gsa planning

PLANNING PROPOSAL

For an additional permitted use at

No. 3843 Old Hume Highway, Berrima

Prepared for:
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1.0 INTRODUCTION

This Planning Proposal has been prepared for Andrew and Melce Leimroth by Gary Shiels & Associates Pty Ltd – (hereafter referred to as GSA Planning). GSA Planning has expertise in Urban Design, Environmental & Traffic Planning.

This planning proposal is for No. 3483 Old Hume Highway, Berrima being Lots 8 to 17 DP 758098 being (hereafter referred to as the "subject site").

This Planning Proposal to amend the Wingecarribee Local Environmental Plan (LEP) 2010 has been prepared in accordance with the NSW Department of Planning and Infrastructure's *"A Guide to Preparing Planning Proposals".* The proposal is to include an additional permitted use in Schedule 1 to allow a *vehicle repair station* on the subject site.

The inclusion of this additional permitted use would allow Berrima Diesel Services, being specialist modifiers of diesel vehicles, to continue to operate from the subject site.

The continued operation of Berrima Diesel Services is justified for the following four (4) reasons which will be discussed in Section 4.0 of this report:

- Berrima Diesel Services has been in continuous operation since 1985 without complaint from neighbours or Council;
- The use of the site satisfies the objectives of the E3 Zone;
- The use satisfies the criteria for Planning Proposals established by DoPI; and,
- The planning proposal is consistent with Section 117 Directions that have been issued by the Minister for Planning and Infrastructure.

This document is divided into ten (10) sections. Section 2 contains a site analysis, Section 3 outlines the statutory context, Section 4 contains the details of the Planning Proposal, Section 5 contains a justification, Section 6 assesses the proposal against the NSW DoPI guidelines, Section 7 assesses the consistency of the Planning Proposal against the relevant Section 117 Directions, Section 8 addresses the Environmental, Social and Economic impacts of the proposal, Section 9 considers any state and commonwealth interests and Section 10 concludes the report.

2.0 SITE ANALYSIS

This section contains a description of the following: The Site; Existing Vegetation; Existing Built Form and Access; and The Surrounds.

2.1 The Site

The subject site is located on the eastern side of the Old Hume Highway and is known as No. 3483 Old Hume Highway, Berrima, described as Lots 8 to 17 DP 758098. The site is located approximately 1km south west of the township of Berrima, NSW (see Figure 1). The site is an irregularly shaped allotment, with a northern boundary of approximately 85m, an eastern boundary of approximately 185m, a southern boundary of approximately 211m and a western frontage to the Old Hume Highway of 224m, providing a total site area of approximately 2.7ha. The site has a gentle downward slope of 1:15 from south east to north west.

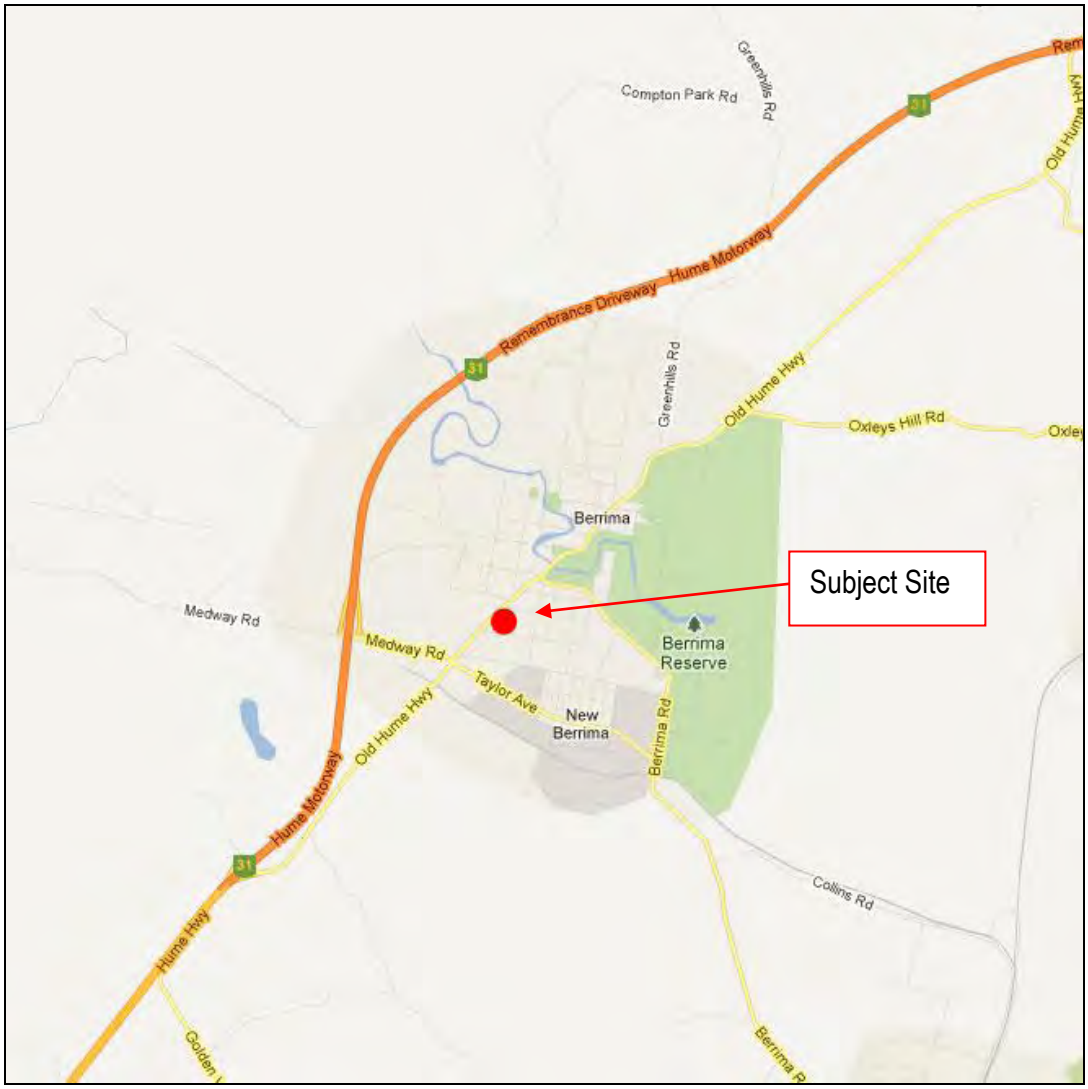


FIGURE 1: LOCATION PLAN

2.2 Existing Vegetation

The site incorporates a significant amount of landscaping throughout and has established landscape buffers at its boundaries. Within the site, to the north of existing built form, is a landscape buffer (see Photograph 1). From this vegetation there is a separation of approximately 45 metres to the northern boundary, where there is a second landscape buffer. To the east of the built form there is a row of recently planted trees along the boundary of the subject site and there is an extensive amount of bushland on the adjoining property at No. 3471 Old Hume Highway (see Figure 2 and Photographs 1 and 2).

The dwelling on No. 3471 Old Hume Highway is approximately 135 metres from the boundary and is obscured by this extensive bushland.

To the south are various outbuildings, some open area, and scattered landscaping. In a similar fashion to the other boundaries, landscape screening is located on the southern boundary of the site, approximately 120 metres away from the principal buildings on the subject site.

To the west on the site is landscaping surrounding a driveway. The western boundary of the site is approximately 85 metres west of an existing dwelling. Beyond the boundary is Council's verge, which contains scattered landscaping, and the Old Hume Highway.

Photograph 1: Vegetation to the north of the hardstanding area.

Photograph 2: Recently planted landscaping on the subject site and dense bushland on the neighbouring site.

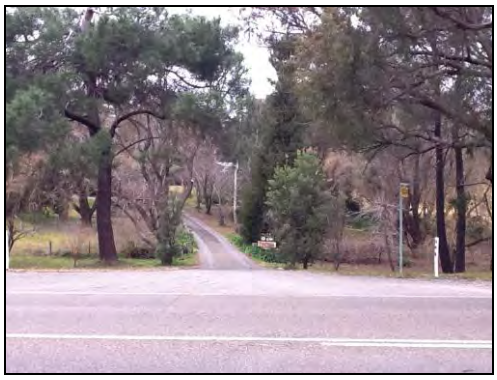
2.3 Existing Built Form and Access

Built form on the subject site comprises a dwelling, a workshop and an office building associated with the vehicle repair station and miscellaneous outbuildings (see Figure 1).

Access to the site is gained via a single lane driveway off the Old Hume Highway (see Photograph 3). At the end of the driveway is a single storey dwelling house (see Photograph 4) which is located approximately 70 metres from Old Hume Highway behind an area of dense landscaping.

To the east of the dwelling is the workshop and office building occupied by Berrima Diesel Services. This building comprises office space, three (3) vehicle service bays, a dyno tuning bay and a small outdoor wash bay (see Photographs 5 and 6 on the following page).

To the immediate north of the workshop building is an area of concrete and gravel hardstand which facilitates vehicle manoeuvring. This hardstand area is bounded to the north and east by landscape buffers.



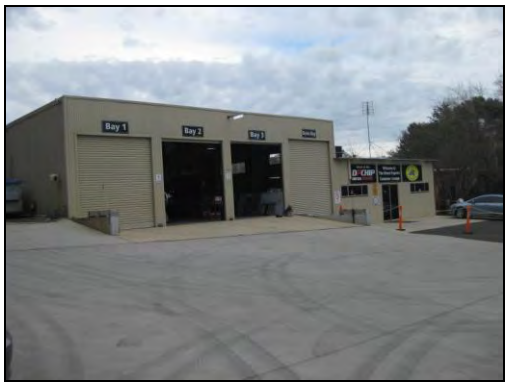
Photograph 3: The entrance to the subject site off the Old Hume Highway.

Photograph 4: The existing dwelling on the subject site.

FIGURE 2: EXISTING BUILT FORM ON SUBJECT SITE

To the south of the workshop building is a small car parking area for staff, two (2) shipping containers used for general storage, a shed and two additional outbuildings.

Photograph 5: The workshop building to the east of the dwelling**.**



Photograph 6: The workshop, office and hardstand area.

2.4 The Surrounds

Development in the surrounding area comprises rural holdings and rural residential development (see Figure 3). To the north of the site, on the corner of the Old Hume Highway and Raglan Street, and beyond an extensive landscape buffer, is a dwelling on a small holding.

FIGURE 3: AERIAL PHOTO OF SITE AND SURROUNDS

This dwelling is approximately 80 metres from the workshop building and is screened from the subject site by dense landscaping. Further to the north, on the opposite side of Raglan Street, is vacant land.

To the east, at No.3471 Old Hume Highway, is a rural holding containing very dense landscaping and a residential dwelling. This dwelling is located approximately 135 metres from the workshop building and is also not visible from the subject site due to the extensive vegetation.

To the south, on the opposite side of Odessa Street, are two residential dwellings at No. 2 and No. 4 Odessa Street. Development on both sites appears to comprise residential dwellings and associated outbuildings. The nearest of these two dwellings is located approximately 160 metres south of the workshop building.

To the west, on the opposite side of the Old Hume Highway, is a larger rural holding containing buildings that are identified by Council mapping as being used for Water Supply purposes. The nearest of these buildings is located approximately 380 metres from the boundary of the subject site.

3.0 STATUTORY CONTEXT

3.1 Wingecarribee LEP 2010

The Wingecarribee LEP 2010 was gazetted on 16 June 2010 and applies to the subject site. The site is zoned E3 Environmental Management under the LEP (see Figure 4).

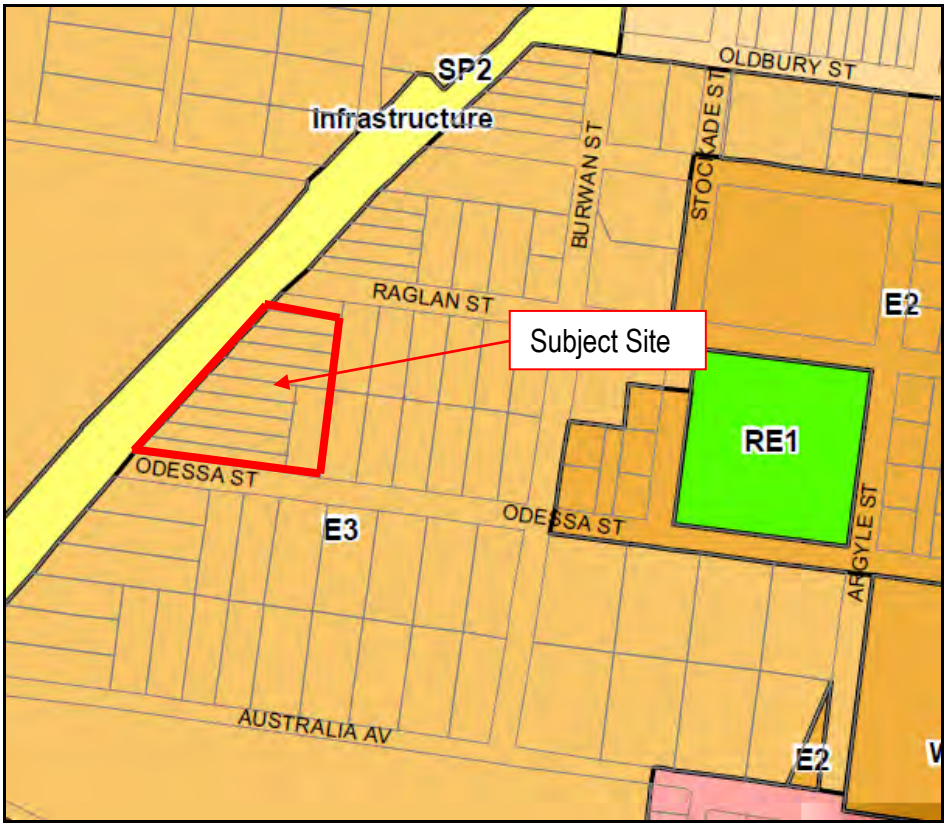


FIGURE 4: ZONING PLAN – WINGECARRIBEE LEP 2010

The Land Use Table within the LEP lists the objectives of the E3 Environmental Management Zone. The Land Use Table also identifies permissible uses, and as a *vehicle repair station* is not listed as being permitted with consent, it is a prohibited use in the zone.

The use of the subject site by Berrima Diesel Services predates the existence of the Wingecarribee LEP 2010 however in our opinion, it is appropriate to consider the use against the objectives of the E3 Zone. The objectives of the E3 Zone, and our planning responses to each, are as follows:

- *To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values.*

Response: The owners of the subject site have retained and embellished the vegetation along the road frontage, as well as throughout the site, and by doing so are responsibly managing the ecological values of the area. Berrima Diesel Services also makes use of scientific processes in its operation as the business is an installer of Diesel Power Chips which work to increase timing and efficiency of diesel engines to increase efficiency and reduce vehicle emissions. In our opinion the Proposal satisfies this objective.

- *To provide for a limited range of development that does not have an adverse effect on those values.*

Response: The business has been in operation for 27 years and in this time, the owners have taken every available step to minimise potential impacts on adjoining properties. Specifically the use is low intensity, does not generate any unreasonable noise, operates only during reasonable working hours and ensures any flood lights are appropriately shielded. The owners have also undertaken additional studies relating to stormwater management to ensure the operation of the business continues to protect and manage the ecological values of surrounding areas.

- *To encourage the retention of the remaining evidence of significant historic and social values expressed in existing landscape and land use patterns.*

Response: Although the site has no specific heritage value, the retention of the dwelling on the subject site has preserved the character and setting of the area. In addition to this, the location of the sheds to the rear of the dwelling and behind extensive screening is sympathetic to the surrounding land use pattern.

- *To minimise the proliferation of buildings and other structures in these sensitive landscape areas.*

Response: As outlined, the owners of the site have ensured that landscaping on the subject site has been maintained and embellished and that built form has been sensitively integrated with the surrounding landscape.

- *To provide for a restricted range of development and land use activities that provide for rural settlement, sustainable agriculture, other types of economic and employment development, recreation and community amenity in identified drinking water catchment areas.*

Response: Berrima Diesel Services has been an integral part of the Berrima Economy for almost three decades. It provides employment to 13 people and due to the specialised nature of the use; customers often travel to the region from other parts of Australia. When customers travel to the business they occupy local accommodation and will often shop with other local businesses. Continued operation of Berrima Diesel Services will benefit the local economy of Berrima and allow the continued employment of a number of local residents.

- *To protect significant agricultural resources (soil, water and vegetation) in recognition of their value to Wingecarribee's longer term economic sustainability.*

Response: While Berrima Diesel is not an agricultural use, the owners of the site are very environmentally responsible. As outlined, recent studies into stormwater management have been undertaken and the business is operated in a fashion that seeks to minimise potential impacts on neighbouring properties.

In summary, while the operation of Berrima Diesel Services from the subject site predates the Wingecarribee LEP 2010, the continued operation of the use from the subject site would, in our opinion, satisfy the objectives of the E3 Zone.

4.0 PLANNING PROPOSAL

This section has been prepared in accordance with the NSW Department of Planning and Infrastructure's, "A guide to preparing Planning Proposals" and "A guide to preparing Local Environmental Plans". This Section includes: a Background to the Planning Proposal; the Objectives and Intended Outcomes; and an Explanation of the Planning Provisions.

4.1 Background to the Planning Proposal

Berrima Diesel has operated from the site, in one form or another, for more than 27 years. In this time, the use has become an established part of the landuse pattern in the area, an important employment generating use and a significant contributor to the social fabric of Berrima. This section will provide a synopsis of the use of the site from 1985 to the present.

In **1985**, the father of the Applicant began operating 'Berrima Diesel Services' from the subject site. The family have also continuously resided at the address since before this date. The business has evolved since 1985, as is the case with all businesses, to meet the modern day needs of clients.

On **3 April 1990**, in response to an enquiry from the property owner, Council issued correspondence noting that the property had been used for the purposes of mechanical repairs for a considerable time and provided that the business was operating under 'Existing Use Rights'. This correspondence states, inter alia:

> *"Council notes that a building located at the rear of the dwelling house located on the property 'Tyacoma' has been used for the purpose of mechanical repairs for a considerable period of time. Council confirms that the provisions of Division 2 of the Environmental Planning and Assessment Act 1979 – 'Existing Use Rights' applies to these premises. Accordingly, you are advised that Council raises no objection to a continuance of the use in accordance with the provisions of Division 2 of the Act."*

On the basis of that letter, Andrew Leimroth became fully involved in the practice with his father and began to offer the aforementioned specialist services.

On **26 May 2010**, Council received a letter of complaint from a Solicitor representing the residents of the neighbouring property. This complaint made reference to construction of additional buildings, lighting and permissibility of the land use. Council staff subsequently inspected the subject site.

On **1 May 2012**, Council issued an Order, pursuant to Sections 121B and 125 of the EP&A Act requiring the Applicant to "cease the use of the subject premises as a vehicle repair station".

