shed perimeter. Lot B DP402812 was not included in the ESA but Council can be confident this land is not potentially contaminated because it is already in residential use.
62	Sustainable Aquaculture	Not relevant as 'aquaculture' (as a subset of 'agriculture') is prohibited within the RU5 zone.
64	Advertising & Signage	The Planning Proposal does not conflict with the aims, development consent requirements and assessment criteria for advertising and signage as provided in the SEPP.

No.	Title	Consistency
65	Design Quality of Residential Flat Development	The Planning Proposal does not conflict with the aims, development consent, assessment, information and notification requirements as provided in the SEPP.
70	Affordable Housing (Revised Schemes)	Not applicable to the local government area of Wentworth.
71	Coastal Protection	Not applicable to the local government area of Wentworth.
	Affordable Rental Housing 2009	The Planning Proposal does not conflict with the aims and functions of this SEPP as changes do not discriminate against the provision of affordable housing (and consequently affordable rental housing). The WLEP cannot influence the provision of rental housing.
	Building Sustainability Index (BASIX) 2004	The Planning Proposal does not conflict with the aims and development consent requirements relating to BASIX affected building(s) that seeks to reduce water consumption, greenhouse gas emissions and improve thermal performance as provided in the SEPP.
	Coastal Management 2018	Not applicable to the local government area of Wentworth.
	Educational Establishments & Child Care Facilities 2017	The Planning Proposal does not conflict with the aims, permissibility, development assessment requirements relating to educational establishments and child care facilities as provided in the SEPP.
	Exempt & Complying Development Codes 2008	The Planning Proposal does not conflict with the aims and functions of this SEPP with respect to exempt and complying development provisions.
	Housing for Seniors & People with a Disability 2004	The Planning Proposal does not conflict with the aims, development consent, location, design, development standards, service, assessment, and information requirements as provided in the SEPP.
	Infrastructure 2007	The Planning Proposal does not conflict with the aims, permissibility, development consent, assessment and consultation requirements, capacity to undertake additional uses, adjacent, exempt and complying development provisions as provided in the SEPP.
	Integration & Appeals 2016	Not applicable to the proposal.
	Kosciuszko National Park – Alpine Resorts 2007	Not applicable to the local government area of Wentworth.
	Kurnell Peninsula 1989	Not applicable to the local government area of Wentworth.
	Mining, Petroleum Production & Extractive Industries 2007	The Planning Proposal does not conflict with the aims, permissibility, development assessment requirements relating to mining, petroleum production and extractive industries as provided in the SEPP.
	Miscellaneous Consent Provisions 2007	The Planning Proposal does not conflict with the aims, permissibility, development assessment requirements relating to temporary structures as provided in the SEPP.

No.	Title	Consistency
	Murray Regional Environmental Plan No. 2 – Riverine Land	The subject land is within the area to which this SEPP applies. The Planning Proposal does not contradict the general planning principles of MREP2 as it will have little to no impact on the riverine environment. An assessment against the specific planning principles within MREP2 is undertaken in Attachment 'D'. As the subject land is located more than 700 metres from the top of the river bank at the closest point, most of the specific planning principles in Part 2 of MREP2 don't require consideration.
	Penrith Lakes Scheme 1989	Not applicable to the local government area of Wentworth.
	Rural Lands 2008	This SEPP is relevant because the subject land is currently zoned RU1. Clause 10 requires Council to consider the following matters relating to subdivision and dwellings. *a) the existing uses and approved uses of land in the vicinity of the development,* *b) whether or not the development is likely to have a significant impact on land uses that, in the opinion of the consent authority, are likely to be preferred and the predominant land uses in the vicinity of the development,* *c) whether or not the development is likely to be incompatible with a use referred to in paragraph (a) or (b),* *d) if the land is not situated within a rural residential zone, whether or not the development is likely to be incompatible with a use on land within an adjoining rural residential zone,* *e) any measures proposed by the applicant to avoid or minimise any incompatibility referred to in paragraph (c) or (d).* The Planning Proposal is generally consistent with these matters because: a) The land uses in the immediate vicinity of the subject land are a mix of agriculture, residential and rural residential. The development of the land for residential purposes is generally compatible with these surroundings. b) Whilst there is no land use strategy for Gol Gol indicating the preferred future use of land (beyond land use zones), the subject land exists as a small parcel wedged between a fully developed residential estate and a creek. The northern boundary is opposite rural land in use for agriculture but is separated by a 20 metre wide road reserve providing a buffer between the two. c) Residential development will be generally compatible with all the surrounding land uses. A road reserve provides a buffer to agricultural land to the north. d) There is no land zoned for rural residential adjoining the subject land. Land on the opposite side of the Gol Gol Creek is developed for rural residential purposes but is approximately 70 metres from the subject land. e) No measures are proposed.
	State & Regional Development 2011	Not applicable as the Planning Proposal is not for State significant development.
	State Significant Precincts	Not applicable as the subject land is not within a State significant precinct.

No.	Title	Consistency
	Sydney Drinking Water Catchment 2011	Not applicable to the local government area of Wentworth.
	Sydney Region Growth Centres 2006	Not applicable to the local government area of Wentworth.
	Four Ports 2013	Not applicable to the local government area of Wentworth.
	Urban Renewal 2010	Not applicable as the subject land is not within a nominated urban renewal precinct.
	Vegetation in Non-Rural Areas 2017	This SEPP is relevant because it involves land proposed for the RU5 zone. However the subject land is devoid of vegetation hence the SEPP will have no influence over its future development.
	Western Sydney Employment Area 2009	Not applicable to the local government area of Wentworth.
	Western Sydney Parklands 2009	Not applicable to the local government area of Wentworth.

Attachment ‘B’

Consistency with Ministerial Directions

No.	Title	Consistency
1.	Employment and Resources	
1.1	Business & Industrial Zones	Not applicable as the Planning Proposal does not involve business or industrial zones.
1.2	Rural Zones	This direction requires consideration because it applies to all Councils and the Planning Proposal affects land within an existing rural zone. The Planning Proposal is inconsistent with this direction because it advocates the rezoning of rural land to residential and reduces the minimum lot size for subdivision. However, the inconsistency is justified on the basis that at around 3ha the area to which the Planning Proposal applies is of 'minor significance'.
1.3	Mining, Petroleum Production & Extractive Industries	Not applicable as the Planning Proposal does not impact on mining.
1.4	Oyster Aquaculture	Not applicable as the subject land is not within a Priority Oyster Aquaculture Area.

1.5	Rural Lands	This direction is relevant because the planning proposal affects land within a rural zone and advocates a minimum lot size for subdivision less than that permitted in the RU1 zone. The direction requires that the planning proposal must be consistent with the following Rural Planning Principles expressed in the SEPP (Rural Lands). *a) the promotion and protection of opportunities for current and potential productive and sustainable economic activities in rural areas,* *b) recognition of the importance of rural lands and agriculture and the changing nature of agriculture and of trends, demands and issues in agriculture in the area, region or State,* *c) recognition of the significance of rural land uses to the State and rural communities, including the social and economic benefits of rural land use and development,* *d) in planning for rural lands, to balance the social, economic and environmental interests of the community,* *e) the identification and protection of natural resources, having regard to maintaining biodiversity, the protection of native vegetation, the importance of water resources and avoiding constrained land,* *f) the provision of opportunities for rural lifestyle, settlement and housing that contribute to the social and economic welfare of rural communities,* *g) the consideration of impacts on services and infrastructure and appropriate location when providing for rural housing,* *h) ensuring consistency with any applicable regional strategy of the Department of Planning or any applicable local strategy endorsed by the Director-General.* The planning proposal can be considered consistent with these principles for the following reasons: a) The land is located within the township of Gol Gol and as such is appropriate for future residential development. Consequently, it can be considered as having no economic future in a rural context. b) As for a) above. c) The loss of approximately 3ha of rural land through its rezoning and development will have no impact on the local community. d) The use of the land for residential purposes as part of Gol Gol's continued growth is more in the community's interest than rural use. e) The subject land is devoid of environmental features. It is also unaffected by natural hazards such as bushfire and flooding in a 1 in 100-year event. f) The rezoning will create opportunities for housing that will benefit rather than impact on the local community. g) The proposed residential development will be fully serviced to minimise impacts. h) See an assessment of the proposal against the *Far West Regional Plan 2036* at Attachment 'C'.