On **27 September 2012**, Council's Solicitor advised our client that Council had resolved unanimously to do the following:

> *"That Council invite the owners of Lots 8 to 17 inclusive, Section 40, DP 758098, RN 3483 Old Hume Highway, Berrima, to submit a planning proposal seeking amendment of the Wingecarribee Local Environmental Plan to permit the continuing use of the property as a "vehicle repair station".*

In accordance with this resolution, GSA Planning has been engaged to prepare this planning proposal for consideration by Council and the DoPI.

4.2 Objectives or Intended Outcomes

This section sets out the objectives or intended outcomes of the planning proposal and comprises a statement of what is planned to be achieved, not how it is to be achieved.

The intended outcome of this planning proposal is to allow a vehicle repair station to operate from land known as No.3843 Old Hume Highway, Berrima, being Lot 8-17 in DP 758098. This will allow the continued operation of the established vehicle repair station, being Berrima Diesel Service, from the subject site.

4.3 Explanation of Proposed Provisions

The section provides an explanation of how the objectives or intended outcomes are to be achieved by means of new controls on development imposed through an LEP amendment.

This planning proposal requests that Schedule 1 of the Wingecarribee Local Environmental Plan 2010 be amended to include the following Clause:

31 Use of certain land at Old Hume Highway, Berrima

(1) This clause applies to land at 3843 Old Hume Highway, Berrima, being Lots 8 to 17 DP 758098

(2) Development for the purposes of a vehicle repair station is permitted with consent.

5.0 JUSTIFICATION

In our opinion, there are four (4) compelling reasons to amend Schedule 1 of the Wingecarribee LEP 2010. These reasons, and our planning justification of each, are as follows:

1 - Berrima Diesel Services has been in continuous operation since 1985 without complaint from neighbours or Council

The Leimroth Family have operated Berrima Diesel Services from the subject site for approximately 27 years. The family have also lived on the subject site during that time. In the almost three (3) decades that the family has operated the business, they have done everything in their ability to minimise impacts on adjoining land uses, and to co-exist with other land uses in the locality. The business minimises noise by only undertaking work within business hours and servicing vehicles within the sheds on the subject site. The business is highly specialised, involving mostly tuning of vehicles and electronic modification, and accordingly has a low turnover of vehicles; working on approximately three per day.

The owners also minimise potential impacts from lighting by maintaining extensive landscaping throughout the subject site, especially along boundary fences and retaining separation distances from neighbouring dwellings. The business only also uses external lights which firstly, are activated by motion sensor and secondly, are shielded to prevent overspill lighting during any short period that they may be activated.

Furthermore, and as outlined, the owners have recently undertaken a study into the business' environmental management processes to ensure it is operating in as environmentally responsible manner as possible.

In summary, it is our opinion that due to the minimal potential for amenity impacts, the continued use of the site by Berrima Diesel is considered to be in the public interest.

2 – The use of the site satisfies the objectives of the E3 Zone.

In our opinion the proposal satisfies the six (6) objectives of the E3 Environmental Management Zone contained in the Wingecarribee LEP 2010 (see Section 3.0). Our assessment of the objectives has determined that the proposal will continue to protect the ecological values of the area. The use has proved that it will not have an adverse impact on the ecological, scientific, cultural or aesthetic values referred to in the Zone objectives. Furthermore, in being consistent with the zone objectives the existing landuse patterns will be maintained. The proposal does not involve the construction of additional buildings on the site, again being consistent with the Zone objectives and lastly, the use will continue to benefit the local economy while protecting valuable environmental resources.

In summary, we have assessed the continued use of the subject site against each of the objectives of the E3 Environmental Management Zone that are contained in the Wingecarribee LEP. In our opinion, the ongoing use of the site will be consistent with these objectives and accordingly, the inclusion of the requested additional permitted use on the subject site would be appropriate in this instance.

3 – The use satisfies the criteria for Planning Proposals established by DoPI.
This planning proposal has been written in accordance with the *Guide to Preparing Planning Proposals* published by DoPI.

The DoPI guide requires an applicant to consider the following matters when justifying a planning proposal:

- Need for the Planning Proposal;
- Relationship to Strategic Planning Framework;
- Environmental, social and economic impact; and
- State and Commonwealth interests.

These matters are considered in the following Sections (see Sections 6.0 to 10.0) and in our opinion the planning proposal is consistent with the relevant considerations.

Firstly, the planning proposal is necessary to permit the continued operation of Berrima Diesel Services from the subject site. Berrima Diesel Services has operated from the site for many years and is an integral part of the local community and economy.

Furthermore the operators of the business are environmentally responsible and they ensure the operation does not adversely impact the biodiversity of the locality. This planning proposal has been prepared in response to a resolution of Council and is considered appropriate in this instance.

Secondly, the planning proposal relates favourably to the Strategic Planning Framework of the Wingecarribee LGA. The consideration provided below (see Section 6.2) addresses how the planning proposal satisfies the intent of the Sydney-Canberra Corridor Regional Plan, the Wingecarribee Community Strategic Plan, the Wingecarribee LEP and the relevant SEPPs. This section will determine that the proposal is appropriate, given the planning context that applies to the site, and that the continued operation of the use will satisfy the requirements of the relevant statutory controls and strategic policies.

Thirdly, as outlined, the operators of the business have taken all possible steps to ensure it operates in an Environmentally Responsible fashion. In our opinion the use has an appropriate environmental outcome and this will be addressed in greater detail below (see Section 8.0). Furthermore, the social and economic benefits of the proposal will also be considered. It will be demonstrated that the proposal has a positive social benefit to the local area; primarily through the ongoing support provided to community groups. It will also be shown that the use contributes to the local community by generating employment and by brining customers to the region who support the local accommodation sector and other local businesses.

Lastly, the proposal will have regard for the interests of State and Commonwealth bodies. Specifically, consideration will be given to whether there are any likely infrastructure implications that will result from the proposal and how the proposal intends to consult with relevant Government agencies.

In summary, the proposal will be assessed against the four key considerations established by the DoPI. In our opinion the proposal satisfies each of the criteria.

4 – The Planning Proposal is consistent with the Section 117 Directions that have been issued by the Minister for Planning and Infrastructure

Section 117 of the *Environmental Planning and Assessment Act 1979* allows the Minister for Planning and Infrastructure to issue directions regarding the content of LEPs to the extent that the content must achieve or give effect to particular principles, aims objectives or policies set out in those directions. There are four (4) Section 117 directions that apply to the subject site which are as follows:

- Direction 1.5 – Rural Lands
- Direction 2.1 – Environmental Zones
- Direction 5.2 – Sydney Drinking Water Catchment
- Direction 6.3 – Site Specific Provisions

The proposal will be assessed individually against the provisions and requirements of each of the abovementioned S.117 Directions (see Section 7.0 below). This assessment will consider whether the planning proposal, and the continuation of the use, is consistent with the objectives and requirements of the relevant S.117 Directions

In summary, this planning proposal will consider the relevant S.117 Directions and assess the suitability of the use against the specified objectives and requirements of each.

6.0 ASSESSMENT OF NSW DOPI GUIDELINES

The section will address the first two considerations of the DoPI Guidelines for preparing Planning Proposals which deal with the need for the planning proposal and the relationship of the proposal to the regional strategic planning framework.

6.1 Need for the Planning Proposal

In accordance with the DoPI guidelines, this section will outline how the planning proposal has come about, why the planning proposal is the best means of achieving the objectives stated above and will consider whether there is a likely community benefit.

Is the planning proposal a result of any strategic study or report?
No. As outlined, the ongoing operation of Berrima Diesel Service has been considered by Wingecarribee Shire Council which resolved unanimously to invite a Planning Proposal seeking an additional permitted use for the subject site.

Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?
Yes. A Planning Proposal is the best means to achieve the intended outcome, being the continued operation of Berrima Diesel Services from the subject site. The insertion of the additional permitted use relating to the subject site will allow the continued operation of a long established business without weakening the aims and provisions relating the E3 Environmental Management Zone. This Planning Proposal has assessed the use against the objectives of the E3 Zone and has determined that it is consistent (see Section 3.0).

Is there a net community benefit?
Yes. The insertion of the additional permitted use for the subject site will allow Council to consider a development application for the continued operation of a business that generates economic and social benefits for the local community of Berrima.

As outlined, Berrima Diesel Service has been in continuous operation at the subject site, in one form or another, since 1985. In its 27 years of operation, the use has generated only one complaint from neighbouring properties. The continuous and harmonious operation of the site for the purposes of a vehicle repair station demonstrates the suitability of the site for the purpose.

The business carries out specialist mechanical improvements to a variety of diesel vehicles and has been widely publicised both on a national and international scale. Work to vehicles is normally carried out by the company over a period of several days and encourages visitors to stay in the local region and invest in the local economy.

In addition to this, the business is a consistent employer of local residents and the ongoing operation of the use will retain up to 13 jobs in the local community.

The business is an integral component of the local community and contributes to the social fabric of Berrima.

Many of the employees are members of the local Rural Fire Service and Berrima Diesel Services provides additional equipment and support to this critical community organisation.

In summary, the ongoing operation of the business will continue to benefit to the local community, in both an economic and social sense.

6.2 Relationship to Strategic Planning Framework

This section will consider whether the proposal is consistent with the strategic planning framework that exists in the Wingecarribee LGA. The overarching strategic document that relates to the Wingecarribee Local Government Area is the Sydney-Canberra Corridor Regional Plan which has been produced by the NSW Department of Planning in conjunction with the relevant Councils. The plan contains, among other things, actions relating to Economic Development and Employment Growth.

This Regional Plan is one document that informs the Wingecarribee Community Strategic Plan (CSP). The CSP is a document which sets general objectives and themes for the future of the Wingecarribee LGA. The aims of the CSP are stated, inter alia:

- Describe the vision and goals the community has for this Shire
- Outline the strategies to achieve the vision and goals
- Provide a long term focus for decision making and resource allocation
- Provide a basis for measuring our progress
- Provide an opportunity for community participation in decision making
- Address social, economic, environmental and civic leadership issues

The CSP contains themes and goals relating to these various aims and with regard to employment, the following theme is stated, inter alia:

- Wingecarribee's diverse economy drives a wide range of job and career opportunities

A number of Environmental Planning Instruments (EPIs) also apply to the subject site including various State Environmental Planning Policies (SEPPs) and the Wingecarribee LEP 2010.

The Section 149(2) Certificate issued by Wingecarribee Shire Council states that there are 27 SEPPs that apply to the subject site. The SEPP that is of specific relevance to this proposal is SEPP (Sydney Drinking Water Catchment) 2011 and this will be considered below.

This report has already considered the proposal against the relevant provisions of the Wingecarribee LEP and has established that it is consistent with the relevant zone objectives.

Is the planning proposal consistent with the objectives and actions contained within the applicable regional or sub-regional strategy?

The Planning Proposal is consistent with the general aims of the Sydney-Canberra Corridor Regional Strategy in that it will continue to provide employment opportunities within the Wingecarribee Local Government Area. The business employs 13 local staff which contributes to the total employment generation required to satisfy the increasing demand.

Within the hierarchy of the Sub Region Strategy, Berrima is identified as a village, and provides a range of local retail and general services. The continued operation of the use at the subject site will contribute to the services provided to the community and the Wingecarribee LGA.

The Regional Plan provides various actions that are to be translated by Council's into Local Environmental Plans. The relevant action is stated, inter alia:

> *"Local environmental plans are to incorporate appropriate provisions to facilitate employment growth in the nominated major regional centres, towns and villages, including as home-based employment."*

This Planning Proposal is consistent with the abovementioned action as it will allow the continued operation of a business which positively contributes to employment generation in Berrima as well as benefiting the local economy.

Is the planning proposal consistent with the local Council's Community Strategic Plan, or other local strategic plan?

The Planning Proposal is consistent with the relevant themes of the Wingecarribee CSP. The ongoing use of the site will continue to support the diverse economy of the LGA and add to the range of job and career opportunities that are available to local residents. Furthermore, the ongoing operation of Berrima Diesel is critical to the social fabric of the village as it supports the Rural Fire Service and other vital community groups.

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

As outlined there are 27 SEPPs that apply to the subject site. The SEPPs that are of relevance to the proposal are SEPP (Rural Lands) 2008 and SEPP (Sydney Drinking Water Catchment) 2011. SEPP (Rural Lands) 2008 will be considered in Section 7.0 of this report, as there is a Section 117 Direction which requires it to be considered.

This section will consider SEPP (Sydney Drinking Water Catchment) 2011, which came into force on 1 March 2011, and how it relates to the subject site.

The relevant aims of this plan are stated, inter alia:

(a) *to provide for healthy water catchments that will deliver high quality water while permitting development that is compatible with that goal, and*

(b) *…*

(c) *to support the maintenance or achievement of the water quality objectives for the Sydney drinking water catchment.*

Berrima Diesel will operate in accordance with an Environmental Management Plan which has been prepared by Strategic Environmental and Engineering Consulting to ensure that the aims of the State Environmental Planning Policy are well satisfied (see Annexure A).

In summary, this planning proposal is consistent with the strategic planning framework that applies to the subject site, the Wingecarribee LGA and the Sydney-Canberra Corridor.

7.0 CONSISTENCY WITH S.117 DIRECTIONS

As outlined, Section 117 Directions are made by the Minister for Planning and are to be considered as a component of making a Local Environmental Plan. All Planning Proposals are required to identify relevant Section 117 Directions and consider whether the proposal is consistent with the relevant directions.

The Section 117 Directions that apply to this planning proposal are:

- Direction 1.5 - Rural Lands
- Direction 2.1 - Environment Protection Zones
- Direction 5.2 - Sydney Drinking Water Catchment
- Direction 6.3 - Site Specific Provisions

An assessment of the proposals consistency with Ministerial Directions has been carried out. The relevant directions have been identified and our response to the requirements of each is provided below.

7.1 Direction 1.5 - Rural Lands

This direction applies to planning proposals that will affect land within an existing or proposed rural or environment protection zone (including the alteration of any existing rural or environment protection zone boundary). The objectives of this direction are stated, inter alia:

> *(a) protect the agricultural production value of rural land,*
> *(b) facilitate the orderly and economic development of rural lands for rural and related purposes.*

In this particular instance, this direction requires a Planning Proposal to be consistent with the Rural Planning Principles listed in State Environmental Planning Policy (Rural Lands) 2008 ('the Rural Lands SEPP').

The stated Rural Planning Principles, and our response to each, is as follows:

> *(a) the promotion and protection of opportunities for current and potential productive and sustainable economic activities in rural areas,*

Response: While Berrima Diesel is not an agricultural use, the owners are environmentally responsible and ensure there is no adverse environmental impact on adjoining land. The proposal will allow the continued operation of a family business that is an integral part of the local economy. In our opinion the proposal is consistent with this principle.

> *(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,*

Response: The subject site has been used by Berrima Diesel Services since 1985. As outlined, despite not being an agricultural use, the business has evolved and developed to incorporate best practise environmental procedures. The responsible environmental management of the use aims to ensure that nearby agricultural land is not adversely effected by the use. In our opinion the proposal is consistent with this principle

(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,

Response: Berrima Diesel is an integral part of the local economy and the Berrima community. The specialised nature of the use brings customers from locations across Australia who support the local accommodation and tourism sectors. Furthermore, the continued employment of up to 13 local residents has a direct positive impact on the local economy. The Planning Proposal is to allow the positive contribution to continue. Accordingly, the continuation of the use is consistent with this principle.

(d) in planning for rural lands, to balance the social, economic and environmental interests of the community,

Response: As outlined in response to principle (c) above, the use benefits the local economy by providing employment benefits and encouraging visitors. This planning proposal has also outlined the operator's commitment to responsible environmental management. In our opinion the proposal satisfies this principle.

(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,

Response: The owners of the subject site have retained and embellished landscaping throughout the site which contributes to biodiversity on the surrounding area. Berrima Diesel Services also takes measures to ensure that its operation does not adversely impact on natural resources, in particular the water supply catchment. Specifically a study has recently been undertaken into how the development manages stormwater and runoff to recommend measures to minimise any potential impacts. In our opinion the use satisfies this principle.

(f) the provision of opportunities for rural lifestyle, settlement and housing that contribute to the social and economic welfare of rural communities,

Response: The proposal is consistent with this principle as the use incorporates measures to minimise any potential impacts on neighbouring residential uses. These measures have been detailed in the Justification of this planning report (see Section 5.0).

(g) the consideration of impacts on services and infrastructure and appropriate location when providing for rural housing,

Response: The site has adequate infrastructure services to cater for the needs of the development. There is no aspect of the planning proposal that will increase demand on infrastructure or services. In our opinion the use satisfies this principle.

(h) ensuring consistency with any applicable regional strategy of the Department of Planning or any applicable local strategy endorsed by the Director-General.

Response: This Planning Proposal has considered the consistency of the use with the Sydney-Canberra Corridor Regional Plan and the Wingecarribee Community Strategic Plan. It has been determined that the continuation of the use is appropriate in this instance (see Section 6.0) and in our opinion that the use is consistent with this principle.

The subject site has been in continuous use by Berrima Diesel Services since 1985 and the use does not compromise the agricultural potential of surrounding areas. The planning proposal involves the continuation of an established use that has a good history of responsible environmental management.

It is our opinion that there will not be any adverse environmental impacts as a result of the continuation of the use and, as outlined, the proposed development is unlikely to compromise any endangered species, habitat or generally have adverse biodiversity impacts as there is no proposed building work or intensification of the use.

The site specific nature of the planning proposal will not result in widespread impacts in terms of housings provision, opportunities for rural lifestyle, nor will it result in impacts on infrastructure and services.

In summary, the proposal satisfies the objectives of S.117 Direction – 1.5 Rural Lands and is consistent with the Rural Planning Principles that are contained in the Rural Lands SEPP.

7.2 Direction 2.1 - Environment Protection Zones

This Section 117 Direction, dealing with Environmental Protection Zones, applies to Planning Proposals that are prepared for land within Environment Protection Zones. The objective of this direction is to protect and conserve environmentally sensitive areas.

This direction outlines that a planning proposal must include provisions that facilitate the protection and conservation of environmentally sensitive areas. It further provides that a planning proposal must not reduce the environmental protection standards that apply to the land (including by modifying development standards that apply to the land).

The planning proposal does not involve any amendment to development standards contained in the LEP or other EPIs. The ongoing use of the land would be subject to Council issuing development consent, which would be required to consider environmental impacts.

In summary, the proposal is consistent with S.117 Direction 2.1 – Environmental Protection Zones, as there is no proposed variation to environmental protection standards.

7.3 Direction 5.2 - Sydney Drinking Water Catchment

This direction applies to planning proposals affecting land in the Sydney Drinking Water Catchment. The objective of the direction is to protect water quality in the Sydney drinking water catchment.

The direction states, inter alia:

(4) A planning proposal must be prepared in accordance with the general principle that water quality within the Sydney drinking water catchment must be protected, and in accordance with the following specific principles:

- *(a) new development within the Sydney drinking water catchment must have a neutral or beneficial effect on water quality, and*
- *(b) future land use in the Sydney drinking water catchment should be matched to land and water capability, and*
- *(c) the ecological values of land within a Special Area that is:*
  - *(i) reserved as national park, nature reserve or state conservation area under the National Parks and Wildlife Act 1974, or*
  - *(ii) declared as a wilderness area under the Wilderness Act 1987, or*

(iii) owned or under the care control and management of the Sydney Catchment Authority,

should be maintained.

(5) When preparing a planning proposal that applies to land within the Sydney drinking water catchment, the relevant planning authority must:

(a) ensure that the proposal is consistent with State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011, and

(b) give consideration to the outcomes of the Strategic Land and Water Capability Assessment prepared by the Sydney Catchment Authority, and

(c) zone land within the Special Areas owned or under the care control and management of Sydney Catchment Authority generally in accordance with the following:

Land	***Zone under Standard Instrument (Local Environmental Plans) Order 2006***
Land reserved under the National Parks and Wildlife Act 1974	*E1 National Parks and Nature Reserves*
Land in the ownership or under the care, control and management of the Sydney Catchment Authority located above the full water supply level	*E2 Environmental Conservation*

(d) consult with the Sydney Catchment Authority, describing the means by which the planning proposal gives effect to the water quality protection principles set out in paragraph (4) of this Direction, and

(e) include a copy of any information received from the Sydney Catchment Authority as a result of the consultation process in its planning proposal prior to the issuing of a gateway determination under section 56 of the Environmental Planning and Assessment Act 1979.

In response to (4) above, the planning proposal relates to a use that has been operating on the site for many years. It is our understanding that there has been no adverse impact on the catchment during this period of operation. Notwithstanding this, a development application will need to be submitted to Council in order to continue the operation of the use. This application would be required to specifically consider the potential for impacts on the water quality of the catchment and would ensure that the development would have a neutral or beneficial effect on water quality. Regarding water capability, given the site specific nature of the planning proposal, and the use, there is likely to be sufficient water available to cater for the requirements of the proposal which, it is noted, will not increase.

As outlined throughout this submission, the operators of the use endeavour to be environmentally responsible and limit the potential for adverse environmental impacts. The Planning Proposal will have no adverse impact upon biodiversity or the like.

In response to (5) above, the aims of State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 are as follows:

(a) to provide for healthy water catchments that will deliver high quality water while permitting development that is compatible with that goal, and

(b) to provide that a consent authority must not grant consent to a proposed development unless it is satisfied that the proposed development will have a neutral or beneficial effect on water quality, and

(c) to support the maintenance or achievement of the water quality objectives for the Sydney drinking water catchment.

It is our opinion that the outcome of the planning proposal will be the continuation of a use that is consistent with these aims. An Environmental Management Plan has been prepared by Strategic Environmental and Engineering Consultants (SEEC) to ensure there is no impact on the catchment (see Annexure 1).

A review of the mapping associated with the Strategic Land and Water Capability Assessment (prepared by the Sydney Catchment Authority) has been undertaken and has determined that the locality of the subject site has a high to moderate capability to accommodate retail, commercial or light industrial uses (a vehicle repair station is not a separate category for the purposes of the mapping). Furthermore, the mapping indicates that there is only a likely low to moderate risk to water quality resulting from such development types. Accordingly, the subject site appears suitable for the subject purpose from a water quality point of view.

As the subject site is within the Sydney drinking water catchment, comment will be sought from the Sydney Catchment Management Authority. In accordance with this direction, this comment is to be sought prior to the issuing of a gateway determination.

In summary, the planning proposal has been prepared in accordance with the specific provision for land within the Sydney drinking water catchment. In our opinion the proposal will protect water quality within the catchment area, is consistent with SEPP (Sydney Drinking Water Catchment) 2011 and is consistent with the Strategic Land and Water Capability Assessment prepared by the Sydney Catchment Authority.

7.4 Direction 6.3 - Site Specific Provisions

This direction applies when a relevant planning authority prepares a planning proposal that will allow a particular development to be carried out. The objective of this direction is to discourage unnecessarily restrictive site specific planning controls.

The planning proposal is consistent with this direction as it would permit the continued operation of a use that has been established on the subject site for many years. The proposed amendment to the schedule of additional permitted uses will not create any additional development standards or restrict development on the subject site.

In summary, the planning proposal seeks to permit the continued operation of Berrima Diesel Services on the subject site. The proposed amendment to the LEP will not create restrictive, site specific, development standards and therefore is consistent with this S.117 Direction.

8.0 ENVIRONMENTAL, SOCIAL AND ECONOMIC IMPACT

This section will consider whether there is likely to be any adverse impact on critical habitats, threatened species populations, ecological communities or critical habitat, whether there will be any other environmental impacts resulting from the proposal and how the Planning Proposal addresses Social or Economic Effects.

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?

Based on a review of Council's Environmental Constraints Mapping and the Department of Environment and Heritage Atlas of NSW Wildlife, it is our understanding that there are no critical habitat areas, no threatened species, populations, ecological communities or their habitats present on the subject land. Accordingly the proposal will not have any impact in this regard.

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

The operation of the vehicle repair station at the subject site involves the use of small quantities of oil and similar chemicals. Appropriately managed, there is little likelihood that the use of these materials will result in any environmental impact.

Strategic Environmental and Engineering Consulting (SEEC) have been engaged to review the stormwater, used oil storage and domestic wastewater on site. SEEC has proposed an Environmental Management Plan to ensure that waste is properly stored in containers on site and does not affect water quality in the surrounding water catchment area. This Management Plan has been considered by Council and is attached to this report (see Annexure 1).

How has the planning proposal adequately addressed any social and economic effects?

As outlined, this planning proposal seeks to permit the continued operation of a vehicle repair station known as Berrima Diesel Services at the subject site. The continued operation of the use will have positive social and economic benefits for the local community of Berrima and for the Wingecarribee Local Government Area. In a social context, the owners of the business and their employees are active members of local community groups and continue to provide equipment for use by the local Rural Fire Service. In terms of economic benefits, the use employs a number of local residents and positively contributes to the local economy. Additionally, the specialised nature of the use generates tourism for the region and brings 'out of town' customers to the area.

It is for these reasons, it is our opinion that the use has a positive social and economic impact and that this planning proposal will allow those benefits to continue.

In summary, the proposal will allow the continued operation of a use that is environmentally responsible, and that positively contributes to both the local community and the economy of Berrima.

9.0 STATE AND COMMONWEALTH INTERESTS

This section will consider whether the planning proposal will impact any State or Commonwealth infrastructure and also outlines how the proposal will consult with public authorities.

Is there adequate public infrastructure for the planning proposal?
This planning proposal seeks a very minor amendment to the Wingecarribee LEP 2010 to permit the continued use of the site for the purposes of a vehicle repair station.

There is no significant infrastructure demand that will result from this ongoing use. The existing services that are available to the subject site are suitable for the proposal and adequate for the requirements of the use.

What are the views of State and Commonwealth public authorities consulted in accordance with the gateway determination?
This planning proposal has not yet been the subject of a gateway determination. Consultation with relevant authorities will be undertaken following the outcome of this determination.

In summary, given the minor and site specific nature of the proposal, it will not result in high demand for public infrastructure. Consultation with State and Commonwealth authorities may be required as part of the planning proposal and this will be undertaken following the issuing of a gateway determination.

10.0 CONCLUSION

This Planning Proposal seeks to amend Schedule 1 of the Wingecarribee Local Environmental Plan 2010 to include *vehicle repair station* as a permissible use on Lots 8 to 17 DP 758098 being No.3843 Old Hume Highway Berrima. The requested amendment to Schedule 1 will facilitate the continued operation of Berrima Diesel Services, from the subject site.

As outlined throughout this submission, Berrima Diesel Services has operated from the subject site for close to three decades. The use is low intensity and there is minimal opportunity for adverse impacts on adjoining land. The operators of the business demonstrate a high level of environmental responsibility and continue to take actions to minimise any potential impacts on the natural resources of the area.

The subject site is appropriate for continued use by Berrima Diesel Services as it is located approximately 1km south of Berrima and is well separated from residential landuses. The existing buildings on the subject site are screened from view by established landscaping and are well set back from property boundaries.

The use is significant not only to the local economy of Berrima but also to the social fabric of the area. The business employs 13 local staff and given it is a specialist use that has been widely publicised; it generates tourism for Berrima and for the Wingecarribee Local Government Area.

The owners of the business and their employees are active members of local community groups and the continuation of the use will be beneficial to organisations such as the Rural Fire Service.

The planning proposal has provided a justification for the LEP amendment in accordance with the DoPI publication “A Guide to Preparing Planning Proposals” and has demonstrated consistency with the relevant directions made by the Minister for Planning an Infrastructure under Section 117 of the Environmental Planning and Assessment Act.

Accordingly, for the reasons stated above, we respectfully request that Council support the insertion of an additional permitted use into Schedule 1 of the LEP, permitting development for the purposes of a vehicle repair station on the subject site.

ANNEXURE A
ENVIRONMENTAL MANAGEMENT PLAN PREPARED BY STRATEGIC ENVIRONMENTAL & ENGINEERING CONSULTING (SEEC)

SEEC

Strategic Environmental & Engineering Consulting

Environmental Management Plan (EMP)

3483 Old Hume Highway, Berrima

For Berrima Diesel

Prepared by:

Mark Passfield
SEEC Reference 12000204-EMP-01

7 September, 2012

SEEC

Strategic Environmental and Engineering Consulting

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Document Certification

This report has been developed based on agreed requirements as understood by SEEC at the time of investigation. It applies only to a specific task on the nominated lands. Other interpretations should not be made, including changes in scale or application to other projects.

Any recommendations contained in this report are based on an honest appraisal of the opportunities and constraints that existed at the site at the time of investigation, subject to the limited scope and resources available. Within the confines of the above statements and to the best of my knowledge, this report does not contain any incomplete or misleading information.

Mark Passfield BSc. (Hons) CPESC
Director
SEEC

7 September 2012

Contents

1 Introduction

SEEC have been commissioned by Andrew Leimroth, Berrima Diesel Pty Ltd to prepare this Environmental Management Plan for 3483 Old Hume Highway, Berrima, NSW. It is required as part of Land and Environment Court Proceedings No. 10470 of 2012 and it addresses issues raised in a letter from Shaw Reynolds Bowen and Gerathy Pty Ltd reference CHS:PXN:121175:RXM, 25th July 2012.

In combination with SEEC report 12000204-WWED-01 (7th September 2012) it addresses issues of onsite sewage management and, separately, it addresses issues of potential pollution from the commercial activities.

Sydney's Drinking Water SEPP, administered by the Sydney Catchment Authority (SCA), applies to these lands. Under the terms of this policy, developments such as these need to demonstrate a neutral or beneficial effect (NorBE) on receiving waters.

This study is required to address only the business operations, not the home. The site was inspected by SEEC staff on 8th August 2012.

2 Site Description

2.1 General Description

Berrima Diesel Pty Ltd are located at 3483 Old Hume Highway, Berrima, NSW. The business is located to the east and south of an existing residence. The buildings under consideration comprise:

(i) an enclosed mechanics' workshop;

(ii) an offices and waiting room that share a toilet and a kitchenette;

(iii) a wash-down bay (30 m^2) located immediately east of the workshop. The wash-down bay is only partly roofed; and

(iv) various small sheds located southeast of the workshop, along the southern boundary.

2.2 Business Operations

The business operates a mechanical workshop where diesel (only) engines are tuned and serviced. The business typically services three vehicles a day. Once the engines have been serviced they are moved to the wash-down bay where they are cleaned using a high-pressure cleaner (e.g. a "Gerni").The vehicles are then parked on a sealed hardstand area for customer pick up.

The business employs three mechanics and 10 support staff. It operates Monday to Friday, nine hours a day.

Figure 1 – Site Layout

3 Identification of Current Potential Environmental Risks

3.1 The Workshop

The workshop is sealed from the weather (Figure 2) but waste oils, hydraulic fluids, detergents, used batteries and (possibly) small amounts of fuel are generated within. These contaminants could become entrained if water is used within the workshop but the floors are cleaned using a mop and bucket. The used water is currently disposed onto the ground surface outside.

Small containers of oils and fluids are stored in the workshop in their original containers. Mostly these consist of small drums (less than or equal to 20 L). They are stored on shelving and/or the floor.

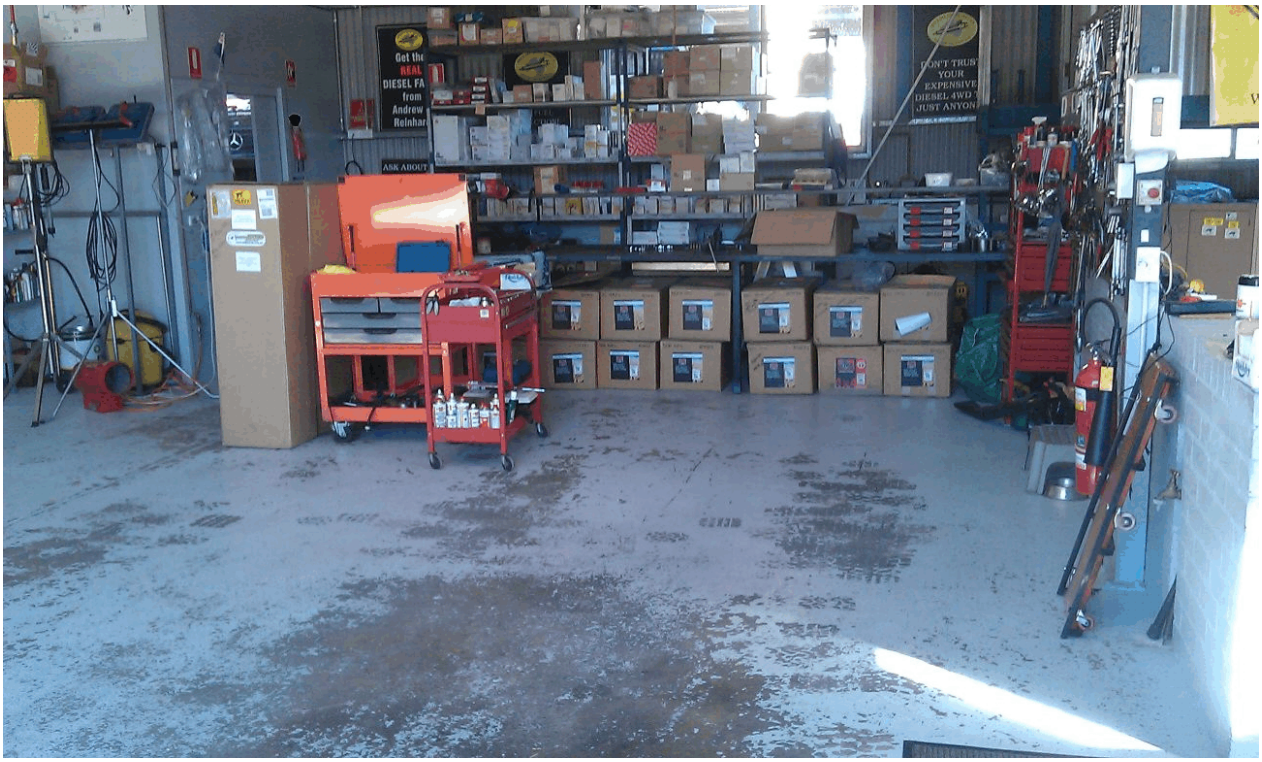


Figure 2 - Workshop Interior

3.2 Wash-down Water

After servicing, the vehicles are moved to the wash-down bay to be cleaned. They are cleaned with a high-pressure hose that typically uses 10 L/minute. It takes about 10 minutes to wash a vehicle, so that equates to about 300 L/day. Oil, grease and sediment becomes entrained in the wash-down water that currently drains to a sump from where it drains to an absorption bed somewhere in the paddock to the north (Figure 1). Oils and surfactants are stored in a small covered portion of the wash-down bay (Figure 3).

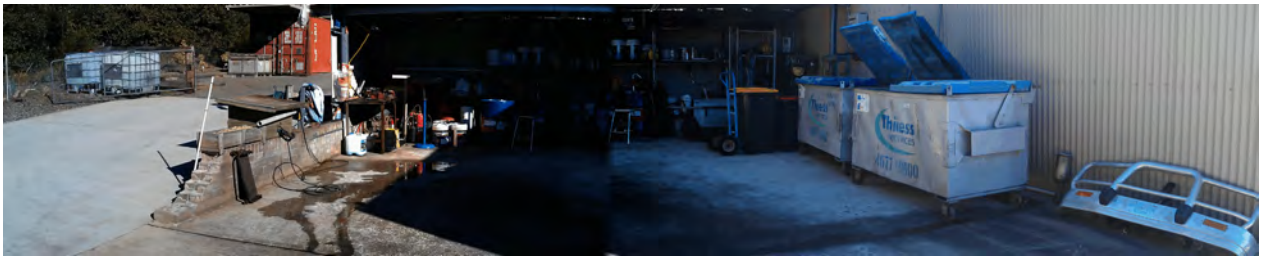


Figure 3 - The Wash-down Bay

3.3 Stormwater

Stormwater from the workshop's roof is collected in rainwater tanks to the south. The southern part of the wash-down area is roofed and it drains onto the concrete hardstand immediately to the east. This flow, plus some other incident rain falling on the southern part of the hardstand, is currently able to drain to the same sump as the wash-down water and so it too becomes entrained in the wash-down system (Figure 4).

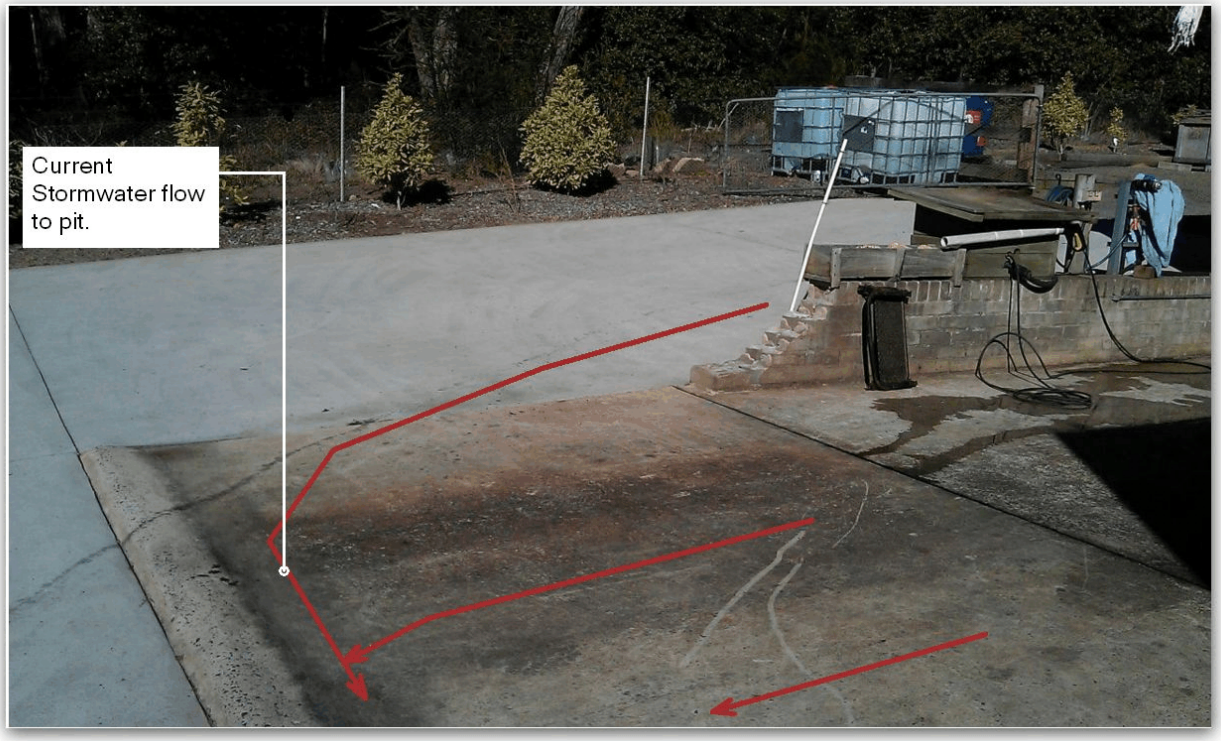


Figure 4 – The missing wall allows stormwater to enter the wash-down bay and into the sump.