		The direction also requires that the planning proposal must be consistent with the following Rural Subdivision Principles expressed in the SEPP (Rural Lands). *a) the minimisation of rural land fragmentation,* *b) the minimisation of rural land use conflicts, particularly between residential land uses and other rural land uses,* *c) the consideration of the nature of existing agricultural holdings and the existing and planned future supply of rural residential land when considering lot sizes for rural lands,* *d) the consideration of the natural and physical constraints and opportunities of land,* *e) ensuring that planning for dwelling opportunities takes account of those constraints.* The planning proposal can be considered consistent with these principles for the following reasons: a) The Planning Proposal will not result in the fragmentation of rural land because the subject land is immediately joining the Gol Gol township (i.e. it is not a parcel of land within an area of RU1 zoned land). b) There is potential for conflict between the proposed residential use of the subject land and the use of land to the north. However, a 20-metre-wide road reserve will separate the uses and act as a buffer. c) There are no agricultural holdings and the proposed development is not for 'rural residential'. d) The subject land is above the 1 in 100-year flood level and can be provided with all urban infrastructure. Having two road frontages and access to all urban services presents as an opportunity for the land to be developed for urban residential purposes. e) The future residential development will be subject to consent from Council and there will be an opportunity at that point ensure any constraints are accounted for.
2.	**Environment and Heritage**	
2.1	Environment Protection Zones	This direction is relevant because it applies to all Planning Proposals. The Planning Proposal is consistent with this direction because it does not involve land identified as environmentally sensitive.
2.2	Coastal Protection	Not applicable as the subject land is not within a coastal zone.
2.3	Heritage Conservation	This direction is relevant because it applies to all Planning Proposals. The Planning Proposal is consistent with this direction because it does not affect existing provisions within the WLEP relating to the protection of known European and Aboriginal heritage.
2.4	Recreation Vehicle Areas	This direction requires consideration because it applies to all Planning Proposals. The Planning Proposal is consistent with the direction because it does not advocate the designation of the subject land as a recreation vehicle area pursuant to an order in force under section 11 (1) of the *Recreation Vehicles Act 1983*.

2.5	Application of E2 and E3 Zones and Environmental Overlays in Far North Coast LEPs.	Not applicable.
3.	**Housing Infrastructure and Urban Development**	
3.1	Residential Zones	This direction is relevant because the Planning Proposal is advocating a zone within which residential development will be permitted. The Planning Proposal is consistent with this direction because it will provide the opportunity for a greater choice and supply of housing in Gol Gol and make use of existing urban infrastructure
3.2	Caravan Parks & Manufactured Home Estates	This direction requires consideration because it applies to all Planning Proposals. The Planning Proposal is consistent with this direction because it does not reduce the opportunities for caravan parks and manufactured homes estates on the subject land.
3.3	Home Occupations	This direction requires consideration because it applies to all Planning Proposals. The Planning Proposal will not prevent future dwellings being used for 'home occupations' and hence is consistent with this direction.
3.4	Integrating Land Use and Transport	This direction is relevant because the Planning Proposal is advocating a zone permitting urban development. The Planning Proposal will facilitate residential development at an urban scale within Gol Gol. Recreational facilities are available in close proximity. Having regard for these circumstances, the Planning Proposal is considered consistent with this direction.
3.5	Development Near Licensed Aerodromes	Not applicable as none of the lots are in the vicinity of a licensed aerodrome.
3.6	Shooting Ranges	Not applicable as none of the lots are in the vicinity of a shooting range.
4.	**Hazard and Risk**	
4.1	Acid Sulphate Soils	Not applicable as none of the lots contain acid sulphate soils.
4.2	Mine Subsidence & Unstable Land	Not applicable as none of the lots are within Mine Subsistence District.
4.3	Flood Prone Land	Not applicable as the subject land is not mapped as flood prone.
4.4	Planning for Bushfire Protection	Not applicable as the subject land is not mapped as bushfire prone.
5.	**Regional Planning**	
5.1	Implementation of Regional Strategies	Revoked in 2017.
5.2	Sydney Drinking Water Catchment	Not applicable as the lots are not within the Sydney Drinking Water Catchment.
5.3	Farmland of State & Regional Significance on the NSW Far North Coast	Not applicable as the lots are not within one of the local government areas nominated in this direction.

5.4	Commercial and Retail Development along the Pacific Highway, North Coast	Not applicable as none of the lots are near the Pacific Highway.
5.5	Development in the Vicinity of Ellalong, Paxton and Millfield (Cessnock LGA)	Revoked in 2010.
5.6	Sydney to Canberra Corridor	Revoked in 2008.
5.7	Central Coast	Revoked in 2008.
5.8	Second Sydney Airport: Badgerys Creek	Not applicable as none of the lots are near the site for a second Sydney airport.
5.9	North West Rail Link Corridor Strategy	Not applicable as none of the lots are near this corridor.
5.10	Implementation of Regional Plans	This direction requires consideration because it applies to all Planning Proposals. The Planning Proposal complies with this direction because it is consistent with the *Far West Regional Plan 2036* (see Attachment 'C').
6.	**Local Plan Making**	
6.1	Approval and Referral Requirements	This direction requires consideration because it applies to all Planning Proposals. The Planning Proposal is consistent with this direction because it does not propose any referral requirements or nominate any development as 'designated development'.
6.2	Reserving Land for Public Purposes	This direction is relevant because it applies to all Planning Proposals. The Planning Proposal is consistent with this direction because it does not remove or propose any public land.
6.3	Site Specific Provisions	Not applicable as the proposal does not propose any site-specific provisions.
7.	**Metropolitan Planning**	
7.1	Implementation of A Plan for Growing Sydney	Not applicable as the lots are not within one of the local government areas nominated in this direction.
7.2	Implementation of Greater Macarthur Land Release Investigation	Not applicable as the lots are not within one of the local government areas nominated in this direction.
7.3	Parramatta Road Corridor Urban Transformation Strategy	Not applicable as the lots are not within one of the local government areas nominated in this direction.
7.4	Implementation of North West Priority Growth Area Land Use and Infrastructure Implementation Plan	Not applicable as the lots are not within the North West Priority Growth Area.

7.5	Implementation of Greater Parramatta Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	Not applicable as the lots are not within the Greater Parramatta Priority Growth Area.
7.6	Implementation of Wilton Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	Not applicable as the lots are not within the Wollondilly Shire Council.

Attachment ‘C’

Consistency with the Far West Regional Plan 2036

Goal, Direction & Action Title	Relevance to the Planning Proposal	Compatibility
Goal 1 – A diverse economy with efficient transport and infrastructure networks.		
Direction 1 – Grow the agribusiness sector, value-added manufacturing opportunities and supply chains.	Not relevant, as the proposal does not relate to value-added manufacturing.	N/A
Direction 2 – Protect productive agricultural land and plan for greater land use compatibility.	Relevant because the land is currently zoned and used for agriculture.	The proposal conflicts with this Direction as the rezoning will result in the loss of productive agricultural land. It is however a small area and situated adjoining urban residential development and a watercourse. It is therefore considered unsuitable for intensive plant agriculture being the most recent use of the land.
Direction 3 – Sustainably manage mineral resources.	Not relevant, as the subject land is not known to contain any significant mineral resources.	N/A
Direction 4 – Diversify energy supply through renewable energy generation.	Not relevant as the proposal does not relate to energy supplies.	N/A
Direction 5 – Promote tourism opportunities.	Not relevant, as the proposal does not relate to tourism.	N/A
Direction 6 – Unlock economic potential through improved freight transport infrastructure.	Not relevant, as the proposal does not relate to transport.	N/A
Direction 7 – Improve regional air connections.	Not relevant as the proposal does not relate to air transport.	N/A
Direction 8 – Enhance access to telecommunications.	Not relevant as then proposal does not relate to telecommunications.	N/A
Direction 9 – Sustainably manage water resources for economic opportunities.	Not relevant as the proposal does not relate to water resources.	N/A

Direction 10 – Enhance the economic self-determination of Aboriginal communities	Not relevant, as the proposal does not relate to the management of Aboriginal communities.	N/A
Direction 11 – Support new planning and land management arrangements.	Not relevant as the proposal is not on unincorporated land.	N/A
Direction 12 – Enhance the productivity of employment lands.	Not relevant as the proposal does not relate to employment.	N/A
Goal 2 – Exceptional semi-arid rangelands traversed by the Barwon-Darling River.		
Direction 13 – Protect and manage environmental assets.	Not relevant, as the subject land is not an "environmental asset".	N/A
Direction 14 – Manage and conserve water resources for the environment.	Not relevant as the proposal will have no impact on water resources.	N/A
Direction 15 – Manage land uses along key river corridors	Not relevant as the subject land is not located adjoining the Murray, Darling or Barwon Rivers.	N/A
Direction 16 – Increase resilience to climate change.	Not relevant as the proposal will have no impact on climate change.	N/A
Direction 17 - Manage natural hazard risks.	Not relevant as the subject land is not mapped as bush fire or flood prone.	The proposal is consistent with Action 17.1 to "*locate developments, including new urban release areas, away from areas of known high biodiversity value, high bushfire and flooding hazards, and designated waterways to reduce the community's exposure to natural hazards.*"
Direction 18 – Respect and protect Aboriginal cultural historic assets.	Relevant, as the *Wentworth Shire Development Control Plan 2011* has a map at Appendix A showing a strip of land along the Gol Gol Creek as an area "*likely to contain archaeological sites*".	Whilst noting the actual parameters of this strip are difficult to determine from the map, it is appropriate to consider the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* to ascertain the potential for items of Aboriginal cultural heritage being present (see below).