3.4 Used Oil Storage

Oil changes are performed in the workshop. Used oil is collected and decanted into dedicated containers to await removal by a licensed oil recycling company. The containers are located on an unsealed and un-bunded surface (Figure 5).

Figure 5 - Used-oil containers on an unsealed, un-bunded surface (both steel and plastic)

3.5 Fuel

Fuel is stored under cover in two tanks on the eastern boundary (Figure 6). The storage area is not bunded or sealed.

Figure 6 - Diesel fuel tanks under cover but not on a bunded, sealed surface.

3.6 Domestic Wastewater

Domestic wastewater is generated in the workshop/office building. Based on a staff of 13 and an allowance of 30 L/d/staff the estimated daily load from the business is 390 (say 400) L/day (NSW Health, 2001).

We understand the septic systems servicing the home and a one-bedroom annexe are approved. There are two existing septic tanks; one 2,000 L tank located between the business premises and the home and one 3,000 L to the south of the dwelling (Figure 1). The business premises drain into the smaller tank and so does half the home's load (estimated at 300 L/day). Therefore, the total design load to the small tank is 700 L/day. The estimated design load on the larger tank is 200 L (annexe) plus half the home (300 L/day) = 500 L/day.

Considering only the wastewater stream of the business, NSW Health, 2001 recommends a minimum septic tank capacity equal to the daily load plus a sludge allowance of 1,550/day. That would be a minimum tank size of 2,250 L. The current AS/NZS standard for wastewater (AS/NZS1547:2012) recommends a minimum tank capacity of 3,000 L for a load up to 1,000 L/day. Therefore, by either guideline, the existing small tank is too small.

The exact location and sizes of the absorption beds are unknown, although there was no obvious signs of failure on the day of the inspection. It would appear that the absorption beds are located within 100 m of a watercourse that flows parallel to the Old Hume Highway. There was water flowing in this watercourse when it was inspected (several days after the last rainfall) and so any *new* effluent management area requires a 100 m buffer from it (DLG, 1998). This buffer would not apply to the already-approved systems servicing the house and annexe.

4 Proposed Management and Maintenance

4.1 The Workshop

(i) Oil and fluids are the main potential contaminant in the workshop.

(ii) Oil and fluids are supplied in small (4 L) containers. All containers will be stored on spill trays having a volume of at least 25% the combined container volume (SA EPA, 2007).

(iii) Should an oil container leak, the contents of the spill containment tray will be decanted into a waste-oil storage tank.

(iv) Waste oil from servicing will be decanted into a waste-oil storage tank.

(v) When nearing the storage capacity the waste oil will be collected by an oil recycling company and removed from site.

(vi) Waste fluids (e.g. brake, coolant, caustics etc.) will be decanted into suitable plastic containers and sealed. The containers will be stored on catch-trays on shelving (off the floor). The trays will have a volume of at least 25% the combined container volume. The fluids are hazardous waste and will be taken to a licensed waste facility for disposal.

(vii) Waste oil filters will be placed in sealed containers and stored on drip trays on shelving until they are taken to a licensed waste facility.

(viii) Used batteries will be collected and placed on drip trays on shelving. Periodically they will be removed by a recycling contractor, or they will be taken to the recycling section of a licensed waste facility.

(ix) Water used to clean the floor (mopping water) will be deposited into the oil/sediment separator (Section 4.2).

(x) Spill control kits capable of catching hydrocarbons and other mechanical fluids will be kept in highly visible locations in the workshop.

- Oil is supplied in 4 L drums and the recommended capacity of the spill kit will suit that.
- The spill kits will be suitable for the chemicals present. If in doubt, seek the input from the manufacturer(s) as to what model of spill kit is required.
- All site personnel will be inducted in the location and use of the spill control kit(s). Additionally, instructions will be kept with the kits.
- If a spill occurs it will be mopped up immediately. Then the site manager will be informed.
- The site manager will replace used spill control kit (s) as soon as possible. Spare kits will be held on site.

- If the new kits differ to the old ones all site personnel will require further induction in their correct use.
- Used spill control kits (including gloves and other protective clothing) will be wrapped securely in plastic bags and placed in a closed container until they can be safely transported to a licensed waste facility.

(xi) Empty or unused oil or chemical containers will be wrapped securely in plastic bags and placed in a waste receptacle until they can be safely transported to a licensed waste facility.

(xii) Metal waste will be placed in a trade waste bin for collection and recycling.

(xiii) Paper/packaging waste will be placed in a lidded trade waste bin for collection and recycling.

(xiv) Used cloths will be wrapped securely in plastic bags and placed in a waste receptacle until they can be safely transported to a licensed waste facility.

(xv) The workshop foreman will inspect the workshops at the end of each day to ensure:

- no spills are present
- all oil and fluid containers are sealed and stored on drip trays on shelving (not on the floor
- oil storage level is satisfactory.

4.2 The Wash-down area

(i) Oil and fluids are the main potential contaminant in the wash-down area.

(ii) Oil and fluids are supplied in small (2 L)containers. All containers will be stored under cover on spill trays having a volume of at least 25% the combined container volume (SA EPA, 2007).

(iii) Should an oil container leak, the contents of the spill containment pallet will be decanted into a waste-oil storage tank.

(iv) Waste oil from servicing will be decanted into a waste-oil storage tank.

(v) When nearing the storage capacity the waste oil will be collected by an oil recycling company and removed from site.

(vi) Waste fluids (e.g. brake, coolant, caustics etc.) will be decanted into suitable plastic containers and sealed. The containers will be stored under cover on catch-trays on shelving (off the floor). The fluids are hazardous waste and will be taken to a licensed waste facility for disposal.

(vii) Waste oil filters will be placed in sealed containers and stored on drip trays under cover and on shelving until they are taken to a licensed waste facility.

(viii) An above-ground oil/water/sediment separator will be used to screen and treat water draining from the wash-down area.

- The unit will be a coalescing plate separator type (Baldwin MPV-12 or equivalent, Appendix A).
- The unit will be housed in a bunded area with clear signage indicating its purpose.
- The unit will be regularly serviced to the manufacturer's recommendations. Minor servicing will be undertaken each month and a major service will be undertaken once per year.
- At least two people will be trained in the operation and servicing of the unit.
- Treated water from the unit will be drained to the existing absorption bed.
- Treated water will have the following target quality (WSC, undated:
  - pH = 7-9
  - Total Dis)solved Solids <4,000 mg/L
  - Total Suspended Solids <300 mg/L
  - Oil and Grease <100 mg/L

  Samples of treated water will be tested monthly for a period of six months and the results reported to Council. After that, subject to satisfactory results, the testing may become annual.
- Trapped oil, grease and solids will be regularly removed from the separator and decanted into sealed containers for immediate disposal at a licensed facility. Alternatively it will be added to the bulk waste oil for recycling.
- A new sump system will be installed to replace the existing one (Figure 7). The sump system will provide a (min) 450 L first flush system to allow collection of the initial (15 mm) "first flush" runoff. Stormflows above 15 mm will be directed to the absorption bed.
- The first flush volume will be separate to the normal collection volume when the wash pad is in use. The system will work on the levels of the pits and pipes and so will not have moving parts.

The sump will be fitted with an initial sediment trap basket (fine mesh filter) to filter out excess sediment. The basket will be inspected daily and replaced per the manufacturer's instructions. Used baskets will be disposed in the trade-waste receptacle.

(ix) A suitable kerb structure (rolled kerb) will be built to deflect stormwater run-on from the south away from the wash-down area (Figure 4). This will limit the catchment to the sump to about 30 m^2.

(x) Washing of vehicles will not be done during rain. To ensure that, a rain sensor will be used to shut off the tap.

(xi) Only "quick-break" detergents will be used. These prevent the oil/water mix from being emulsified for too long (so the oil may be trapped).

(xii) Spill control kits capable of catching hydrocarbons and other mechanical fluids will be kept in highly visible locations in the wash-down area. See Section 4.1 (xi) above for more details.

(xiii) An inspection pipe will be fitted to the absorption bed to monitor water level within. Should the water level remain higher than 200 mm for more than one week a qualified plumber will be employed to build an additional bed. We note, however, that the existing bed appears to be working satisfactorily, and under an higher load than will be the case.

4.3 Fuel Storage Tanks

(i) The two existing diesel tanks (Figures 1 and 6) will be repositioned onto a sealed and bunded area. The volume of the bunding will be 120% the volume of the largest tank (allowing for the displacement volume of the other tank).

(ii) They will remain roofed.

(iii) The bunding and floor will be reinforced concrete.

(iv) The distance from the bund to the tanks will be 1 m.

(v) A collection sump will be provided to ensure easy spill removal by pumping (only).

(vi) Spilled diesel will be taken from site by an approved trade-waste contractor and either recycled or disposed at a licensed facility.

(vii) Rainwater that might become trapped will be pumped to the oil/sediment separator for treatment.

(viii) Once a week the site manager will inspect the bunding paying attention to:

- trapped liquid
- integrity of the bund walls and flooring
- integrity of any joints in the floor

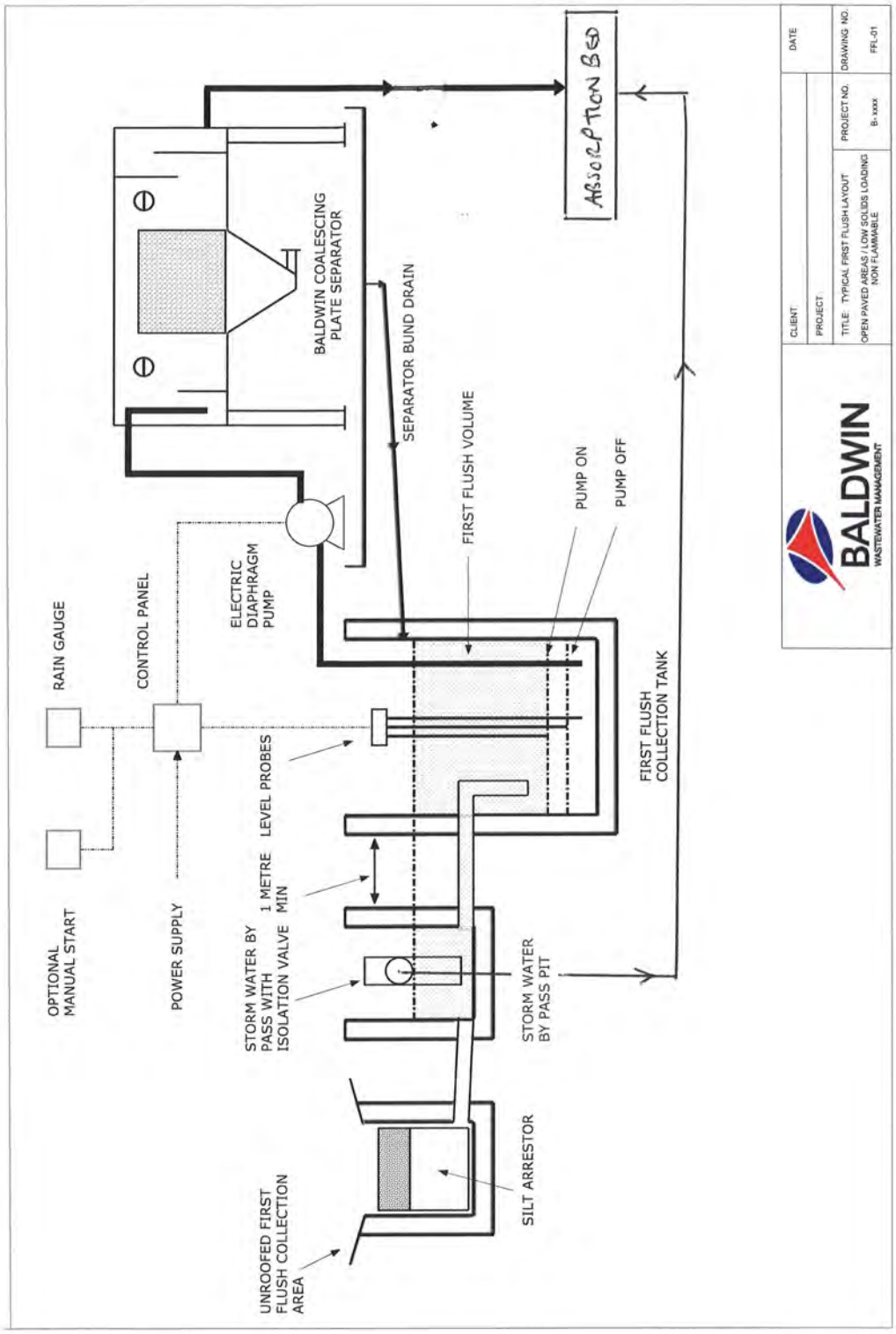


Figure 7 – Schematic of Proposed First Flush Layout

4.4 Waste Oil Storage

(i) The waste oil drums and tanks (Figures 1 and 5) will be repositioned onto a sealed and bunded area. The volume of the bunding will be 120% the volume of the largest tank/drum (allowing for the displacement volume of the other tanks/drums).

(ii) The area will be roofed.

(iii) The bunding and floor will be reinforced concrete.

(iv) The distance from the bund to the tanks will be 1 m.

(v) A collection sump will be provided to ensure easy spill removal by pumping (only).

(vi) Spilled oil will be taken from site by an approved trade-waste contractor and either recycled or disposed at a licensed facility.

(vii) Rainwater that might become trapped may be pumped to the oil/sediment separator for treatment.

(viii) Once a week the site manager will inspect the bunding paying attention to:

- trapped liquid
- integrity of the bund walls and flooring
- integrity of any joints in the floor.

4.5 Onsite Domestic Wastewater

Domestic wastewater from the business will be separated from the home's (including the annexe) wastewater systems and treated and disposed following the recommendations given in SEEC report 12000204-WWED-01, dated 7th September 2012..

4.6 Commercial Wastes

(i) As far as possible wastes generated by the commercial activities will be separated into recyclable products and general garbage. Recyclable materials will be:

- waste paper in the office.
- waste bottles and (non-chemical) plastic containers in the office and workshops.
- waste steel in the workshop (e.g. waste parts).

- used oil drums.
- waste oil from the workshop.
- used batteries in the workshop.

(ii) Trade waste receptacles will be placed in the workshop and office to collect and sort these materials.

(iii) Periodically the bins will be removed by a trade waste contractor.

(iv) Other general domestic waste and food scraps will be placed in the regular garbage collection stream.

(v) Trade waste bins will be checked daily by the site manager.

(vi) The site manager will ensure a contract exists with the trade waste contractor to ensure regular removal of wastes.

5 Checklist

Table 1 is a checklist for inspection routines. It will be used to keep a record of inspections throughout the year.

Table 1 - Regular Inspection Routines

		Time Frame			
Inspection	**Responsibility**	**Daily**	**Weekly**	**Monthly**	**Annually**
Oil and fluid containers safely stored on drip trays and on shelves	Site Manager	✔			
Used oil storage tank levels	Site Manager	✔			
Oil Separator Sump	Site Manager	✔			
Oil separator Pump	Site Manager	✔			
Oil separator wastewater tank	Site Manager		✔		
Minor service for oil separator	Site Manager			✔	
Major service for oil separator	Contractor				✔
Trade waste bins (capacity left)	Site Manager	✔			
Spill control kits	Site Manager	✔			
Spare spill control kits	Site Manager		✔		
Oil/Fuel bunding	Site Manager		✔		
Aerated wastewater treatment system	Wastewater Contractor			Three-monthly	
Wastewater Disposal system	Wastewater Contractor		✔		
Stormwater Absorption Bed	Site Manager		✔		

6 Conclusion

In combination with SEEC report 12000204-WWED-01 (7th September 2012) this Plan addresses issues raised in a letter from Shaw Reynolds Bowen and Gerathy Pty Ltd; reference CHS:PXN:121175:RXM, 25th July 2012. This Plan and SEEC Report 12000204-WWED-01 have been undertaken with reference to the latest "Current recommended Practices" listed on Sydney Catchment Authority's Website:

http://www.sca.nsw.gov.au/the-catchments/regional-plan/regional-plan-current-recommended-practices/general-development

This Plan and the accompanying SEEC report 12000204-WWED-01 make recommendations for managing potentially contaminated water (from the workshop and wash down areas) and sewage (from the office facilities) respectively. If this Plan is implemented and managed correctly, the risk of either of these contaminated sources of water having a detrimental effect on the quality of water leaving the site will be minimised (they will have a neutral effect).