	Due diligence steps	**Response**
	1. Will the activity disturb the ground surface or any culturally modified trees?	Yes, there will be ground disturbance through the construction of the future subdivision. There are no trees on the subject land.
	2. Are there any: a) relevant confirmed site records or other associated landscape feature information on AHIMS? and/or b) any other sources of information of which a person is already aware? and/or c) landscape features that are likely to indicate presence of Aboriginal objects?	There are no Aboriginal sites or places recorded for the subject land on AHIMS (see Figure 6). There are no other sources available such as a specific site investigation for Aboriginal sites or places. The landscape of the subject land is highly modified (including soil conditions) through its use for many years as intensive agriculture. Consequently, there are no remaining features indicating a presence of Aboriginal objects.
	3. Can harm to Aboriginal objects listed on AHIMS or identified by other sources of information and/or can the carrying out of the activity at the relevant landscape features be avoided?	Not applicable having regard for the response to Step 2.
	4. Does a desktop assessment and visual inspection confirm that there are Aboriginal objects or that they are likely?	No.
	5. Further investigation and impact assessment	Not required having regard for the response to Step 2.
Direction 19 - Conserve and adaptively re-use European heritage assets.	Not relevant as the subject land contains no European heritage.	N/A
Goal 3 – Strong and connected communities.		
Direction 20 – Manage change in settlements.	Relevant as the proposal affects Gol Gol township.	The Planning Proposal will benefit the Gol Gol community through an increase in population.

Direction 21 – Strengthen communities of interest and cross-regional relationships	Relevant because while Gol Gol is not directly opposite the regional city of Mildura on the Murray River, it is in proximity.	The proposal will offer more choice in residential location and an alternative to a larger regional city for future residents.
Direction 22 – Collaborate and partner with Aboriginal communities.	Not relevant because the proposal does not relate to Aboriginal communities.	N/A
Direction 23 – Improve access to local health services, aged care and seniors' housing.	Not relevant as the proposal will have no impact on access to such services and will not be providing housing for this sector.	N/A
Direction 24 – Enhance access to education and training.	Not relevant as the proposal does not relate to education and training.	N/A
Direction 25 – Improve public and community transport services.	Not relevant, as the proposal does not relate to public transport.	N/A
Direction 26 – Manage and conserve water resources for communities.	Not relevant as the proposal will have no impact on water resources.	N/A
Direction 27 - Provide greater housing choice.	Relevant as the proposal is intended to provide for residential development.	The proposal will provide an additional location for future residential development in Gol Gol and therefore choice for future residents.
Direction 28 - Deliver greater opportunities for affordable housing.	Relevant as the proposal will result in residential development.	From a policy perspective, the proposal is inconsistent with this Direction because in the absence of any incentives either at the State or Local level for the private sector to provide for 'affordable housing', it is unlikely to be provided for in the future development of the subject land.
Direction 29 - Manage rural residential development.	Not relevant, as the proposal does not relate to rural residential development.	N/A
Direction 30 - Create healthy built environments.	Relevant as the proposal will result in new residential development.	The actions espoused for this Direction will be achieved through Council's assessment of the development application for future residential subdivision.

Attachment ‘D’

Consideration of principles in Murray Regional Environmental Plan No 2 – Riverine Land

Principles to be taken into account	Consistency
General	
(a) the aims, objectives and planning principles of this plan.	Satisfaction against the general objectives can be determined by the assessment against the specific principles below.
(b) any relevant River Management Plan	There are no known river management plans relevant to the proposal.
(c) any likely effect of the proposed plan or development on adjacent and downstream local government areas.	Polluted stormwater is the only consequence of the development that potentially could have a detrimental downstream impact. The subject land is more than 700 metres from the river itself and stormwater from any future subdivision will be treated prior to discharge. Done properly, this should result in no downstream impacts.
(d) the cumulative impact of the proposed development on the River Murray.	None.
Access	
The waterway and much of the foreshore of the River Murray is a public resource. Alienation or obstruction of this resource by or for private purposes should not be supported.	The proposal does not prevent access to the river.
Development along the main channel of the River Murray should be for public purposes. Moorings in the main channel should be for the purposes of short stay occupation only.	Not applicable.
Human and stock access to the River Murray should be managed to minimise the adverse impacts of uncontrolled access on the stability of the bank and vegetation growth.	The subject land does not have frontage to the river.
Bank disturbance	
Disturbance to the shape of the bank and riparian vegetation should be kept to a minimum in any development of riverfront land.	The development is not on riverfront land.

Flooding	
Where land is subject to inundation by floodwater: a) the benefits to riverine ecosystems of periodic flooding, b) the hazard risks involved in developing that land, c) the redistributive effect of the proposed development on floodwater, d) the availability of other suitable land in the locality not liable to flooding, e) the availability of flood free access for essential facilities and services, f) the pollution threat represented by any development in the event of a flood, g) the cumulative effect of the proposed development on the behaviour of floodwater, and h) the cost of providing emergency services and replacing infrastructure in the event of a flood.	The Flood Planning Area Map in the WLEP does not encroach on the subject land indicating it is not flood prone.
Flood mitigation works constructed to protect new urban development should be designed and maintained to meet the technical specifications of the Department of Water Resources	Not applicable.
Land degradation	
Development should seek to avoid land degradation processes such as erosion, native vegetation decline, pollution of ground or surface water, groundwater accession, salination and soil acidity, and adverse effects on the quality of terrestrial and aquatic habitats.	The only land disturbance arising from future development will be through subdivision works and site preparation for residential development. These works will be controlled via a Soil and Water Management Plan.
Landscape	
Measures should be taken to protect and enhance the riverine landscape by maintaining native vegetation along the riverbank and adjacent land, rehabilitating degraded sites and stabilising and revegetating riverbanks with appropriate species.	Notwithstanding that the subject land does not have river frontage, it is highly modified from its natural riverine environment. There remain some trees along the Gol Gol Creek but this is not in the subject land.

River related uses	
Only development which has a demonstrated, essential relationship with the river Murray should be located in or on land adjacent to the River Murray. Other development should be set well back from the bank of the River Murray	The subject land is not 'on' or adjacent to the river.
Development which would intensify the use of riverside land should provide public access to the foreshore.	The subject land is not 'riverside' land.
Settlement	
New or expanding settlements (including rural-residential subdivision, tourism and recreational development) should be located: (a) on flood free land, (b) close to existing services and facilities, and (c) on land that does not compromise the potential of prime crop and pasture land to produce food or fibre.	The proposal is considered to be infill rather than 'greenfield' development. Notwithstanding that, the subject land is not flood prone and located within a short distance of central Gol Gol. All urban services are available to service the future development of the subject land. The rezoning will result in the loss to agriculture of a small area of land. However, the land abuts the urban area of the town and is considered strategically suitable to accommodate some of the future growth of Gol Gol.
Water quality	
All decisions affecting the use or management of riverine land should seek to reduce pollution caused by salts and nutrients entering the River Murray and otherwise improve the quality of water in the River Murray.	It is possible that development of the land for urban residential purposes will result in an improvement of water quality in the river because existing run-off from the agricultural activity is unconstrained and potentially more polluted.

Wetlands Wetlands are a natural resource which have ecological, recreational, economic, flood storage and nutrient and pollutant filtering values. Land use and management decisions affecting wetlands should: (a) provide for a hydrological regime appropriate for the maintenance or restoration of the productive capacity of the wetland, (b) consider the potential impact of surrounding land uses and incorporate measures such as a vegetated buffer which mitigate against any adverse effects, (c) control human and animal access, and (d) conserve native plants and animals	The subject land does not contain a wetland.