7 References

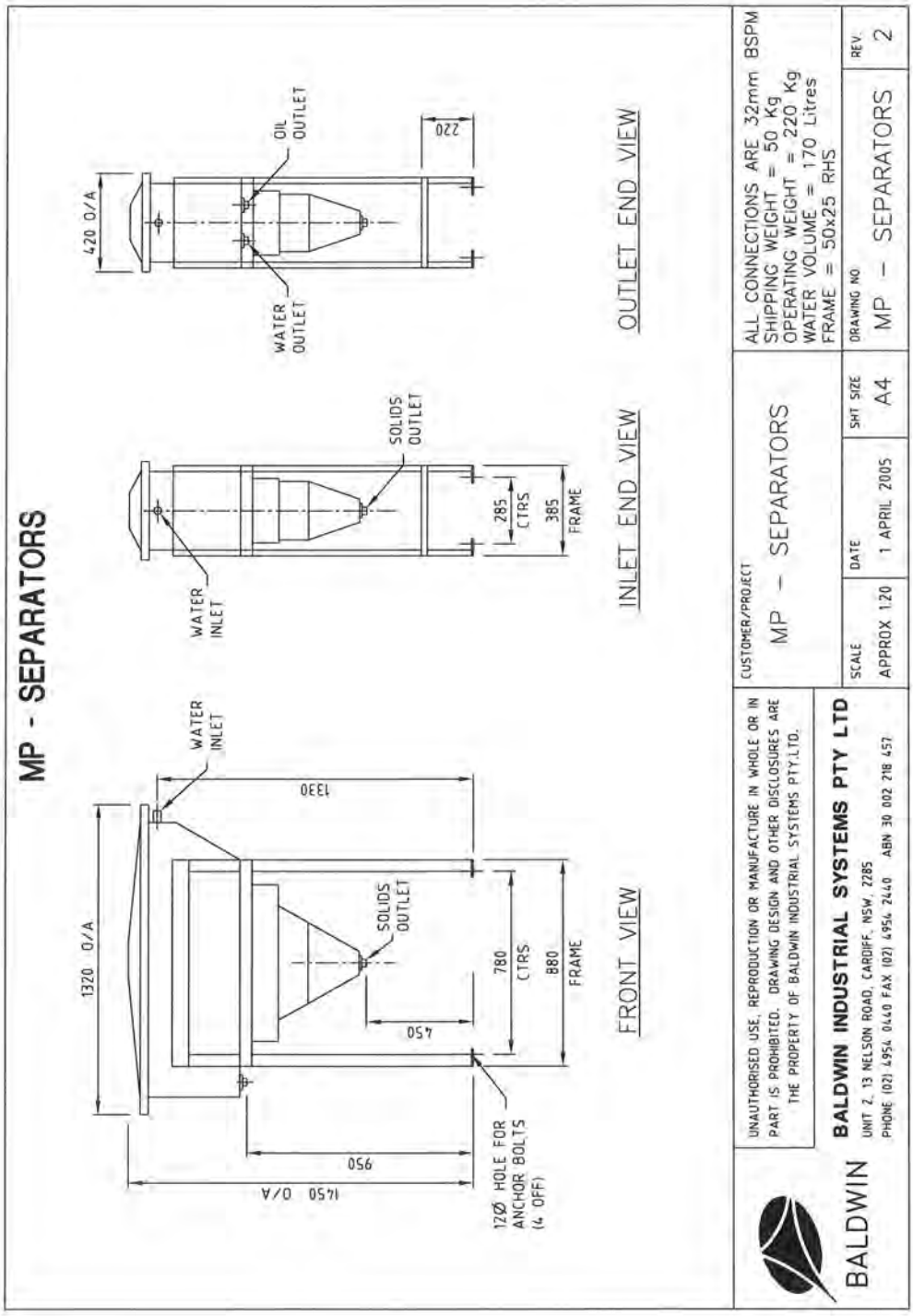
AS/NZS 1547:2012. *On-Site Domestic Wastewater Management*

DLG, 1998. *On-site Sewage Management for Single Households* ("The Silver Book"). Department of Local Government, Sydney.

SA EPA, 2007. EPA Guidelines. *Bunding and Spill Management*. South Australia EPA.

SCA, 2012. *Designing and Installing On-Site Wastewater Systems.* Sydney Catchment Authority, Sydney.

8 Appendix A - Details of Oil/Sediment Separator



ANNEXURE B
WASTEWATER MANAGEMENT: SITE & SOIL EVALUATION & DISPOSAL SYSTEM DESIGN PREPARED BY SEEC

SEEC

Strategic Environmental & Engineering Consulting

Wastewater Management: Site & Soil Evaluation & Disposal System Design

For: Existing Commercial Development at Berrima Diesel, 3483, Old Hume Highway, Berrima, NSW.

Prepared by: Tom Heasman

SEEC
Strategic Environmental and Engineering Consulting
PO Box 1098,
Bowral NSW 2576
ph: (02) 4862 1633
fax: (02) 4862 3088

SEEC Ref: 12000204-WWED-01

email: reception@seec.com.au

7 September 2012

SEEC

Strategic Environmental and Engineering Consulting

PO Box 1098, Bowral NSW 2576
phone: (02) 4862 1633 • fax: (02) 4862 3088 • email: reception@seec.com.au

Document Certification

This report has been developed based on agreed requirements as understood by SEEC at the time of investigation. It applies only to a specific task on the nominated lands. Other interpretations should not be made, including changes in scale or application to other projects.

Any recommendations contained in this report are based on an honest appraisal of the opportunities and constraints that existed at the site at the time of investigation, subject to the limited scope and resources available. Within the confines of the above statements and to the best of my knowledge, this report does not contain any incomplete or misleading information.

Mark Passfield
Director
SEEC

Version	Date	Author	Reviewed	Date
DRAFT	16-Aug-12	TH	MP	16-Aug-12
FINAL	7-Sep-12	MP	CLIENT	7-Sep-12

Design Producer Statement

On-Site Wastewater Disposal System Design

ISSUED BY:	Strategic Environmental and Engineering Consulting (SEEC)
TO:	Sydney Catchment Authority
DA No:	-
OWNER	Andrew Leimroth
IN RESPECT OF:	New On-site Wastewater Management System
AT:	Berrima Diesel, 3483, Old Hume Highway, Berrima, NSW.

Strategic Environmental and Engineering Consulting have been contracted by Andrew Leimroth to provide the technical design details for an on-site wastewater system.

The design has been carried out in accordance with:

- SCA, 2012. Developments in Sydney's Drinking Water Catchment - *Water Quality Information Requirements*
- DLG, 1998. Environment and Health Protection Guidelines - *On-Site Sewage Management for Single House Holds*
- AS/NZS 1547:2012. *On-Site Domestic Wastewater Management* .

This is an independent design, covered by a current policy of Professional Indemnity Insurance

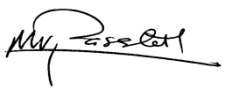
DECLARATION:
I believe on reasonable grounds that this design has been carried out in accordance with agency and Council requirements, and best practice in on-site wastewater design principles and procedures.

NOTE: This statement does NOT approve the installed system.

DISCLAIMER:
Approval is to be sought from SEEC should variations to the specification and layout in this report be considered necessary by the installer before or at the time of installation. Failure to do so will invalidate the Design Producer Statement and SEEC will no longer take responsibility for the design.

The client is to make full disclosure of relevant information on existing and / or proposed activities on the site that will influence estimation of likely daily wastewater quantity (based on the number of potential bedrooms and other wastewater producing activities) and quality (in particular any chemicals in the wastewater stream potentially toxic to biological wastewater processes).

Subsequent changes to the site that might affect the topography and soil profiles are to be notified by the client. Failure by the client to provide this information will invalidate this Design Producer Statement.

SIGNATURE: 

TITLE: Director
NAME: Mark Passfield
FOR: Strategic Environmental & Engineering Consulting
DATE: 7/09/2012

Executive Summary

Scope of Work

Strategic Environmental and Engineering Consulting has been commissioned by Mr. John Leimroth to provide this wastewater site assessment. It forms part of a response to advice given in a letter from Shaw Reynolds Bowen and Gerathy Pty Ltd reference CHS:PXN:121175:RXM, 25th July 2012 and it will accompany an application to install a new septic treatment system at Berrima Diesel, 3483 Old Hume Highway, NSW. The site is occupied by a two bedroom dwelling a single bedroom dwelling various outbuildings and a diesel tuning business all of which are on a town water supply (Figure 1).This report is required to show how treated wastewater generated from the diesel tuning business can be sustainably managed on the site.

Site Description

The site is a 3 ha semi-rural residential lot. The existing business premises are located close to the eastern site boundary. An area just south of here is the location of the Expected Effluent Application Area (EEAA). Here the site has a very good cover of pasture grass and a few scattered trees.

A suitable EEAA has been identified (Figure 1). This area slopes west at approximately 5% and is well exposed to sun and wind.

The site is affected by the presence of a watercourse just beyond the boundary which flows parallel to the western extent of the site. However, appropriate buffers are more than achievable (Figure 1). According to the NSW Natural Resources Atlas there are no bores used for potable water supply within 250m of the Expected Effluent Application Area (EEAA).

Soils are reminiscent of the Soapy Flat Soil Landscape and consist of 100 mm of brown sandy loam topsoil over 500 mm of moderately pedal clay loam over 600 mm of orange moderately pedal clay loam.

Proposed Wastewater Management System

The office facilities include a toilet with hand basin and a kitchenette. At peak times the office is expected to have no more than 12 staff. A design wastewater loading of 840 L/day has been calculated and it is proposed to treat all wastewater in a septic tank that will overflow to a pump well. Wastewater will then be disposed of via absorption beds (Drawings 12000207-WW01 to WW03). The required area of bed is 56 m² this can be provided by two beds each 2 m x 14 m built along the contour and should be located within the EEAA shown on Figure 1.

An index valve will be used to select each bed. The disposal area will be as detailed in drawings 12000204-WW01 to WW03.

Conclusion and Recommendations

We conclude that the site is suited to provide onsite wastewater disposal via absorption beds after treatment in a septic tank. In particular our recommendations are:

1. To decommission the existing septic tank and disposal area;
2. To install an approved septic tank of minimum size 3,000 L to treat all wastewater;
3. To install 56 m² of absorption beds (two 2 m x 14 m beds); (Drawings 12000204-WW01 to WW03)
4. To protect the beds from stock and vehicle damage;
5. For the developer to submit full details of the chosen treatment and disposal systems to Council for their approval;
6. To preferentially select low phosphorus, liquid detergents;
7. To install and manage the wastewater system according to the details of this report, its appendices and the manufacturer's recommendations.

1. Site Evaluators

SEEC
Strategic Environmental & Engineering Consulting
PO Box 1098, Bowral NSW 2576
P: (02) 4862 1633
F: (02) 4862 3088

Signature:

Project Reference: 12000204-WWED-01
Date of Assessment: 7/09/2012
Template July 2012

2. Site Information

Site Address:	Berrima Diesel, 3483, Old Hume Highway, Berrima, NSW.
GPS reading (if known)	-34.496503, 150.327018
Owner:	Andrew Leimroth
Owner Address:	3483, Old Hume Highway, Berrima, NSW
Owner Phone:	4877 1256
Developer:	Andrew Leimroth
Developer Address:	3483, Old Hume Highway, Berrima, NSW
Developer Phone:	4877 1256
Allotment Size:	3 Ha
Existing Development:	Vehicle Workshop, Offices, Toilet, Hand Basin and Kitchenette
Water Supply:	Town
Number of Potential Staff:	13
Local Government Authority:	Wingecarribee Shire Council
Assessment Criteria:	- AS/NZS 1547:2012 - On-site Domestic Wastewater Management; - Dept. Local Govt (1998) - On-site Sewage Management for Single Households; - SCA (2012) - Design and Installation of On-site Wastewater Systems - Any development control plans or strategies of the local Council
Design Wastewater Allowance	NSW Health *Septic Tank and Collection Well Accreditation Guideline* . December, 2001 Table 1: Allowances and Daily Flows for Calculation of Tank Capacities.

Design Wastewater Loading: 390 L/day

Figure 1: Expected Effluent Application Area (EEAA)

3. Physical Site Assessment

The site and soil has been undertaken following AS/NZS 1547:2012: On-site Domestic Wastewater Management, Sections 2.1 & 2.2 of the Sydney Catchment Authority's Designing and Installing On-Site Wastewater Systems (2012) and Appendix 2 of the 'Environment & Health Protection Guidelines: On-site Sewage Management for Single Households (the 'Silver Book', Department of Local Government, 1998).

3.1 Climate

Climate is an important factor in onsite wastewater management. It is particularly important when designing evapotranspiration beds as the dual parameters of incidental rainfall and evaporation have a direct effect on the required size. If ETA beds are adopted a hydraulic balance based on historical climatic data is provided. Areas that have high evaporation and low rainfall are better suited to effluent management than those with a cold and/or wet climate.

Limitation	Low	Med.	High
	x		N/A

The site is in an area where evaporation exceeds rainfall for most, if not all of, the year.

3.2 Flood Potential

It is required to locate all effluent management areas (EMAs) above the 1:20 year flood level. This is to reduce the risk of effluent being transported off the site. In addition all electrical components, vents and inspection holes should be located above the 1:100 year flood level. This might involve locating the electrical components remote from the tanks, e.g. on a wall or similar.

Limitation	Low	Med.	High
	x		

We are not aware of any flood study having been undertaken on this property. However there does not appear to be any threat of flooding in the proposed EMA.

3.3 Exposure

Sun and wind exposure on the EMA should be maximised to help with evaporation. Factors that affect this are local topography, vegetation and the built environment. Improper location of an EMA in the shade can reduce evaporation by up to 30 percent.

Limitation	Low	Med.	High
	x		

The proposed EMA is well exposed to sun and wind

3.4 Slope Gradient

Slope is an important parameter affecting the choice of effluent management systems. Excessive slope increases the risk of effluent leaving the site, particularly during wet weather. It also makes the excavation of absorption or ETA beds difficult as their bases must be level. The values suggested are based on ideal site and soil conditions. If conditions are not ideal we might have adopted a more conservative approach.

Limitation	Low	Med.	High
	x		

Slopes in the proposed EMAs are between 0 and 5 percent.

3.5 Landform

Different landforms pose different limitations to effluent management. The risk of run-on and hence the risk of runoff from an EMA is directly related to the type of landform and the position of the EMA on it. Different systems are suitable for different slope gradients.

Limitation	Low	Med.	High
	x		

The proposed EMA is either on a crest, upper side slope or an open plain. Therefore, the risk of effluent runoff is considered low.

3.6 Run on and Seepage

Surface stormwater run-on should not be permitted onto an EMA. This is because it could transport effluent offsite and into receiving waters. In addition regular run-on might inhibit vegetative growth.

Limitation	Low	Med.	High
		x	

Depending on the final location chosen for the EMAs, there might be a risk of surface stormwater run-on. This is because the EMA might be in the mid to lower parts of a side slope or there might be some run-on from road(s). An upslope diversion berm should be constructed to control this run-on.

3.7 Erosion Potential, Mass Movement

Sites where there is active erosion or where there are indications of mass movement should be avoided for effluent management.

Limitation	Low	Med.	High
	x		N/A

There are no signs of erosion at this well vegetated site.

3.8 Site Drainage

An EMA must not be placed in wet or damp areas. This is to reduce the risk of effluent leaving the site by either surface waters or groundwater. The type of vegetation and the condition of the soils give good indications of the site's drainage.

Limitation	Low	Med.	High
	x		N/A

There are no signs of moisture tolerant vegetation such as sedges, ferns or Juncus sp. In addition there are no signs of grey mottling in the subsoils within 600 mm of the surface.

3.9 Fill

The presence of fill might affect the choice of an effluent management system, particularly if very high or very low permeability soils have been imported. Fill might also be prone to settlement and might also be detrimental to the establishment of good vegetative cover.

Limitation	Low	Med.	High
	x		

There are no signs of fill at this site.

3.10 Surface Rock

The presence of frequent rock outcrops is usually an indication of shallow and variable soils and/or erosion. Construction of trenches/beds is difficult at such sites and special measures might need to be adopted.

Limitation	Low	Med.	High
	x		

The site has less than 10 percent rock outcrops.

3.11 Groundwater Use

The Sydney Catchment Authority recommends that effluent management areas are not located within 100 m from the high water level in bores that are used for domestic potable water.

Limitation	Low	Med.	High
	x		

There are no bores used for potable water within 100 m of the proposed effluent management area.

3.12 Vegetation

The suitability of the existing vegetation (if any) must be considered. The most common, and one of the most suitable, types of vegetation for effluent management is turf. Turf efficiently covers large areas and provides a good opportunity for evapotranspiration and nutrient uptake (particularly nitrogen). Some native vegetation, particularly that developed on poor sandy soils, will not respond well to nutrient-rich wastewater and, if possible, should be avoided or replaced with more suitable species.

Vegetation Type:	Improved Pasture		
Limitation	Low	Med.	High
	x		

The proposed EMAs have a good cover of turf or pasture grasses.

3.13 Proximity to Watercourses

The proximity of natural watercourses or dams is one of the most important factors in the selection of an EMA. It will be necessary to maintain buffers anywhere from 40 m to 150 m between the EMA and a watercourse/dam.

A 40 m buffer is required between an EMA and a drainage depression or a dam, a 100 m buffer is required from a permanent or an intermittent watercourse and 150 m is required from SCA named Rivers.

Section 5.5 provides further information of buffers distances.

Limitation	Low	Med.	High
		x	

There is a watercourse or dam affecting the site (figure 1). However, the proposed EMA is located outside of prescribed buffer distances

3.14 Land Availability

After summarising all of the above, particularly regarding buffer distances, land that is suitable for effluent management has been identified.

Limitation	Low	Med.	High
	x		

There is more than enough land suitable for effluent management at this site. Figure 1 identifies those areas that are suitable for the effluent management system adopted. Effluent must not be applied outside of those areas indicated, unless at the discretion of the supervising authority.

3.15 Stock Present	Yes

4. Soil Assessment

The site and soil has been undertaken following AS/NZS 1547:2012: On-site Domestic Wastewater Management, Sections 2.1 & 2.2 of the Sydney Catchment Authority's Designing and Installing On-Site Wastewater Systems (2012) and Appendix 2 of the 'Environment & Health Protection Guidelines: On-site Sewage Management for Single Households (the 'Silver Book', Department of Local Government, 1998).

4.1 Geology and Soil Landscape

Soapy Flat

4. Soil Description

4.2.1 Soil Profile Description

Test Pit 1

Layer 1	0	to	100	Brown Sandy Loam
Layer 2	100	to	200	Brown Sandy Clay Loam
Layer 3	200	to	600	Orange Brown Clay Loam
Layer 4	600	to	1100	Orange Clay Loam

Test Pit 2

Layer 1	0	to	100	Brown Sandy Loam
Layer 2	100	to	200	Brown Sandy Clay Loam
Layer 3	200	to	500	Orange Brown Clay Loam
Layer 4	500	to	1200	Orange Clay Loam

Test Pit 3

Layer 1		to		
Layer 2		to		
Layer 3		to		
Layer 4		to		

4.2.2 Soil Classification and Design Loading Rates (DLR)

Soil Category	Soil Texture	Structure	Indicative Permeability		Design Loading Rate (DLR) (mm/day) (AS/NZS 1547:2012) Trenches & Beds - Primary Treated - Conservative Rate
1	Gravels & Sands	Massive	>3.0		
2	Sandy Loams	Weak/ Massive	>3.0		
			1.4 - 3.0		
3	Loams	High/ Moderate	1.5 - 3.0		
			0.5 - 1.5		
4	Clay Loams	High/ Moderate	0.5 - 1.5	x	12
		Weak	0.12 - 0.5		
		Massive	0.06 - 0.12		
5	Light Clays	Strong	0.12 - 0.5		
		Moderate	0.06 - 0.12		
		Weak/ Massive	< 0.06		
6	Medium to Heavy Clays	Strong	0.06 - 0.5		
		Moderate	< 0.06		
		Weak/ Massive	< 0.06		

4.3 Soil Related Constraints

4.3.1 Soil Depth to a Limiting Layer (e.g. bedrock or watertable)

Soil depth is an important factor in choosing a suitable effluent disposal method. The depth of soil is measured to a limiting layer - i.e. bedrock or a periodically high watertable (shown by grey mottling in the soils). Generally, soil is a very good medium for providing treatment to effluent. As the effluent passes through soil it is filtered and there is adsorption of chemicals (particularly phosphorous) onto the soil particles. In addition, the time taken to pass through the soil provides time for viruses to die. At least 600mm of soil is required under beds or trenches dosed with primary-treated effleunt. This can be reduced to 300 mm for secondary effluent but a check must be made of the linear loading rate.

Limitation	Low	Medium	High	V.High
The soil depth is between 0.8 m and 1.2 m. Primary treated effluent may only be disposed of in beds - if site gradient and soil type permits. However, depending on the exact depth such beds might need to be built "at grade".		x		N/A

4.3.2 Coarse Fragments

Coarse fragments are those over 2 mm in diameter. They can pose limitations to vegetative growth by lowering the soil's ability to supply water and nutrients.

Limitation	Low	Medium	High	V.High
Less than 20 percent coarse fragments present	x			N/A

4.3.3 pH of Soils

The pH of a soil influences its ability to supply nutrients to vegetation. If the soil is too acidic vegetative growth would be inhibited.

pH measured by laboratory =	7

Limitation	Low	Medium	High	V.High
The pH of the soil is more than 6.0. This would not inhibit vegetative growth	x			N/A

4.3.4 Electrical Conductivity

The electrical conductivity of the soil relates to the amount of salts present. A high salt concentration would inhibit vegetative growth. Electrical conductivity has been measured in deci sememes per metre (dS/m).

Measured Conductivity =	0.03

Limitation	Low	Medium	High	V.High
The electrical conductivity of the soils is less than 4 dS/m. This would not inhibit vegetative growth.	x			N/A

4.3.5 Emerson Aggregate Test (EAT)

The Emerson Aggregate Test (EAT) is a measure of soil dispersibility and susceptibility to erosion. It assesses the physical changes that occur to a single ped of soil when immersed in water - specifically whether it slakes and falls apart or disperses and clouds the water.

Measured EAT value =	3(2)

Limitation	Low	Medium	High	V.High
The soils show no dispersion potential	x			N/A

4.3.6 Phosphorus Sorption

The capacity of a soil to adsorb phosphorus is expressed as its phosphorus sorption capacity. Soils with a high capacity to sorb phosphorous are preferred and can result in smaller application areas. These numbers are used in Table 2 - the nutrient balance.

TOPSOIL Measured P-Sorp =		107
SUBSOIL Measured P-Sorp =		525

Limitation	Low	Medium	High	V.High
The soils show a moderate ability to sorb phosphorous		x		N/A

4.3.7 Cation Exchange Capacity (CEC)

The Cation Exchange Capacity (CEC) of a soil is a measure of its ability to hold and release various elements and compounds. A soil with a high CEC is better able to entrain pollutants (i.e. provide better in-soil treatment).

Measured CEC =	6

Limitation	Low	Medium	High	V.High
The soils have a CEC of between 5 and 15 cmol/kg. They are reasonably well suited to provide additional treatment to the effluent.		x		

4.3.8 Sodicity

Sodic soils are characterised by a disproportionately high concentration of sodium (Na) in their cation exchange complex. They are usually defined as having an exchangeable sodium percentage greater than 5%. These soils can be unstable, exhibiting poor physical and chemical properties that can impede water infiltration, water availability and, ultimately, plant growth.

Measured Sodicity =	-

Limitation	Low	Medium	High	V.High
The sodicity of the soil is less than 5% and so the soils are not sodic.	x			N/A

5. Recommendations

5.1 Wastewater System

The following disposal method has been chosen by the client and/ or is considered the most suitable

Absorption Beds

Following treatment in a:

Septic Tank of minimum volume 3000 litres and fitted with an outlet filter.

5.2 Sizing of the Disposal System

AS/NZS 1547:2000 provides a formula to be used to calculate the required area of the bed(s).

The formula to calculate the required area of bed(s) is:

Required area = wastewater load/ DLR.

The DLR from section 4.2.2 is adopted in the calculations.

Note that the maximum recommended width of an absorption bed is 4 m and the maximum recommended length is 20 m. This is to ensure even application of effluent over the base. However, if the beds are pressure dosed (i.e. from a pump well or an AWTS) these conditions may be relaxed.

5.3 Professional Construction

A licensed plumber familiar with the design of wastewater disposal systems must be employed to install the disposal system. A combination of manual and/or automatic switching valves will be used to help switch the wastewater flow between the different beds as required. The full details of the disposal system are given in the accompanying design drawings.

5.4 Nominated Disposal System

Based on all the limitations discussed the nominated disposal system is:

Trenches		**Absorption Beds**	x	**ETA/ETS Beds**	

5.5 Buffer Distances

SCA (2012) guidelines table 2.4 and NSW DLG (2012) Table 5.5 specify buffer distances from the selected land application system as follows:

Buildings, boundaries, paths and walkways, retaining walls.	**6.0 m**
Premises boundaries, paths and walkways, recreation areas, in ground swimming pools	**6.0 m**
In ground potable water tanks	**15.0 m not to be located upslope**
Permanent and intermittent watercourses	**100 m from high water level 150m from SCA named river**
Bore or well used for domestic consumption	**100 m from high water level**
Dam and drainage depression	**40 m from high water level**

5.6 Detergent Use

Liquid detergents should be used in the household as powders contain elevated concentrations of salt (which could alter the soil's chemistry and reduce its ability to percolate water). All cleaning products must be "Septic Friendly".

5.7 Water Saving Fixtures

This design assumes at least three-star rated plumbing fixtures are used in any new home.

2.6 System Design Drawings

The proposed layout, operation, installation, location of the land application area/treatment system relevant to this site are as detailed in the following documents;

SEEC Report 12000204-WWED-01
SEEC Drawing 12000204-WW01
SEEC Drawing 12000204-WW02
SEEC Drawing 12000204-WW03

Other Matters:

▪ The exact location of the treatment tank(s) is to be decided by the installer in consultation with the property owner. It is to be at least 3 m from any building.

▪ A power supply (and telephone line if telemetry or an automated monitoring alarm is fitted), will be required to deliver power to the treatment unit (if required).

Other Requirments:

It is a requirement of this report that SEEC receive a copy of the Installer's Installation Certificate.

This design assumes a certain design wastewater load. It will be invalidated if that load were to significantly increase (>10 percent): This might occur due to (but not limited to):

- if a spa bath or in-sink food grinder were installed
- if the home is occupied by more than six persons
- if water fixtures that are not three-star rated or better are installed.

The design is warranted to meet the required design guidelines and standards at the time of writing. However, that does not preclude the requirement of the home owner to satisfactorily use maintain the system to the requirements of the manufacturers and to the generic guidelines given in Appendix 1. In particular there are requirements to:

- ensure that only "septic-friendly" substances are disposed into the system (materials and chemicals)
- periodically (once per 3-5 years) clean out the septic tank
- regularly (once per three months) clean the septic outlet filter
- periodically (one per year) check the disposal area for signs of seepage
- periodically (one per year) check the upslope diversion drain (if applicable) to ensure stormwater is adequately diverted

Should there be a problem with your system you should initially consult the licensed plumber who installed the system and/or your regular maintenance contractor.

DECLARATION:

This System Design dated 7/09/2012 has been prepared by:

SIGNATURE: 

TITLE: Senior Civil Designer

NAME: Jason Armstrong

DO

- ✓ Learn how your sewage management system works and its operational and maintenance requirements.
- ✓ Learn the location and layout of your sewage management system.
- ✓ Have your AWTS (if installed) inspected and serviced four times per year by an approved contractor. Other systems should be inspected at least once every year. Assessment should be applicable to the system design.
- ✓ Keep a record of desludgings, inspections, and other maintenance.
- ✓ Have your septic tank or AWTS desludged every three years to prevent sludge build up, which may 'clog' the pipes.
- ✓ Conserve water. Conservative water use around the house will reduce the amount of wastewater which is produced and needs to be treated.
- ✓ Discuss with your local council the adequacy of your existing sewage management system if you are considering house extensions for increased occupancy.

DON'T

- ✘ Don't let children or pets play on land application areas.
- ✘ Don't water fruit and vegetables with effluent.
- ✘ Don't extract untreated groundwater for cooking and drinking.
- ✘ Don't put large quantities of bleaches, disinfectants, whiteners, nappy soakers and spot removers into your system via the sink, washing machine or toilet.
- ✘ Don't allow any foreign materials such as nappies, sanitary napkins, condoms and other hygiene products to enter the system.
- ✘ Don't put fats and oils down the drain and keep food waste out of your system.
- ✘ Don't install or use a garbage grinder or spa bath if your system is not designed for it.

Reducing water usage

Reducing water usage will lessen the likelihood of problems such as overloading with your septic system. Overloading may result in wastewater backing up into your house, contamination of your yard with improperly treated effluent, and effluent from your system contaminating groundwater or a nearby waterway.

Your sewage management system is also unable to cope with large volumes of water such as several showers or loads of washing over a short period of time. You should try to avoid these 'shock loads' by ensuring water use is spread more evenly throughout the day and week.

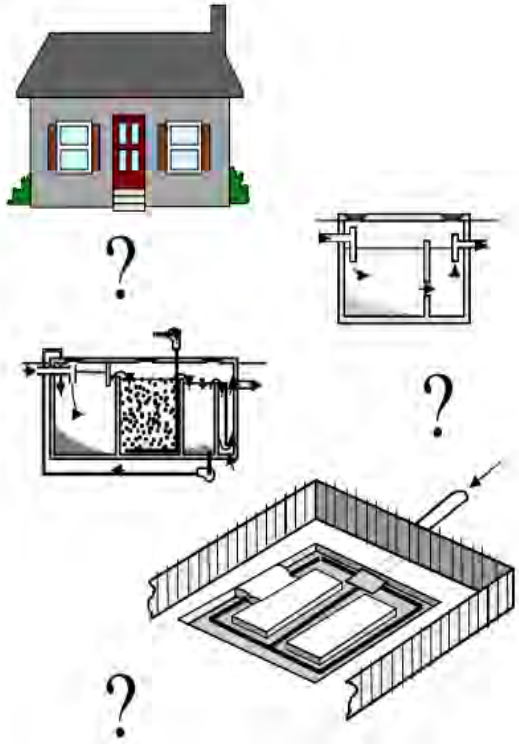
HELP PROTECT YOUR HEALTH AND THE ENVIRONMENT

Poorly maintained sewage management systems are a serious source of water pollution and may present health risks, cause odours and attract vermin and insects.

By looking after your management system you can do your part in helping to protect the environment and the health of you and your community.

For more information please contact:

Managing Wastewater In Your Backyard



SEEC

ON-SITE SEWAGE MANAGEMENT SYSTEMS

If you live in or rent a house that is not connected to the main sewer then chances are that your yard contains an on-site sewage management system. If this is the case then you have a special responsibility to ensure that it is working as well as it can.

The aim of this pamphlet is to introduce you to some of the most popular types of on-site sewage management systems and provide some general information to help you maintain your system effectively. You should find out what type of system you have and how it works.

More information can be obtained from the pamphlets:

Your Septic System
Your Aerated Wastewater Treatment System
Your Composting Toilet
Your Land Application Area

You can get a copy of these pamphlets from your local council or the address marked on the back of this pamphlet.

It is important to keep in mind that maintenance needs to be performed properly and regularly. Poorly maintained on-site sewage management systems can significantly affect you and your family's health as well as the local environment.

What is an on-site sewage management system?

A domestic on-site sewage management system is made up of various components which - if properly designed, installed and maintained - allow the treatment and utilisation of wastewater from a house, completely within the boundary of the property.

Wastewater may be blackwater (toilet waste), or greywater (water from showers, sinks, and washing machines), or a combination of both.

Partial on-site systems - eg. pump out and common effluent systems (CES) - also exist. These usually involve the preliminary on-site treatment of wastewater in a septic tank, followed by collection and transport of the treated wastewater to an off-site management facility. Pump out systems use road tankers to transport the effluent, and CES use a network of small diameter pipes.

How does an on-site sewage management system work?

For complete on-site systems there are two main processes:

1. treatment of wastewater to a certain standard
2. its application to a dedicated area of land.

The type of application permitted depends on the quality of treatment, although you should try to avoid contact with all treated and untreated wastewater, and thoroughly wash affected areas if contact does occur.

Treatment and application can be carried out using various methods:

Septic Tank
Septic tanks treat both greywater and blackwater, but they provide only limited treatment through the settling of solids and the flotation of fats and greases. Bacteria in the tank break down the solids over a period of time. Wastewater that has been treated in a septic tank can only be applied to land through a covered soil absorption system, as the effluent is still too contaminated for above ground or near surface irrigation.

AWTS
Aerated wastewater treatment systems (AWTS) treat all household wastewater and have several treatment compartments. The first is like a septic tank, but in the second compartment air is mixed with the wastewater to assist bacteria to break down solids. A third compartment allows settling of more solids and a final chlorination contact chamber allows disinfection. Some AWTS are constructed with all the compartments inside a single tank. The effluent produced may be surface or sub-surface irrigated in a dedicated area.

Composting Toilets
Composting toilets collect and treat toilet waste only. Water from the shower, sinks and the washing machine needs to be treated separately (for example in a septic tank or AWTS as above). The compost produced by a composting toilet has special requirements but is usually buried on-site.

These are just some of the treatment and application methods available, and there are many other types such as sand filter beds, wetlands, and amended earth mounds. Your local council or the NSW Department of Health have more information on these systems if you need it.

Regulations and recommendations

The NSW Department of Health determines the design and structural requirements for treatment systems for single households. Local councils are primarily responsible for approving the installation of smaller domestic septic tank systems, composting toilets and AWTSs in their area, and are also responsible for approving land application areas. The NSW Environment Protection Authority approves larger systems.

The design and installation of on-site sewage management systems, including plumbing and drainage, should only be carried out by suitably qualified or experienced people. Care is needed to ensure correct sizing of the treatment system and application area.

Heavy fines may be imposed under the Clean Waters Act if wastewater is not managed properly.

Keeping your on-site sewage management system operating well

What you put down your drains and toilets has a lot to do with how well your system performs. Maintenance of your sewage management system also needs to be done well and on-time. The following is a guide to the types of things you should and should not do with your system.

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DON'T

- ✘ Don't put large quantities of bleaches, disinfectants, whiteners, nappy soakers and spot removers into your septic tank via the sink, washing machine or toilet.
- ✘ Don't allow any foreign materials such as nappies, sanitary napkins, condoms and other hygiene products to enter the system.
- ✘ Don't use more than the recommended amounts of detergents.
- ✘ Don't put fats and oils down the drain and keep food waste out of your system.
- ✘ Don't install or use a garbage grinder or spa bath if your system is not designed for it.

Reducing water usage

Reducing water usage will lessen the likelihood of problems such as overloading with your septic system. Overloading may result in wastewater backing up into your house, contamination of your yard with improperly treated effluent, and effluent from your system contaminating groundwater or a nearby river, creek or dam.

Conservative water use around the house will reduce the amount of wastewater which is produced and needs to be treated.

Your septic system is also unable to cope with large volumes of water such as several showers or loads of washing over a short period of time. You should try to avoid these 'shock loads' by ensuring water use is spread more evenly throughout the day and week.

Warning signs

You can look out for a few warning signs that signal to you that there are troubles with your septic tank. Ensure that these problems are attended to immediately to protect your health and the environment.

Look out for the following warning signs:

- Water that drains too slowly.
- Drain pipes that gurgle or make noises when air bubbles are forced back through the system.
- Sewage smells, this indicates a serious problem.
- Water backing up into your sink which may indicate that your septic system is already failing.
- Wastewater surfacing over the land application area.

Trouble shooting guide

If there are odours check the following areas:

- Greasetrap (if installed), is it full or blocked?
- Absorption field, is it wet or soggy?
- Has there been recent heavy rain?

Odour problems from a vent on the septic system can be a result of slow or inadequate breakdown of solids. Call a technician to service the system.

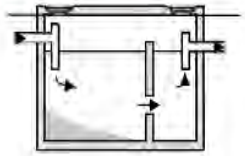
HELP PROTECT YOUR HEALTH AND THE ENVIRONMENT

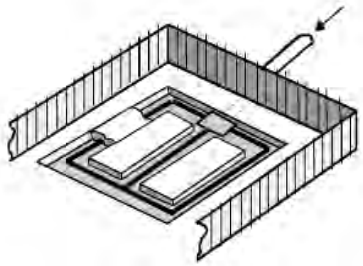
Poorly maintained septic tanks are a serious source of water pollution and may present health risks, cause odours and attract vermin and insects.

By looking after your septic system you can do your part in helping to protect the environment and the health of you and your family.

If you would like more information please contact:

Your Septic System





SEPTIC SYSTEMS

In unsewered areas, the proper treatment and reuse of household wastewater on-site is critical in ensuring minimal impact to public health and the environment. Septic systems have been developed as a way of achieving this.

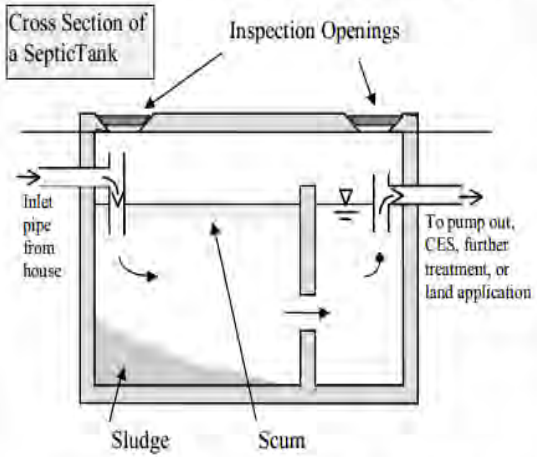
What is a septic system?

A septic system consists of a septic tank combined with a soil absorption system and/or transpiration beds or pump out connections. The system enables people living in unsewered areas to treat and disperse their sewage.

A septic tank is a structurally sound watertight tank used for the treatment of sewage and liquid wastes from a single household or multiple dwellings.

How does a septic system work?

All the wastewater from a household enters the tank. Most of the solids settle to the bottom and are retained in the tank forming a sludge layer, whilst fats and greases collect at the top in a scum layer.

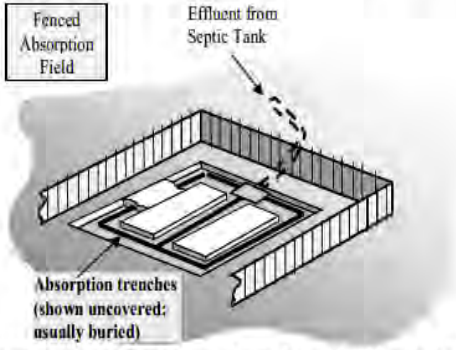


Bacteria in the septic tank break down the solid matter in the sludge and scum layers. Material that cannot be fully broken down gradually builds up in the tank and must be pumped out periodically.

There are three ways to handle septic tank effluent:

On-site application. The effluent flows from the septic tank to transpiration and/or absorption trenches. Here the effluent is mainly absorbed into the soil and partly evaporated by the sun and used by vegetation.