Attachment ‘E’

Environmental Site Assessment

Mark Hooper Designs

Environmental Site Assessment

26 Gol Gol North Road, Gol Gol, NSW

18 June 2018

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Document Status

	Issue Date	Purpose of Document
Version 1	18/06/2018	Final Report

	Name	Position	Date
Author	Nathan Floramo	Environmental Consultant	18/06/2018

Environmental Site Assessment

26 Gol Gol North Road, Gol Gol, NSW

Prepared by

Sunraysia Environmental Pty Ltd

for

Mark Hooper Designs

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Consultant: Nathan Floramo

Report No: #63/1 Date: 18/06/2018

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Executive Summary

Mark Hooper Designs engaged Sunraysia Environmental to undertake a Preliminary Environmental Site Assessment (ESA) for a property that is proposed to be developed into a residential subdivision.

The site is currently an agricultural property, and a development application to subdivide and rezone the land for residential use has been submitted to the Wentworth Shire Council.

As a planning authority, the Wentworth Shire Council will need to consider the potential for land to be contaminated under the *State Environmental Planning Policy, Remediation of Land SEPP.*

A Preliminary ESA will ascertain if there is any potential for contamination issues with the land or infrastructure at the site, in accordance with the *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) (NEPM)*.

This principal aim of this assessment was to identify:

- potential sources of contamination and determine potential contaminants of concern
- areas of potential contamination
- potential human and ecological receptors
- potentially affected media (soil, sediment, groundwater, surface water, indoor and ambient air).

The property is being used as a market garden, and has a house that is now rented to employees. Much of the property also featured a vineyard that has been cleared in stages. A large shed was constructed about 10 years ago to be used as a warehouse for a small business distributing packaging supplies for fruit and vegetables.

The analysis results show that there was no detectable level of herbicides or pesticides in soil samples collected during the site assessment.

The analysis results show that levels of hydrocarbon contamination were present in small quantities of stained soil. The TRH results for S1 and S3 exceeded the recommended investigation levels, particularly in the C10-C16 (F2) and C16-C34 (F3) fractions.

The soil was stained by oil leaking from tractors and other farming implements in the maintenance shed (S1) were contaminated by hydrocarbons as was expected. Also, the soil stained by minor spillage of diesel at the diesel tank (S3) was also contaminated by hydrocarbons. Only low levels of hydrocarbons were detected at S5, where small patches of soil were stained by oil leaking from a parked tractor.

Due to the fact the areas contaminated by hydrocarbons were very small, no immediate action is required from a regulatory or operational point of view, as there are no plausible pathways for the contaminated soil to be a threat to the environment or human health. However, as best practice, remediation and proper disposal of the contaminated soil should be considered. Such remediation or disposal should comply with National Environment Protection Measure (NEPM) guidelines.

Onsite remediation of soil would require the preparation of a Remedial Action Plan (RAP). Under NSW planning legislation consent may be required from the Wentworth Shire Council for remediation.

Off site disposal of will require the excavated soil to be classified as required by NSW EPA's waste classification guidelines. The classification of the soil hazard will determine the appropriate management and disposal facility for the contaminated soil.

Any suspected asbestos containing materials that may be present in the existing buildings will need to be managed in accordance with the NSW *Work Health and Safety Regulation 2011*. A qualified building inspector should be consulted prior to planning any renovations or demolition of existing buildings to identify materials suspected of containing asbestos and to provide guidance on correct handling and disposal of those materials.

If the small quantities of stained soil are remediated or removed as waste, the site would then be suitable for residential use.

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1.0 Introduction

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- potential sources of contamination and determine potential contaminants of concern
- areas of potential contamination
- potential human and ecological receptors
- potentially affected media (soil, sediment, groundwater, surface water, indoor and ambient air).

1.1 Site Identification

The property is located at Gol Gol, NSW, on the corner of Gol Gol North Road and Kingfisher Road on the northern outskirts of the township. A location map is provided in Appendix 1. Gol Gol Creek is located adjacent to the eastern boundary of the property.

The property is comprised of three parcels:

- Lot A DP402812
- Lot 216 DP756946
- Lot 217 DP756946

According to SIX Maps (an online mapping tool for NSW), the property address is 26 Gol Gol North Road, Gol Gol.

1.2 Current and Proposed Use

The site is currently used for agriculture and distribution of packaging for fruit and vegetables. There are eight glasshouses for growing vegetables, a residential dwelling, a large shed for the storage and distribution of bins for the packing of fruit and vegetables, a workshop and a several smaller sheds used for housing agricultural equipment. The remainder of the site is used for growing vegetables.

The proposed use is residential, with the property proposed to be subdivided into small lots.

1.3 Zoning and Planning Overlays

The property is located within the Wentworth Shire Council, and is subject to the rural use zone (RU1 – Primary Production) as defined under the Wentworth Local Environmental Plan 2011.

2.0 Site Description

2.1 Geology, Soils and Topography

Gently undulating topography dominates the landforms of the region. The property is situated close to the centre of the Murray Basin, which is a depression that has filled with tertiary marine and non-marine sediments. This sequence has subsequently been overlain by Quaternary aged aeolian, fluvial and lacustrine sediments.

The property is located on the edge of the Murray River floodplain, with the eastern boundary running alongside Gol Gol Creek (also known as Moontongue Creek).

Gol Gol Creek flows in a north easterly direction to Gol Gol Swamp and ultimately Lake Gol Gol. The creek is a distributary of the Murray River, with the junction situated 1 km south west of the property.

Above the floodplain, the soils are formed from Quaternary aged, aeolian deposits known as the Woorinen formation. Soils formed from this material are characterised by horizons of concentrated calcium carbonate (finely divided lime or calcrete rubble). These soils are commonly sandy at the surface, with the clay content increasing down the profile.

The Murray River floodplain consists of Quaternary fine-textured alluvial deposits which are prevalent adjacent the property in Gol Gol Creek.

The topography of the property and surrounding land is relatively flat. The property is elevated about 3 - 5m above the normal water level in Gol Gol Creek. There is a gentle slope across the property which falls to the south east towards the creek. The eastern boundary of the property is aligned with the top of the creek bank.

2.2 Vegetation

The property was cleared of native vegetation to enable use for agriculture.

The vegetation prior to clearing would have been a mix of Semi-arid Woodland and Inland Floodplain Woodlands, as the property lies on the transition zone from floodplain to higher ground. A mix of Black Box open woodland with native pine and Black Oak - Western Rosewood open woodland would have been expected. There is remnant riverine vegetation present alongside Gol Gol Creek with a mix of River Red Gum and Black Box woodlands.

2.3 Groundwater

There are no groundwater bores shown within 500m of the property according to the NSW Office of Water online groundwater database. There is one bore located about 900m to the east (GW087069). Monitoring data since 1972, when the bore was installed show that the depth of groundwater varies between 4 – 5m below the surface. The location is shown on the inset map in Appendix 1.

2.4 Sources of Information

Information for this preliminary assessment has been obtained from the following sources:

- Mr Marco Ceilo – current property owner
- Wentworth Shire Council – site history and general site information
- NSW Land & Property Information – Spatial Information Exchange (SIX Maps)

- NSW Land & Property Information – Historical Lands Records Viewer (HLRV)
- InfoTrack Pty Limited – Historic title information
- Department of Primary Industries - geology, groundwater bore data and surface water, vegetation
- NSW Office of Water - geology, soils, vegetation
- NSW EPA – online search of the public register under *Section 308 of the Protection of the Environment Operations Act 1997 (the POEO Act)*
- Satellite imagery
- Aerial photography
- Site layout plans
- Trove – National Library of Australia archives
- A site inspection conducted on 30 April 2018.

2.5 Previous and Current Land Use

On 17 March 1836, the surveyor Thomas Livingston Mitchell set out on an expedition from central NSW near Orange, with 25 men, two boats, a train of bullock carts and a herd of at least 100 cattle, which were to be used for food when wild animals were scarce.

On his arrival at the site of the future village the local Aboriginals informed Mitchell that the area next to the Murray River was called Gol Gol (meaning meeting place). Mitchell generally used Aboriginal names when marking his maps as he felt that a map was more useful if settlers could ask the local inhabitants for help. When Mitchell returned to his base camp on the 4 June 1836 he passed on the name of Gol Gol to his superiors.

Dr Dugald Fletcher was one of the first settlers in the area, and took procession of Tapio Station in 1846. Tapio Station in 1870 was 600,000 acres and occupied the area east of the Darling River, north of the Murray River and Mallee Cliffs Station, south of Burtundy Station, and east of Arumpo Station. Dr Dugald Fletcher's family managed Tapio Station after his death in 1869. The portion of Tapio east of the Darling River was sold to a partnership known as Service, Brooke and Ormand in 1871.

In 1865 a survey was undertaken by the NSW government to determine the site of the proposed Gol Gol township alongside the Murray River, which was notified in the government Gazette of 1866.

In 1871 sales began of allotments at Gol Gol but it took a decade for many of them to be occupied.

Gol Gol, in the early 1880's was a small village. The mostly underdeveloped town site was recorded as having one hotel, one store, one stone building residence, a cemetery with three graves and one log hut. It was also an important stop along the old coach road used by travellers.

Ben Chaffey purchases Tapio in 1905 and divided it into smaller parcels, then Eli Barnfield purchased a downsized section of Tapio in 1906. The remainder was purchased by Sylvester Byrnes and referred to a Wamberra Station. Both families still own their portions.

The Gol Gol township continued to increase in size as a result of irrigated horticulture being established in the surrounding area. Market gardens were developed by local families alongside the township at this time.

The land now occupied by the existing property was Crown land occupied under Western Lands Lease (WLL). The land under WLL surrounding the township was used for grazing and irrigated horticulture.

In 1943, George Herbert Eastwell was granted a portion of WLL2818 as freehold land, then referred to as Allotment 58. Allotment 58 was the southern portion of the property now referred to as Lots A and B DP402812.

Aerial imagery captured in 1945 indicated that the site was being used for horticulture, with a structure visible, assumed to be the existing house on what is now referred to as Lot 216 DP756946.

In 1952, Allotment 58 was subdivided into two lots, A and B DP402812. George Herbert Eastwell retained Lot B, which is not subject to this ESA. James Joseph King, a local market gardener, purchased Lot A. The following year, in 1958, Giovanni Macri, also a market gardener, purchased Lot A. Although not part of this ESA, Lot B was also owned by the current owner of the site, who built a house in late 2010 on what was a part of a patch of vines that extended over Lot A.

In 1960, Licinio Cielo, a market gardener, purchased Lot A. He also purchased Lots 216 and 217 (located north of Lot A and south of Kingfisher Road). It is at that time that lots 216 and 217 were transferred from WLL (WLL2722 and WLL2818 respectively). Richard White was listed as the lessee of WLL2818 and S.R.A. Hancock was listed as lessee of WLL2722 in 1977 on the Western Lands Commission's *Town of Gol Gol and Environs* map.

Aerial imagery captured in 1972 showed the property was used for irrigated horticulture.

In 1984, Marco Cielo, Licinio's son, and Janet Mary Cielo took over procession of Lots A and B (DP402812) and Lots 216 and 217 (DP756946).

Marco Cielo is listed as the current proprietor of the property.

Table 1: Previous and current land owners

Land parcel	Volume-Folio	Proprietor	Date purchased	Comment
Tapio		Dr Dugald Fletcher	1846	Station used for grazing
Tapio		Service, Brooke and Ormand	1870's	Station used for grazing
Tapio		Gol Gol township surveyed	1865	
Tapio		Gol Gol township established	1880's	
Gol Gol township commons		Western Lands Lease	1901	Portions of land surrounding
Tapio		Ben Chaffey	1905	Station used for grazing
Tapio		Eli Barnfield	1906	Station used for grazing
Allotment 58	6445/18	George Herbert Eastwell	22/1/1943	Woodcutter and general labourer, Allotment 58 is created from a portion of WLL2818

Land parcel	Volume-Folio	Proprietor	Date purchased	Comment
Lot A DP402812	7432/152	James Joseph King	21/1/1952	Market gardener, Allotment 58 is subdivided into Lots A & B (G Eastwell retains Lot B)
Lot A DP402812	7524/60	Giovanni Macri	9/10/1985	Market gardener
Lot A DP402812		Licinio Cielo	19/91960	Market gardener
Lot A DP402812		Marco Cielo	1/8/1985	Market gardener/Current owner
WLL2722		S.R.A. Hancock	Unknown	Western lands lease
216 DP756946	15290/171	Licinio Cielo	18/12/1984	Market gardener, Lot 216 created after WLL is converted to freehold
216 DP756946		Marco Cielo	1/8/1985	Market gardener/Current owner
WLL2818		Richard White	Unknown	Western lands lease
217 DP756946	15290/214	Licinio Cielo	18/12/1984	Market gardener, Lot 217 created after WLL is converted to freehold
217 DP756946		Marco Cielo	1/8/1985	Market gardener/Current owner

2.6 Previous & Present Buildings & Structures

A review of historic aerial imagery and parish maps did not reveal the presence of any features of concern for agricultural properties such as shearing sheds, or sheep dips. A house appeared in aerial imagery captured in 1945 in the same position as the one that existed at the time of this assessment. The house is also visible in imagery captured in 1972, and was evident that at that time the property is being used for irrigated horticulture.

The buildings at the time of this assessment included the farmhouse (Figure 1), and a shed used for packing fruit and vegetables, an office and a maintenance/storage area (Figures 2 - 6). The house was estimated to be more that 50-60 years old and it is possible that it may contain asbestos containing materials. These materials were not identified as part of this assessment.

A large shed used by MC Bin Supplies as a warehouse to store fruit and vegetable packaging was located alongside Kingfisher Road (Figure 7). The shed was constructed about 10 years ago.

Figure 1: Farmhouse

Figure 2: Packing shed

Figure 3: Packing shed (left) and maintenance shed (right)

Figure 4: Packing shed

Figure 5: Packing shed and office

Figure 6: Maintenance and storage shed

Figure 7: Packaging supplies storage shed, Kingfisher Road is visible on the left

There are 8 glasshouses located at the north western part of the property for growing vegetables (Figure 8).

Figure 8: Glasshouses

At the north eastern part of the property near the edge of the escarpment to Gol Gol Creek were two small older sheds, the smaller one (Figure 9) was being used for storage and the larger one (Figure 10) was used for storage, but was also a workshop or maintenance shed in the past. Neither of these sheds was being used on a regular basis, and appear to have been used when the property incorporated a vineyard more than 10 years ago.

Figure 9: Old storage shed

Figure 10: Old storage and maintenance shed

A pump shed is located further south on the bank of Gol Gol Creek, (Figure 11). The pump motors are electric.

Figure 11: Pump shed on Gol Gol Creek

2.7 Wastes Produced & Disposal Locations

Rubbish and waste generated during activities on the property were collected in domestic and industrial bins and disposed of at the municipal landfill by contractors.

2.8 Discharges to Land & Water

According to the current owner, there have been no known discharges to land and water at the property that would cause concern for contamination. A search of the NSW EPA's database for penalty notices in the Wentworth Shire Council areas did not reveal any records. The property was not on the list of contaminated sites notified to the EPA as of 8 June 2018.

2.9 Product Spills, Losses, Incidents & Accidents

There were no formal recording systems identified for incidents or accidents by farm managers. No incidents or accidents that caused significant contamination were recalled by the current owner.

2.10 Spill Control Systems

There was no spill control system for the three aboveground fuel tanks, aside from regular checking of volumes of fuel products.

2.11 Chemical Storage & Transfer Areas

At the time of the site inspection, agricultural chemicals were stored in a secured facility in the maintenance shed with an impervious floor of concrete (Figure 12). There was no evidence of discharges or spillages from that area. There was a small quantity of fertilizers located nearby (Figure 13).

Figure 12: Chemical storage in the maintenance shed

Figure 13: Fertilizer storage area

There were three small aboveground fuel tanks located at the southern end of the packing shed. They appeared to be in good condition with only minor staining evident on the soil beneath them. Two of the tanks have been used for storing diesel, and the other for petrol.

Figure 14: Fuel storage area at the southern end of the packing shed

Figure 15: Fuel storage area at the southern end of the packing shed

2.12 Motive Power

Contamination issues relating to motive power was limited to vehicles and machinery for farming operations.

2.13 Sewer & Underground Services

The existing farmhouse was serviced by a septic sewerage system.

Other underground services to the property included telecommunication cables, water pipes as well as electricity in the vicinity of the farmhouse, sheds and pump sites.

The underground services are not expected to provide a conduit for any potential contaminants.

2.14 History of Adjacent Land Uses

Until recently, the land surrounding the property was all used for irrigated horticulture until the land on the opposite side of Gol Gol North Road was redeveloped for residential use more than 15 years ago. A fruit packing company, Simfresh, was established about 15 years ago on the opposite side of the intersection of Gol Gol North Road and Kingfisher Road.

No land use or activity in the vicinity of the property is suspected of posing a contamination risk.

3.0 Site Inspection

A site inspection was conducted on 30 April 2018 to gather information about the status of the property and observe any environmental concerns or potential issues.