Such application systems have the potential to contaminate groundwater and are not recommended in sensitive locations or in higher density developments. Further treatment followed by subsurface irrigation should be considered.



Pump out. The effluent flows from the septic tank into a collection well or holding tank. At regular periods, a tanker pumps out the holding tank and transports the effluent to an off-site management facility.

Common effluent system (CES). The treated wastewater is transported to an off-site management facility through a network of small diameter pipes.

Regulations and recommendations

An on-site septic system requires approval from the local council before it is put in place. The regulations that apply to single household systems differ from those for multiple dwellings. The Environment Protection Authority (EPA) is responsible for approving septic tanks used to treat wastes generated by multiple dwellings like caravan parks and commercial and industrial premises. The NSW Department of Health determines the design and structural requirements for septic tanks and collection wells.

Local councils have the authority to approve systems certified by the NSW Department of Health for individual properties and ensure the systems do not have adverse impacts on health and the environment. Local councils are responsible for ensuring that the approved system is installed according to specifications and any special conditions, and is maintained and serviced correctly. You should consult your local council on the regulations that apply to you.

Care of the septic tank is only a part of the maintenance of your septic system. Management of the treated wastewater from your septic system is your responsibility and is discussed in the pamphlet "Your Land Application Area". Heavy fines may be imposed if the effluent is managed improperly.

Maintaining your septic system

The effectiveness of the system will, in part, depend on how it is operated and maintained. The following is a guide on how to achieve the most from your system.

DO

- ✓ Have your septic tank desludged every three years to prevent sludge build up, which may 'clog' the pipes and absorption trenches.
- ✓ Have your septic tank serviced annually by contractors to check scum and sludge levels, and the presence of blockages in the outlet and inlet pipes.
- ✓ Have your grease trap (if installed) cleaned out at least every two months.
- ✓ Keep a record of pumping, inspections, and other maintenance.
- ✓ Learn the location and layout of your septic system and land application area.
- ✓ Check household products for suitability for use with a septic tank.
- ✓ Use biodegradable liquid detergents, such as concentrates with low phosphorous.
- ✓ Ensure your tank is mosquito-proofed.
- ✓ Conserve water.

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Maintaining your land application area

The effectiveness of the application area is governed by the activities of the owner.

DO

- ✓ Construct and maintain diversion drains around the top side of the application area to divert surface water.
- ✓ Ensure that your application area is kept level by filling any depressions with good quality top soil (not clay).
- ✓ Keep the grass regularly mowed and plant small trees around the perimeter to aid absorption and transpiration of the effluent.
- ✓ Ensure that any run off from the roof, driveway and other impermeable surfaces is directed away from the application area.
- ✓ Fence irrigation areas.
- ✓ Ensure appropriate warning signs are visible at all times in the vicinity of a spray irrigation area.
- ✓ Have your irrigation system checked by the service agent when they are carrying out service on the treatment system.

DON'T

- ✘ Don't erect any structures, construct paths, graze animals or drive over the land application area.
- ✘ Don't plant large trees that shade the land application area, as the area needs sunlight to aid in the evaporation and transpiration of the effluent.
- ✘ Don't plant trees or shrubs near or on house drains.
- ✘ Don't alter stormwater lines to discharge into or near the land application area.
- ✘ Don't flood the land application area through the use of hoses or sprinklers.
- ✘ Don't let children or pets play on land application areas.
- ✘ Don't water fruit and vegetables with the effluent.
- ✘ Don't extract untreated groundwater for potable use.

Warning signs

Regular visual checking of the system will ensure that problems are located and fixed early.

The visual signs of system failure include:

- surface ponding and run-off of treated wastewater
- soil quality deterioration
- poor vegetation growth
- unusual odours

Volume of water

Land application areas and systems for on-site application are designed and constructed in anticipation of the volume of waste to be discharged. Uncontrolled use of water may lead to poorly treated effluent being released from the system.

If the land application area is waterlogged and soggy the following are possible reasons:

- Overloading the treatment system with wastewater.
- The clogging of the trench with solids not trapped by the septic tank. The tank may require desludging.
- The application area has been poorly designed.
- Stormwater is running onto the area.

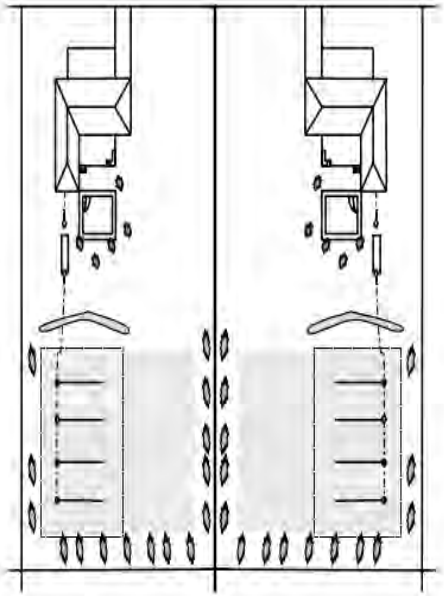
HELP PROTECT YOUR HEALTH AND THE ENVIRONMENT

Poorly maintained land application areas are a serious source of water pollution and may present health risks, cause odours and attract vermin and insects.

By looking after your sewage management system you can do your part in helping to protect the environment and the health of you and your family.

For more information please contact:

Your Land Application Area



LAND APPLICATION AREAS

The reuse of domestic wastewater on-site can be an economical and environmentally sound use of resources.

What are land application areas?

These are areas that allow treated domestic wastewater to be managed entirely on-site.

The area must be able to utilise the wastewater and treat any organic matter and wastes it may contain. The wastewater is rich in nutrients, and can provide excellent nourishment for flower gardens, lawns, certain shrubs and trees. The vegetation should be suitably tolerant of high water and nutrient loads.

How does a land application area work?

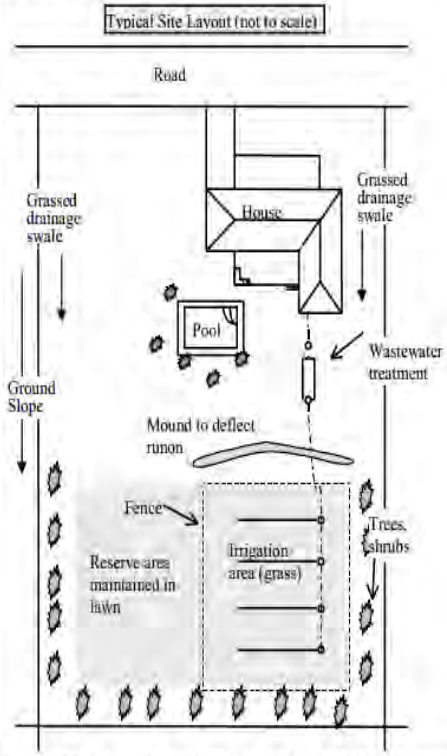
Treated wastewater applied to a land application area may be utilised or simply disposed, depending on the type of application system that is used. The application of the wastewater can be through a soil absorption system (based on disposal) or through an irrigation system (based on utilisation).

Soil absorption systems do not require highly treated effluent, and wastewater treated by a septic tank is reasonable as the solids content in the effluent has been reduced. Absorption systems release the effluent into the soil at a depth that cannot be reached by the roots of most small shrubs and grasses. They rely mainly on the processes of soil treatment and then transmission to the water table, with minimal evaporation and up-take by plants. **These systems are not recommended in sensitive areas as they may lead to contamination of surface water and groundwater.**

Irrigation systems may be classed as either subsurface or surface irrigation. If an irrigation system is to be used, wastewater needs to be pre-treated to at least the quality produced by an aerated wastewater treatment system (AWTS).

Subsurface irrigation requires highly treated effluent that is introduced into the soil close to the surface. The effluent is utilised mainly by plants and evaporation.

Surface irrigation requires highly treated effluent that has undergone aeration and disinfection treatments, so as to reduce the possibility of bacteria and virus contamination.



The effluent is then applied to the land area through a series of drip, trickle, or spray points which are designed to eliminate airborne drift and run-off into neighbouring properties.

There are some public health and environmental concerns about surface irrigation. There is the risk of contact with treated effluent and the potential for surface run-off. Given these problems, subsurface irrigation is arguably the safest, most efficient and effective method of effluent utilisation.

Regulations and recommendations

The design and installation of land application areas should only be carried out by suitably qualified or experienced people, and only after a site and soil evaluation is done by a soil scientist. Care should be taken to ensure correct buffer distances are left between the application area and bores, waterways, buildings, and neighbouring properties.

Heavy fines may be imposed under the Clean Waters Act if effluent is managed improperly.

At least two warning signs should be installed along the boundary of a land application area. The signs should comprise of 20mm high Series C lettering in black or white on a green background with the words:

RECLAIMED EFFLUENT
NOT FOR DRINKING
AVOID CONTACT

Depending on the requirements of your local council, wet weather storage and soil moisture sensors may need to be installed to ensure that effluent is only irrigated when the soil is not saturated.

Regular checks should be undertaken of any mechanical equipment to ensure that it is operating correctly. Local councils may require periodic analysis of soil or groundwater characteristics

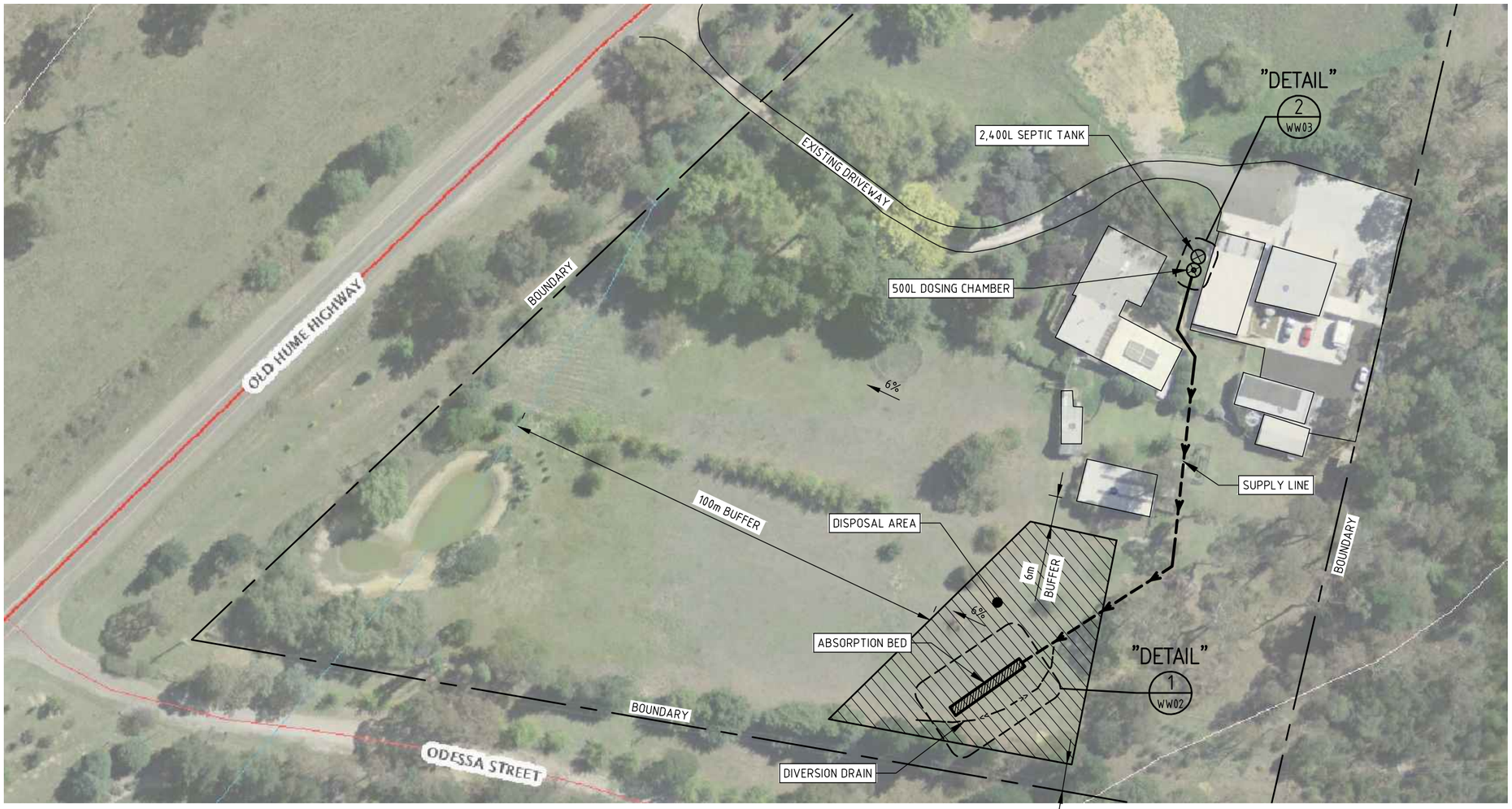
Humans and animals should be excluded from land application areas during and immediately after the application of treated wastewater. The longer the period of exclusion from an area, the lower the risk to public health.

The householder is required to enter into a service contract with the installation company, its agent or the manufacturer of their sewage management system, this will ensure that the system operates efficiently.

Location of the application area

Treated wastewater has the potential to have negative impacts on public health and the environment. For this reason the application area must be located in accordance with the results of a site evaluation, and approved landscaping must be completed prior to occupation of the building. Sandy soil and clayey soils may present special problems.

The system must allow even distribution of treated wastewater over the land application area.



SITE PLAN

0 10 20 30 40 50m

Scale: 1:1000

GENERAL NOTES:

1. PRIOR TO THE COMMENCEMENT OF WORKS, THE CONTRACTOR SHALL DETERMINE THE LOCATION AND LEVEL OF ALL SERVICES.
2. DURING CONSTRUCTION THE CONTRACTOR SHALL SHOW DUE DILIGENCE IN THE PROTECTION OF EXISTING SERVICES. ALL DAMAGED SERVICES SHALL BE REPAIRED OR REPLACED IMMEDIATELY AT THE CONTRACTORS EXPENSE.
3. THE CONTRACTOR SHALL AT ALL TIMES EXERCISE ALL NECESSARY PRECAUTIONS APPROPRIATE TO ENSURE THE SAFETY OF ALL PERSONS ON THE WORK SITE OR IN THE VICINITY OF THE WORK SITE.
4. SEDIMENT AND EROSION CONTROL MEASURES ARE TO BE INSTALLED AND MAINTAIINED BY THE CONTRACTOR PRIOR TO THE INSTALLATION OF THE WASTEWATER SERVICES IN ACCORDANCE WITH COUNCIL REQUIREMENTS.
5. TRENCH EXCAVATION IS TO BE IN ACCORDANCE WITH WORK COVER GUIDELINES AND AS/NZS 3500.2:2003, SECTION 5.2 "EXCAVATION OF TRENCHES". ALL OTHER WORKS ARE TO COMPLY WITH THE RELEVANT STANDARDS.
6. ALL SANITARY DRAINAGE TO BE INSTALLED IN ACCORDANCE WITH AS/NZS 3500.2:2003 "SANITARY PLUMBING AND DRAINAGE."
7. MAKE SMOOTH CONNECTION TO ALL EXISTING STRUCTURES AND SERVICES.
8. COUNCIL SHALL BE NOTIFIED 48 HOURS PRIOR TO COMMENCEMENT OF WORKS AND FOR ALL INSPECTIONS.
9. ALL WORK TO BE INSPECTED BY COUNCIL PRIOR TO BACKFILLING.
10. PROVIDE 300mm MINIMUM DEPTH OF COVER OVER ALL PIPES. WHERE SUBJECT TO VEHICULAR TRAFFICE THE FOLLOWING SHOULD APPLY:

    WHERE SUBJECT TO LIGHT TRAFFIC 450mm
    WHERE SUBJECT TO HEAVY TRAFFIC 500mm

11. THE LOCATION OF UNDERGROUND PIPES AND LAND APPLICATION FIELDS TO BE MARKED WITH TAPE TO AS/NZS2648.1
12. WARNING SIGN, COMPLYING WITH AS/NZS1319, AT THE BOUNDARIES OF THE DESIGNATED AREA IN AT LEAST TWO PLACES, CLEARLY VISIBLE TO PROPERTY USERS, WITH WORDING SUCH AS 'RECYCLED WATER - AVOID CONTACT - DO NOT DRINK'.
13. SEPTIC TANKS SHOULD BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH AS/NZS 1546.1. AND MANUFACTURERS RECOMMENDATIONS.
14. ALL DISTURBED AREAS AFFECTED BY CONSTRUCTION WORKS ARE TO BE GRASSED SEEDED AND FERTILISED AT THE COMPLETION OF THE WORKS.
15. DIMENSIONS ARE IN METERS. USE FIGURATIVE DIMENSIONS ONLY. DO NOT SCALE FROM DRAWINGS.
16. CONTRACTOR WILL PROVIDE A "COMPLETION OF WORKS" CERTIFICATE TO COUNCIL AND SEEC.