The following features are an example of the types of evidence that were sought during the site inspection:

- Current uses of the site and surrounding uses
- Disturbed, coloured or stained soil
- Bare soil patches
- Disturbed or distressed vegetation
- Presence of chemical containers, holding tanks, mixing areas and tank fill points
- Unusual odours
- Quality of any surface water present
- Site topography and surface water drainage features
- Condition of buildings, concrete and bitumen, floors, tracks and roads
- Presence of fill, containment areas, sumps, drains and landfill sites – exposed or buried
- Underground structures that may be associated with sub-surface contamination
- Condition of materials storage and handling facilities and any solid or liquid waste disposal areas
- Any evidence of off-site migration, on-site spillage of dangerous goods, abnormal colouration of ground or surface waters or sheens on water surfaces
- Fuel storage and refuelling areas
- Sheep dips.

No areas were identified on the property that would indicate on-site or off-site contamination issues, aside from minor staining of soil from oil and diesel. The property did not have any unusual bare patches or signs of distressed or dying vegetation. No other types of evidence listed above were identified in the site history or site inspection. Figures 16 – 21 show the six locations suspected of having contaminants present which were identified during the site inspection. These locations are also shown on the map (Appendix 1).

Soil from the maintenance shed's earthen floor was observed to be stained from oil leakage where tractors and farm equipment were parked (Figure 16). A composite sample (S1) was taken from four locations in the patch of stained soil.

Discoloured soil from beneath a spray cart (Figure 17) was sampled (S2) by taking soil from three locations.

Soil stained by minor spillage during refuelling of plant and equipment was apparent at the base of two of the ASTs located at the southern end of the packing shed (Figure 19). A composite sample (S3) was taken from three of the patches of stained soil.

Bare soil was observed in the spaces between the glasshouses (Figure 19). The bare soil could indicate the use of herbicides. A composite sample was obtained using soil from 4 locations (Appendix 1) to ascertain if the soil contained excessive amounts of herbicides.

Stained soil observed beneath a parked tractor (Figure 20) was also selected for sample S5. It was a composite sample taken from three locations within a stained patch of soil.

Soil from the earthen floor of the older shed used for maintenance and storage (Figure 21) was also sampled (S6). There were four locations selected from the floor for the composite sample.

Figure 16: S1 – stained soil beneath parked tractor

Figure 17: S2 – stained soil beneath spray cart

Figure 18: S3 – stained soil beneath fuel tanks

Figure 19: S4 – bare soil between glasshouses

Figure 20: S5 – stained soil beneath parked tractor

Figure 21: S6 – soil forming the floor of older shed

4.0 Sample Collection & Analysis

4.1 Site Selection and Sampling

Based on the site history and the contaminants of concern, the sampling plan chosen was a *systematic judgemental* sampling pattern. Soil sampling locations were based on probable distribution of the contaminants as determined by the location evidence of potential contamination.

As described in Section 3.0, the sampling locations were selected by observing stained patches of soil, or bare patches of soil (Figures 16 – 21). Samples were taken from just below the soil surface. A map of the site showing the location of each sample point is appended (Appendix 1).

A total of six soil samples were collected and their details are presented in Table 2. The analysis results are provided in Appendix 2.

Table 2: Samples Taken for Laboratory Analysis

Sample	Sample Description	Smell Detected	Visual Staining
S1	Soil stained by oil on shed floor beneath parked tractors in maintenance shed. Composite sample taken from four locations.	Yes	Yes
S2	Soil beneath sprayer and next to chemical storage area. Composite sample taken from three locations.	No	Yes
S3	Soil featuring minor staining beneath aboveground fuel tanks. Composite sample taken from three locations.	Yes	Yes
S4	Bare soil between glasshouses. Composite sample taken from four locations.	No	No
S5	Oil stained soil beneath parked tractor with fork lift. Composite sample taken from 3 locations.	Yes	Yes
S6	Soil in older shed shed near creek. Composite sample taken from four locations.	No	No

The soil sampling was conducted using a stainless steel trowel. The samples at sampling sites were made up of the soil just below the surface (25-100 mm). The soil samples were placed into solvent-washed screw top glass jars supplied by the testing laboratory. Samples were despatched chilled in a portable cooler to the testing laboratory under chain of custody procedures.

The laboratory used for the soil testing was Envirolab. The laboratory is approved by the *National Association of Testing Authorities* (NATA), and the analyses conducted were within the NATA registration of the laboratory.

Sample analysis reflected the contaminants known to potentially occur at the site:

- Benzene, Toluene, Ethyl-benzene, Xylene and Naphthalene (BTEXN)
- Total Recoverable Hydrocarbons (TRH)
- Polycyclic Aromatic Hydrocarbons (PAH)
- Organochlorine and Organophosphorous Pesticides (OCP/OPP)
- Phenoxy Acid Herbicides.

Quality Assurance and Control (QA/QC) measures undertaken for this Stage included:

- Sampling tools cleaned between each sampling event
- Appropriate sample labelling, preservation, storage and transport under chain of custody procedures
- Laboratory analyses conducted within appropriate holding times
- Use of laboratories that hold NATA accreditation for the analyses undertaken
- Analysis of laboratory QA/QC samples including duplicates, blanks, matrix spikes, matrix spike duplicates and surrogates.

4.2 Analytical Techniques

The analytical techniques used by the testing laboratory (Envirolab) for the analysis of soil samples listed in Table 3.

Table 3: Soil Analysis Methods

Analysis	Method Reference
BTEX	Org-016
TRH C6 – C9	Org-016
TRH C10 – C36	Org-003
PAH	Org-012
OCP/OPP	Org-012
Herbicides	Org-031

5.0 Laboratory Analysis Results

5.1 Analysis Results & Interpretation

Relevant extracts are presented and discussed below in relation to soil criteria that are used to interpret the potential risks to human health and ecosystems from contaminants found on the site.

This interpretation uses the following levels from the *National Environmental Protection Measure* (NEPM) *Guidelines on Investigation Levels for Soil and Groundwater, Schedule B1 (1999)* as appropriate:

- Ecological investigation levels (EILs)
- Ecological screening levels (ESLs)
- Groundwater investigation level (GIL)
- Health investigation levels (HILs)
- Health screening levels (HSLs)
- Management limits (ML)

As described in Section 4, samples S1, S2 and S5 where analysed for hydrocarbon contamination (BTEXN, TRH and PAH), while samples S2, S4 and S6 where analysed for herbicides, organochlorine and organophosphorous pesticides (OCP/OPP).

5.2 Benzene, Toluene, Ethyl Benzene, Xylene and Naphthalene

There were no detectable levels of Benzene, Toluene, Ethyl Benzene, Xylene or Naphthalene (BTEXN) in any of the soil samples analysed (Table 4).

Table 4: BTEXN Concentrations in Soil Samples

Sample ID		BTEX			
	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Xylene (Total) mg/kg	Naphthalene mg/kg
S1	<0.2	<0.5	<1	<1	<1
S3	<0.2	<0.5	<1	<1	<1
S5	<0.2	<0.5	<1	<1	<1
Level 1	**10**	**10**	**1.5**	**10**	**10**
Level 2	**50**	**85**	**70**	**105**	**170**
Level 3	**75**	**135**	**165**	**180**	**370**

Note: BTEX – Benzene, Toluene, Ethyl Benzene & Xylene
Ecological Screening Levels for course textured soils (NEPM Schedule B1, Table 1B(6))
Level 1 – Areas of ecological significance
Level 2 – Urban residential and public open space
Level 3 – Commercial and industrial

5.3 Total Recoverable Hydrocarbons (TRH)

There were levels of TRH detected in soil samples S1, S3 and S5, particularly for the C16-C34 fractions (Table 5). The detectable levels in the higher fractions (F2-F3) are typically indicative of the presence of diesel fuel. The highest fractions (F3-F4) are typically indicative of the presence of lubricating oil. Samples S1 and S5 were both stained by oil so it was expected that hydrocarbons were detectable in the F3 and F4 fractions. Sample S3 was from soil that was stained by diesel, so it was expected that hydrocarbons were detectable in the F2 and F3 fractions. Sample S1 had detectable levels in F3 that exceeded Levels 1 to 5. Sample S3 had detectable levels in F2 that exceeded Levels 1 to 3, and levels

in F3 that exceeded Levels 2 – 4. Sample S5 only had very low levels of hydrocarbons detectable in F3.

The management limits are used to consider the formation of light non aqueous phase liquids, fire and explosion risks and damage to buried infrastructure. These values assist with evaluation of human health and ecological risks and risks to groundwater resources and apply to all soil depths based on site-specific considerations. Levels 1, 2, 3, 4 and 5 relate to the typically coarse texture of the soil surface that was sampled.

Table 5: Total Recoverable Hydrocarbon Concentrations in Soil Samples

Sample ID	Total Recoverable Hydrocarbons			
	C6-C10 (F1) mg/kg	C10-C16 (F2) mg/kg	C16-C34 (F3) mg/kg	C34-C40 (F4) mg/kg
S1	<25	62	**5,800**	2,100
S3	<25	**840**	**3,400**	<100
S5	<25	<50	110	<100
Level 1	**125**	**25**	**-**	**-**
Level 2	**180**	**120**	**300**	**2800**
Level 3	**215**	**170**	**1700**	**3300**
Level 4	**700**	**1000**	**2500**	**10000**
Level 5	**700**	**1000**	**3500**	**10000**

Note: Ecological Screening Levels for course textured soil (NEPM Schedule B1, Table 1B(6))
Level 1 – Areas of ecological significance
Level 2 – Urban residential and public open space
Level 3 – Commercial and industrial

Management Limits for TPH fractions F1-F4 in course textured soil (NEPM Schedule B1, Table 1B(7))
Level 4 - Residential, parkland and public open space
Level 5 - Commercial and industrial

5.4 Polycyclic Aromatic Hydrocarbons

The list of Polycyclic Aromatic Hydrocarbons (PAH) that were analysed is shown in the appended laboratory analysis report (Appendix 2). The total amount of PAHs found in each sample is shown in Table 6, along with the specific PAH chemicals that were detected. Only a very low amount of Pyrene was detected in sample S3. It did not exceed Levels 1 to 5. No other PAHs were detectable.

Table 6: Polycyclic Aromatic Hydrocarbons in Soil

Sample Id	PAH detected (mg/kg)	Total PAH (mg/kg)
S1	Nil	<0.1
S3	Pyrene (0.8)	0.8
S5	Nil	<0.1
Level 1		**300**
Level 2		**4000**
Level 3		**10**
Level 4		**170**
Level 5		**370**

Note: Health investigation levels for direct contact with soil (NEPM Schedule B1, Table 1A(1):
Level 1 – Recreational (HIL C);
Level 2 – Commercial/Industrial (HIL D);

Ecological Investigation Levels for soil (NEPM Schedule B1, Table 1B(5)):
Level 3 – Areas of ecological significance (Naphthalene);
Level 4 – Urban residential and public open space (Naphthalene);
Level 5 – Commercial and industrial (Naphthalene)

5.5 Organochlorine and Organophosphorous Pesticides

The list of organochlorine and organophosphorous pesticides (OCP/OPP) that were analysed is shown in the appended laboratory analysis report (Appendix 2). The total amount of pesticides found in each sample is shown in Table 7, along with any specific pesticides that were detected. No OCPs or OPPs were detectable in samples S2, S4 or S6.

Table 7: Organochlorine and Organophosphorous Pesticides in Soil

Sample Id	OCP/OPPs detected (mg/kg)	Total OCP/OPP (mg/kg)
S2	Nil	<0.1
S4	Nil	<0.1
S6	Nil	<0.1

Note: Health investigation levels for direct contact with soil for selected OCPs and OPPs are provided in NEPM Schedule B1, Table 1A(1).

5.6 Phenoxy Acid Herbicides

The full list of Phenoxy Acid Herbicides that were analysed are shown in the laboratory analysis report (Appendix 2). The total amount of herbicides found in each sample is shown in Table 8, along with any specific herbicides that were detected. No herbicides were detectable in samples S2, S4 or S6.

Table 8: Phenoxy Acid Herbicides in Soil

Sample Id	Herbicides detected (mg/kg)	Total Herbicides (mg/kg)
S2	Nil	<1
S4	Nil	<1
S6	Nil	<1

Note: Health investigation levels for direct contact with soil for selected herbicides are provided in NEPM Schedule B1, Table 1A(1).

6.0 Conclusion and Recommendations

The analysis results show that there were no detectable levels of herbicides or pesticides in soil samples S2, S4 or S6.

The analysis results show that levels of hydrocarbon contamination were present in small quantities of stained soil. The TRH results for S1 and S3 exceeded the recommended investigation levels, particularly in the C10-C16 (F2) and C16-C34 (F3) fractions.

The soil stained by oil leaking from tractors and other farming implements in the maintenance shed (S1) was contaminated by hydrocarbons, as was expected. Also, the soil stained by spillage of diesel at the diesel tank (S3) was also contaminated by hydrocarbons. Only low levels of hydrocarbons were detected at S5, were small patches of soil were stained by oil leaking from a parked tractor.

Due to the fact the areas contaminated by hydrocarbons were very small, no immediate action is required from a regulatory or operational point of view, as there are no plausible pathways for the contaminated soil to be a threat to the environment or human health. However, as best practice, remediation and proper disposal of the contaminated soil should be considered. Such remediation or disposal should comply with *National Environment Protection Measure* (NEPM) *guidelines*.

Onsite remediation of soil would require the preparation of a *Remedial Action Plan* (RAP). Consultation with regulatory authorities and nearby owners and occupiers potentially affected by the land farming activities should occur early in the planning process. NSW planning legislation may require approvals from the Wentworth Shire Council.

Off site disposal of will require the excavated soil to be classified as required by NSW EPA's waste classification guidelines. The classification of the soil hazard will determine the appropriate management and disposal facility for the contaminated soil.

Any suspected asbestos containing materials that may be present in the existing buildings will need to be managed in accordance with the NSW *Work Health and Safety Regulation 2011*. A qualified building inspector should be consulted prior to planning any renovations or demolition of existing buildings to identify materials suspected of containing asbestos and to provide guidance on correct handling and disposal of those materials.

If the small quantities of stained soil are remediated or removed as waste, the site would then be suitable for residential use.

6.1 Limitations

This report was prepared with the usual site history and file searches undertaken for a preliminary site investigation of this nature. The site history and sampling were carried out in accordance with the *Australian Standard 4482.1 – 2005* and the *National Environment Protection (Assessment of Site Contamination) Measure* (NEPM). A systematic judgemental sampling design was used, based on the known land uses, and the known activities at the site. However, the sampling undertaken cannot rule out the presence of contamination at localised points.

Appendix 1:

Location Map

Appendix 1 - Location Map
26 Gol Gol North Road
Gol Gol NSW

- Sampling Locations
- Bores
- Property Boundary
- Cadastre

House
Carport
KINGFISHER ROAD
Warehouse for MC Bin Supplies
Glasshouses
S2
S1
Maintenance shed
S4
216 DP756946
S3
Packing Shed/Office
S4
S5
Parked tractor
Aboveground fuel tanks
S4
Older shed
S4
217 DP756946
S6
GOL GOL NORTH ROAD
Pumpsite
A DP402812
Gol Gol Creek
Lot B DP402812
GW087069
2015 imagery

SUNRAYSIA environmental
Land, Water & Environment

Date: 15/06/2018 Page size: A3 Job Ref: #63

Spatial grid datum and projection: GDA 94, MGA Zone 54

While every effort has been made to ensure map accuracy, Sunraysia Environmental takes no responsibility for the spatial accuracy of information displayed on this map.

N W E S

Scale - 1 : 1,000

0 25 50 100 Metres

Appendix 2:

Laboratory Analysis Report

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
1 Dalmore Drive Scoresby VIC 3179
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 13655

Client Details

Client	Sunraysia Environmental
Attention	Nathan Floramo
Address	84 Lemon Avenue, VIC, 3500

Sample Details

Your Reference	**#63**
Number of Samples	6 Soil
Date samples received	02/05/2018
Date completed instructions received	02/05/2018

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	09/05/2018
Date of Issue	09/05/2018

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Chris De Luca, Senior Chemist

Authorised By

Pamela Adams, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		13655-1	13655-3	13655-5
Your Reference	UNITS	S1	S3	S5
Date Sampled		30/04/2018	30/04/2018	30/04/2018
Type of sample		Soil	Soil	Soil
Date extracted	-	04/05/2018	04/05/2018	04/05/2018
Date analysed	-	04/05/2018	05/05/2018	05/05/2018
vTRH C_6 - C_9	mg/kg	<25	<25	<25
vTRH C_6 - C_{10}	mg/kg	<25	<25	<25
TRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	86	83	90

TRH Soil C10-C40 NEPM				
Our Reference		13655-1	13655-3	13655-5
Your Reference	UNITS	S1	S3	S5
Date Sampled		30/04/2018	30/04/2018	30/04/2018
Type of sample		Soil	Soil	Soil
Date extracted	-	04/05/2018	04/05/2018	04/05/2018
Date analysed	-	05/05/2018	07/05/2018	07/05/2018
TRH C_{10} - C_{14}	mg/kg	<50	140	<50
TRH C_{15} - C_{28}	mg/kg	3,300	4,100	<100
TRH C_{29} - C_{36}	mg/kg	3,500	<100	<100
Total +ve TRH (C10-C36)	mg/kg	6,800	4,200	<50
TRH >C_{10} -C_{16}	mg/kg	62	840	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	62	840	<50
TRH >C_{16} -C_{34}	mg/kg	5,800	3,400	110
TRH >C_{34} -C_{40}	mg/kg	2,100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	8,000	4,300	110
Surrogate o-Terphenyl	%	72	#	87