LEGEND

- 10% — SLOPE DIRECTION AND GRADE (APPROXIMATE)
- UPSLOPE DIVERSION DRAIN (REFER TO DETAIL ON DRAWING WW03)
- SUPPLY LINE 40mm PURPLELINE (PE) PRESSURE PIPE
- BOUNDARY
- 2,400L SEPTIC TANK
- 500L DOSING CHAMBER
- ABSORPTION BED
- DISPOSAL AREA

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
A	23/08/12	J.M.A.	S.C.A.	M.P.	ISSUED FOR APPROVAL

DRAWING STATUS	
DESIGN BY	J.M.A.
DRAWN BY	S.C.A.
FINAL APPROVAL	
SCALE: (on A3 Original)	1:1000

FOR APPROVAL

North

CLIENT: BERRIMA DIESEL

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email: reception@seec.com.au
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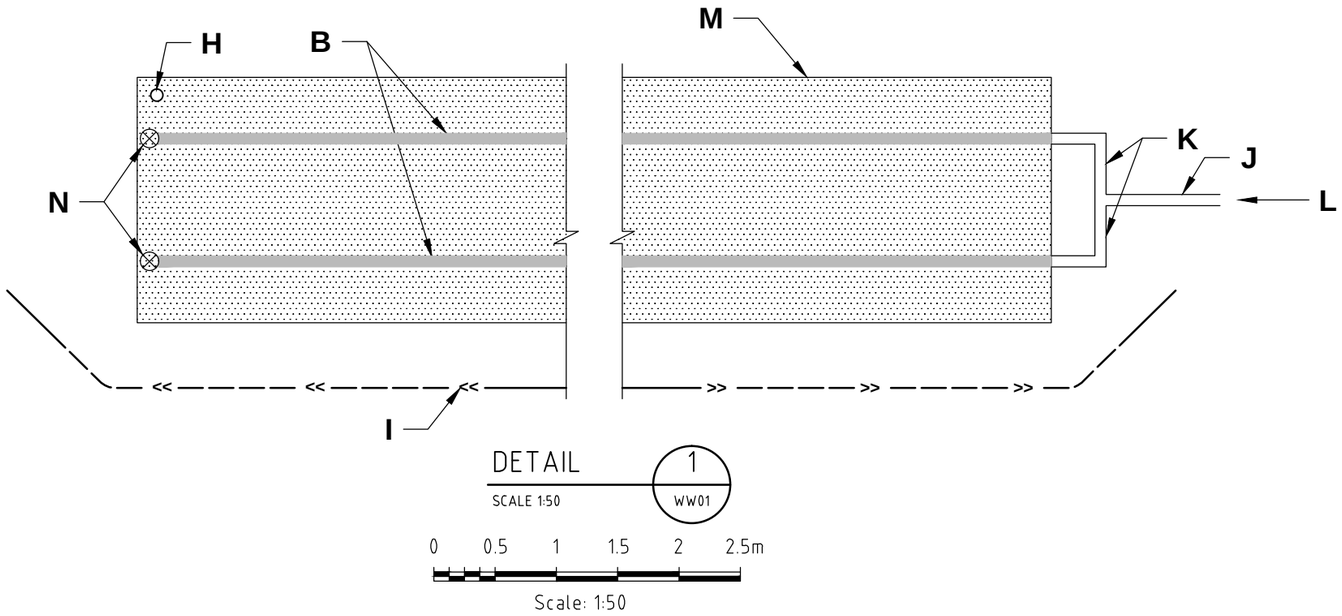
PROJECT TITLE: WASTEWATER SITE ASSESSMENT
3483 OLD HUME HIGHWAY
BERRIMA NSW

DRAWING TITLE: ON-SITE WASTEWATER SITE PLAN

PROJECT NO.	SUB-PR NO.	DRAWING NO.	REV
12000204	P01	WW01	A

Plot Date: Thursday, 23 August 2012 3:09:38 PM CAD File Name: L:\12000204 Berrima Diesel\Drawings\12000204_P01_WW_REV A.dwg

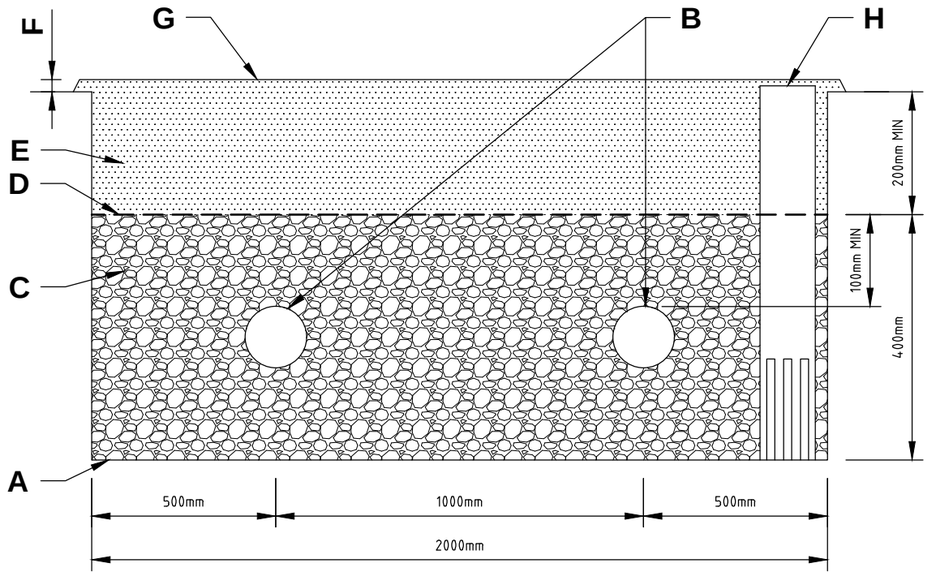


DETAIL 1 / WW01

SCALE 1:50

0 0.5 1 1.5 2 2.5m

Scale: 1:50



CROSS SECTION: ABSORPTION BED

0 0.1 0.2 0.3 0.4 0.5m

Scale: 1:10

ABSORPTION BED CONSTRUCTION NOTES:

A. THE BASE OF THE TRENCH MUST BE LEVEL TO ENSURE EVEN DISTRIBUTION OF EFFLUENT. BASE LEVELS SHOULD BE CHECKED WITH A DUMPY/LASER LEVEL.
B. 90mm SLOTTED PVC PIPE.
C. 20-40mmΦ DISTRIBUTION AGGREGATE.
D. GEOTEXTILE FILTER CLOTH.
E. CLEAN LOCAL OR IMPORTED TOP SOIL (SANDY LOAM TO CLAY LOAM).
F. ALLOWANCE FOR SETTLING AFTER BACKFILLING.
G. GRASS MUST BE ESTABLISHED ACROSS THE CONSTRUCTION AREA AS SOON AS POSSIBLE. BED SURFACE MUST BE SLIGHTLY MOUNDED.
H. INSPECTION PORT ON DOWNHILL SIDE OF BED. MADE FROM 50mm PVC-U PIPE WITH PERFORATIONS IN THE AGGREGATE LEVEL OF THE BED.
I. UPSLOPE STORMWATER DIVERSION DRAIN (SEE DRAWING WW03 FOR DESIGN DETAIL).
J. 40mm PURPLELINE (PE) PRESSURE PIPE SUPPLY LINE.
K. 40mm PVC-U PN9 DISTRIBUTION MANIFOLD.
L. PUMP FED EFFLUENT FROM TREATMENT SYSTEM (REFER TO DETAIL 2 ON WW03).
M. LOCATION AND ORIENTATION OF THE ABSORPTION BED TO BE AS PER DRAWING WW01.
N. FLUSH VLAVE

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
A	23/08/12	J.M.A.	S.C.A.	M.P.	ISSUED FOR APPROVAL

DRAWING STATUS	
DESIGN BY	J.M.A.
DRAWN BY	S.C.A.
FINAL APPROVAL	
SCALE: (on A3 Original)	AS SHOWN

FOR APPROVAL

North

CLIENT

BERRIMA DIESEL

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PROJECT TITLE

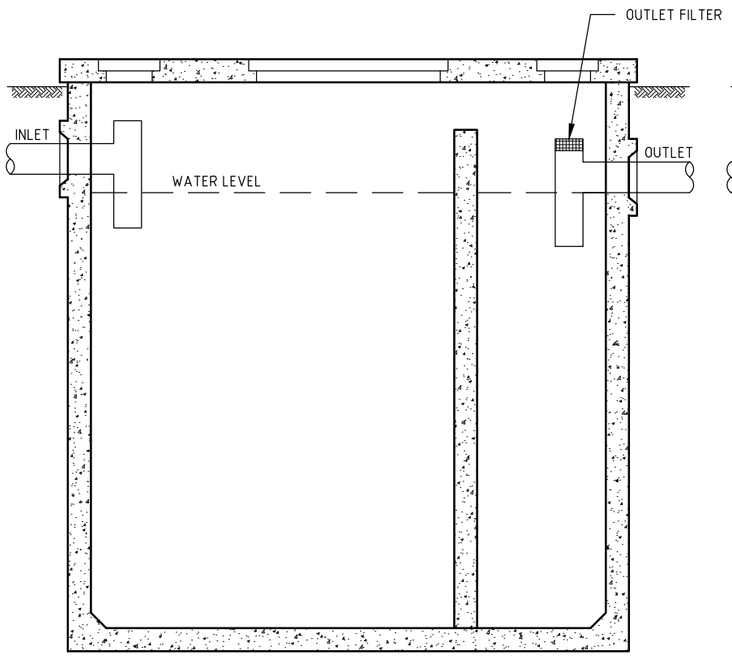
WASTEWATER SITE ASSESSMENT
3483 OLD HUME HIGHWAY
BERRIMA NSW

DRAWING TITLE

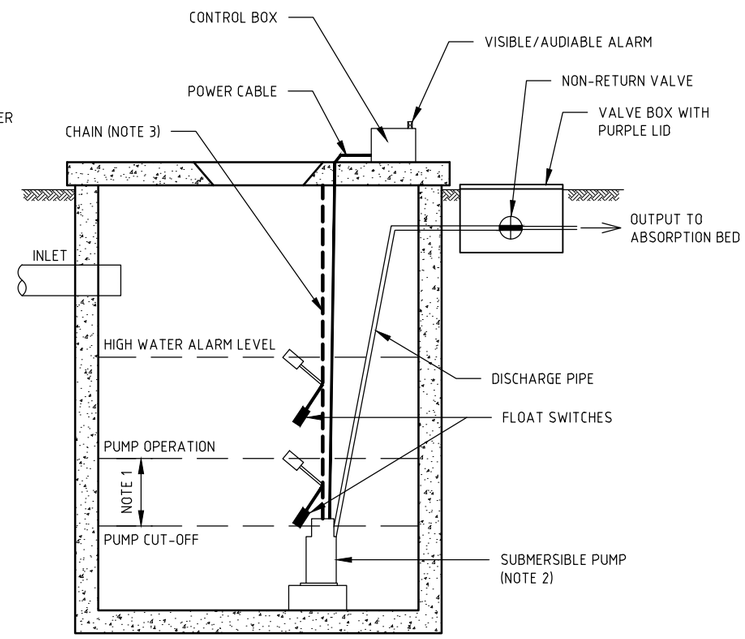
ON-SITE WASTEWATER ABSORPTION BED DETAIL

PROJECT NO.	SUB-PR NO.	DRAWING NO.	REV
12000204	P01	WW02	A

Plot Date: Thursday, 23 August 2012 3:09:21 PM CAD File Name: L:\12000204 Berrima Diesel\Drawings\12000204_P01_WW_REV A.dwg



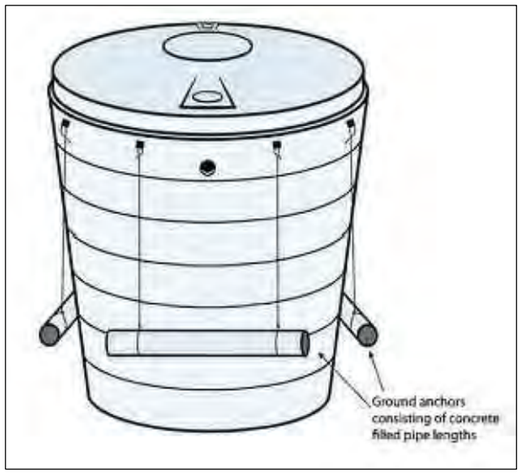
2,400L SEPTIC TANK



500L DOSING CHAMBER

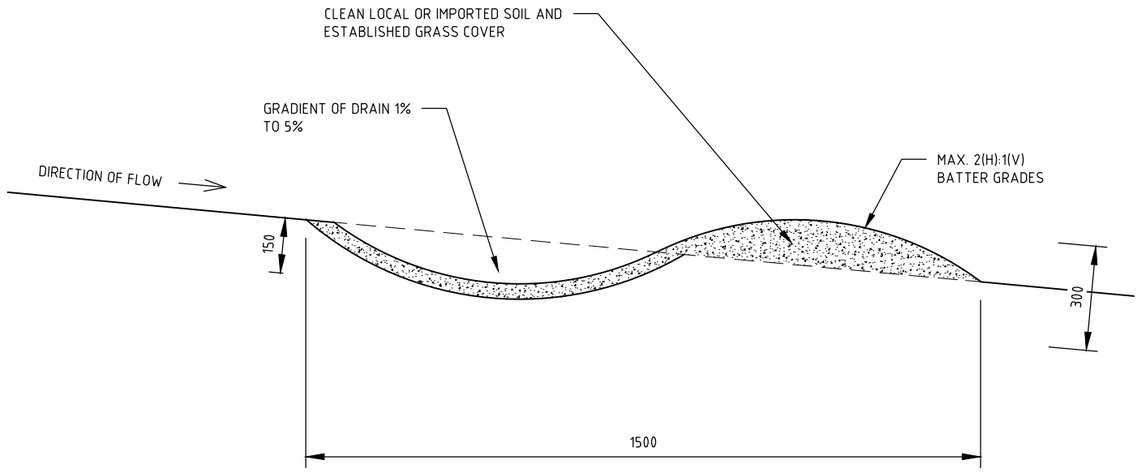
DETAIL 2 / WW01

NOT TO SCALE



GROUND ANCHOR DETAIL

NOTE TO SCALE



UPSLOPE DIVERSION DRAIN

NOT TO SCALE

TANK INSTALLATION NOTES

1. CONNECTION TO BE IN ACCORDANCE TO AS3500 AND LOCAL GOVERNING STATUTORY AUTHORITIES.
2. MINIMUM FLOW PATH FROM DWELLING TO THE INLET OF THE TANK IS 1500mm UNLESS AUTHORISED BY THE LOCAL GOVERNING STATUTORY AUTHORITY.
3. ALL TANKS HAVE A 100mm DWV PLAIN COUPLINGS FOR CONNECTION TO 100mm SEWER PIPE. FLEXIBLE COUPLING RECOMMENDED.
4. EXCAVATOR TO ALLOW **1 METER** ALL ROUND AT BOTTOM OF EXCAVATION FOR LOCATING LIFTING POINTS.
5. LIDS ARE DESIGNED FOR PEDESTRIAN TRAFFIC ONLY AND ARE NOT DESIGNED TO CARRY ANY OTHER SURCHARGE OR FILL. LID THICKNESS ADDS 80mm TO TANK HEIGHT.
6. ALL TANKS TO BE LAID ON 60mm COMPACTED AND LEVEL BED OF SAND OR METAL DUST.
7. BACKFILLING USING EXCAVATED MATERIAL IS PERMISSIBLE PROVIDING THAT ROCKY MATERIAL IN EXCESS OF 75mm THICK IS REMOVED.
8. DURING BACKFILLING IT IS RECOMMENDED THAT THE TANK(S) BE FILLED WITH WATER. CONCRETE ANCHORS SHOULD BE PLACED AROUND THE BASE OF THE TANK TO AVOID FLOATATION (REFER TO GROUND ANCHOR DETAIL).
9. TANK LIDS MAY BE SEALED USING A SAND/CEMENT MORTAR MIX. ACCESS COVERS AND INSPECTION HOLES ARE SELF SEALING. TANK RISERS TO BE SEALED WITH ROCLA E2190 MASTIC OR EQUIVALENT.
10. TANK BODY MANUFACTURED TO COMPLY WITH AS/NZS1546.1:1998
11. TANK CERTIFICATION ACCREDITED BY THE NEW DEPT. OF HEALTH C

TANK GROUND ANCHORS

THE SIZE AND INSTALLATION OF GROUND ANCHORS MUST COMPLY WITH 'AS/NZS1546.2008 3.2.2 ANCHORAGE'.
LOOPS CONNECTING THE ANCHORS TO THE TANK MUST BE FITTED WHEN THE TANK IS INSTALLED. EACH SIDE OF THE TANK MUST BE ANCHORED USING A PIECE OF FILLED PIPE ATTACHED TO THE TANK BY DURABLE TIES MADE FROM STAINLESS STEEL CABLE. THESE TIES ARE FITTED TO THE ANCHOR POINTS ON THE TANK AND HAVE A LOOP IN THE OTHER END AT EXCAVATION BASE LEVEL.

BACKFILLING COVERS THE ANCHORS SECURING THE TANK IN THE GROUND. TO PREPARE GROUND ANCHORS YOU MUST;

- FILL THE GROUND ANCHORS (100mm PVC-U SEWER PIPE) WITH CONCRETE AND CAP THE ENDS. ATTACH AT LEAST TWO ANCHORS TO A TANK, PARALLEL TO EACH OTHER, ON OPPOSITE SIDES OF THE TANK. USE MORE ANCHORS IF THE SOIL IS PRONE TO SATURATION. THE ANCHORS SHOULD BE AT LEAST AS LONG AS THE DIAMETER OF THE TANK.
- SECURE THE FREE END LOOPS OF CABLE AROUND THE ENDS OF EACH GROUND ANCHOR WITH TWO CABLES TO EACH ANCHOR.
- FIT A STAINLESS STEEL SHACKLE IN EACH CABLE THROUGH PRE-DRILLED HOLES IN VERTICAL RIBS OF EACH TANK AND SECURE.
- HANG ALL GROUND ANCHORS LEVEL BESIDE THE TANK APPROXIMATELY 150mm FROM THE BOTTOM OF THE EXCAVATION WITH CABLES FULLY SECURED AND ALL FASTENINGS SECURELY TIGHTENED. SAND FILLED ANCHORS HELP TIGHTEN THE CABLES AND ENSURE MAXIMUM EFFECT. NEVER RUN CABLES THROUGH THE ANCHOR PIPES AS THEY WILL CUT WHEN UNDER LOAD.

DOSING CHAMBER AND PUMP NOTES:

1. THE DEPTH OF EFFULENT PUMPED WITHIN EACH CYCLE OF THE FLOAT SWITCH (IE THE DEPTH BETWEEN PUMP CUT-OFF AND OPERATION) IS CALCULATED BY:

   depth of pumped effulent (m) X basal tank area (m^2) X 1000
   = discharge volume (litres per pump cycle).

   THIS VOLUME MUST MATCH THE HYDRAULIC CAPABILITIES OF THE RECEIVING COMPONENT BASED ON FLOW RATE AND TOTAL DYNAMIC HEAD.
2. SUBMERSIBLE PUMP USED AS AN EXAMPLE ONLY. THE PUMP WILL NEED TO BE SELECTED BASED ON THE SPECIFIC TASK (REFER TO SYSTEM DESIGN NOTES BELOW). IT MAY BE A CENTRIFUGAL PUMP OR VORTEX PUMP DEPENDING ON THE TYPE OF EFFLUENT BEING PUMPED AND THE HYDRAULIC CHARACTERISTICS OF THE SYSTEM. IT MAY SIT ON TOP OF THE TANK AND DRAW EFFLUENT FROM THE TANK.
3. SUBMERSIBLE PUMPS MUST NOT BE REMOVED FROM THE TANK BY THEIR POWER CORD. HEAVIER PUMPS MAY REQUIRE THE INSTALLATION OF A SOLID STEEL BAR CONFIGURATION ACCORDING TO MANUFACTURER'S SPECIFICATIONS.

SYSTEM DESIGN NOTES:

DLR	= 390L/Day
ABSORPTION BEDS	= 1 x 2m WIDE x 17m LONG
PUMP REQUIREMENTS	
FLOW RATE	= 86L/min
HEAD	= 13m

CONTRACTOR TO PROVIDE PUMP TO SUIT THE ABOVE REQUIREMENTS. DESIGN BASED ON A DAVEY D42A PUMP.

REV	DATE	DES.	DRN.	APP.	REVISION DETAILS
A	23/08/12	J.M.A.	S.C.A.	M.P.	ISSUED FOR APPROVAL

DRAWING STATUS

DESIGN BY	J.M.A.
DRAWN BY	S.C.A.
FINAL APPROVAL	
SCALE: (on A3 Original)	NOT TO SCALE

FOR APPROVAL

North

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PROJECT TITLE: WASTEWATER SITE ASSESSMENT
3483 OLD HUME HIGHWAY
BERRIMA NSW

DRAWING TITLE: ON-SITE WASTEWATER SECTIONS AND DETAILS

PROJECT NO.	SUB-PR NO.	DRAWING NO.	REV
12000204	P01	WW03	A

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