PAHs in Soil				
Our Reference		13655-1	13655-3	13655-5
Your Reference	UNITS	S1	S3	S5
Date Sampled		30/04/2018	30/04/2018	30/04/2018
Type of sample		Soil	Soil	Soil
Date extracted	-	04/05/2018	04/05/2018	04/05/2018
Date analysed	-	05/05/2018	05/05/2018	05/05/2018
Naphthalene	mg/kg	<1	<0.1	<0.1
Acenaphthylene	mg/kg	<1	<0.1	<0.1
Acenaphthene	mg/kg	<1	<0.1	<0.1
Fluorene	mg/kg	<1	<0.1	<0.1
Phenanthrene	mg/kg	<1	<0.1	<0.1
Anthracene	mg/kg	<1	<0.1	<0.1
Fluoranthene	mg/kg	<1	<0.1	<0.1
Pyrene	mg/kg	<1	0.8	<0.1
Benzo(a)anthracene	mg/kg	<1	<0.2	<0.1
Chrysene	mg/kg	<1	<0.2	<0.1
Benzo(b,j&k)fluoranthene	mg/kg	<2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.5	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	0.79	<0.05
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (Half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (PQL)	mg/kg	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d_{14}	%	110	94	88

OCP in Soil				
Our Reference	UNITS	13655-2	13655-4	13655-6
Your Reference		S2	S4	S6
Date Sampled		30/04/2018	30/04/2018	30/04/2018
Type of sample		Soil	Soil	Soil
Date extracted	-	04/05/2018	04/05/2018	04/05/2018
Date analysed	-	05/05/2018	05/05/2018	05/05/2018
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
Hexachlorobenzene	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve reported DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	98	112	104

OP in Soil				
Our Reference		13655-2	13655-4	13655-6
Your Reference	UNITS	S2	S4	S6
Date Sampled		30/04/2018	30/04/2018	30/04/2018
Type of sample		Soil	Soil	Soil
Date extracted	-	04/05/2018	04/05/2018	04/05/2018
Date analysed	-	05/05/2018	05/05/2018	05/05/2018
Azinphos-methyl	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Dichlorovos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	13	<0.1	0.15
Parathion	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	98	112	104

Phenoxy Acid Herbicides in Soil				
Our Reference		13655-2	13655-4	13655-6
Your Reference	UNITS	S2	S4	S6
Date Sampled		30/04/2018	30/04/2018	30/04/2018
Type of sample		Soil	Soil	Soil
Date Extracted	-	07/05/2018	07/05/2018	07/05/2018
Date analysed	-	07/05/2018	07/05/2018	07/05/2018
Clopyralid	mg/kg	<0.5	<0.5	<0.5
3,5-Dichlorobenzoic acid	mg/kg	<0.5	<0.5	<0.5
o-Chlorophenoxy acetic acid	mg/kg	<0.5	<0.5	<0.5
4-CPA	mg/kg	<0.5	<0.5	<0.5
Dicamba	mg/kg	<0.5	<0.5	<0.5
Mecoprop	mg/kg	<0.5	<0.5	<0.5
MCPA	mg/kg	<0.5	<0.5	<0.5
Dichloroprop	mg/kg	<0.5	<0.5	<0.5
2,4-D	mg/kg	<0.5	<0.5	<0.5
Bromoxynil	mg/kg	<0.5	<0.5	<0.5
Triclopyr	mg/kg	<0.5	<0.5	<0.5
2,4,5-TP (Silvex)	mg/kg	<0.5	<0.5	<0.5
2,4,5-T	mg/kg	<0.5	<0.5	<0.5
MCPB	mg/kg	<0.5	<0.5	<0.5
2.4-DB	mg/kg	<0.5	<1	<1
Dinoseb	mg/kg	<1	<0.5	<0.5
Ioxynil	mg/kg	<1	<1	<1
Picloram	mg/kg	<0.5	<0.5	<0.5
DCPA (Chlorthal) Diacid	mg/kg	<0.5	<0.5	<0.5
Acifluorfen	mg/kg	<2	<2	<2
2,4,6-T	mg/kg	<0.5	<0.5	<0.5
2,6-D	mg/kg	<0.5	<0.5	<0.5
Surrogate: 2,4-DCPA	%	100	99	100

Moisture						
Our Reference		13655-1	13655-2	13655-3	13655-4	13655-5
Your Reference	UNITS	S1	S2	S3	S4	S5
Date Sampled		30/04/2018	30/04/2018	30/04/2018	30/04/2018	30/04/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/05/2018	04/05/2018	04/05/2018	04/05/2018	04/05/2018
Date analysed	-	07/05/2018	07/05/2018	07/05/2018	07/05/2018	07/05/2018
Moisture	%	0.9	0.6	2.7	1.0	1.8

Moisture		
Our Reference		13655-6
Your Reference	UNITS	S6
Date Sampled		30/04/2018
Type of sample		Soil
Date prepared	-	04/05/2018
Date analysed	-	07/05/2018
Moisture	%	2.5

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 12 hours.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Note, For OCs the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Method ID	Methodology Summary
ORG-031	Acid herbicides and speciated phenols in soil by DCM:Acetone extraction with derivatisation and determination by GC-MS. Haloacetic acids in waters are derivatised and analysed by GC-ECD. Acid herbicides, speciated phenols, carbamates and ureas in water by DCM extraction with derivatisation and determination by GC-MS. Analysed by MPL, NATA accrediation 2901.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			04/05/2018	[NT]	[NT]	[NT]	[NT]	04/05/2018	[NT]
Date analysed	-			04/05/2018	[NT]	[NT]	[NT]	[NT]	04/05/2018	[NT]
vTRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	84	[NT]
vTRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	84	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	90	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	84	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	87	[NT]	[NT]	[NT]	[NT]	88	[NT]

QUALITY CONTROL: TRH Soil C10-C40 NEPM						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			04/05/2018	[NT]	[NT]	[NT]	[NT]	04/05/2018	[NT]
Date analysed	-			04/05/2018	[NT]	[NT]	[NT]	[NT]	04/05/2018	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	75	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	75	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	80	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	75	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	75	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	80	[NT]
Surrogate o-Terphenyl	%		Org-003	82	[NT]	[NT]	[NT]	[NT]	76	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			04/05/2018	[NT]	[NT]	[NT]	[NT]	04/05/2018	[NT]
Date analysed	-			05/05/2018	[NT]	[NT]	[NT]	[NT]	05/05/2018	[NT]
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Benzo(b,j&k)fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	[NT]	[NT]	68	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-012	106	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: OCP in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			04/05/2018	[NT]	[NT]	[NT]	[NT]	04/05/2018	[NT]
Date analysed	-			05/05/2018	[NT]	[NT]	[NT]	[NT]	05/05/2018	[NT]
alpha-BHC	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Hexachlorobenzene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
gamma-BHC	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
delta-BHC	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
gamma-Chlordane	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
alpha-chlordane	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Dieldrin	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Endrin	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	60	[NT]
Endosulfan II	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	124	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	68	[NT]
Methoxychlor	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-012	106	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: OP in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			04/05/2018	[NT]	[NT]	[NT]	[NT]	04/05/2018	[NT]
Date analysed	-			05/05/2018	[NT]	[NT]	[NT]	[NT]	05/05/2018	[NT]
Azinphos-methyl	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorovos	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Fenitrothion	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	76	[NT]
Malathion	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-012	106	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: Phenoxy Acid Herbicides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Clopyralid	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
3,5-Dichlorobenzoic acid	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
o-Chlorophenoxy acetic acid	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-CPA	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dicamba	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	88	[NT]
Mecoprop	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	89	[NT]
MCPA	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	92	[NT]
Dichloroprop	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4-D	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	85	[NT]
Bromoxynil	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Triclopyr	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-TP (Silvex)	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,5-T	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	82	[NT]
MCPB	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2.4-DB	mg/kg	0.5	ORG-031	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dinoseb	mg/kg	1	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ioxynil	mg/kg	1	ORG-031	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Picloram	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
DCPA (Chlorthal) Diacid	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acifluorfen	mg/kg	2	ORG-031	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,4,6-T	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2,6-D	mg/kg	0.5	ORG-031	<0.5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate: 2,4-DCPA	%		ORG-031	98	[NT]	[NT]	[NT]	[NT]	99	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Report Comments

TRH: # Percent recovery is not possible to report as the high concentration of analytes in the sample/s have caused interference.

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