smartalliances
ENGINEERING / RESOURCE MANAGEMENT / ARCHITECTS LTD

SmartAlliances Ltd
PO Box 546
Blenheim, 7240

T: 03 579 6211
F: 03 579 6233
E: info@smartalliances.co.nz

Attachment 4

Brent Delport

Engineering Report

- **Onsite Wastewater Management System**

Lot 1, D.P. 416509, South East Bay, Pelorus Sound

15 July 2013 **Our ref: 3967**

Brent Delport
Woolshed Conversion
South East Bay, Pelorus Sound.

Contents

Issue No.	1	2	3	4	5	6
Date	15.07.13					
Prepared By	KS					
Approved By	RE					

1 Executive Summary

Smart Alliances have carried out an engineering appraisal of the on-site wastewater management criteria for the proposed woolshed conversion for Brent Delport (the client) at Lot 1, D.P.416509 South East Bay, in the Pelorus Sound.

The client wishes to convert an old woolshed into two bedroom accommodation.

There is sufficient area to treat and dispose of the wastewater created from the house.

The wastewater management system for the proposed dwelling should comprise:

- A primary treatment unit (septic tank)
- Filter at the tank outlet
- Flout in a dosing chamber.
- Shallow ETS bed land application area.

The application area should be a single bed totalling a minimum of 82.5m^2 area.

Installation is to be in accordance with the requirements and recommendations of AS/NZS 1547:2012.

The recommendations listed above should not be taken in isolation and must be read in conjunction with the remainder of this report and the context of the proposed residential development at the site.

2 Introduction

Mr Delport proposes to convert an old woolshed into two bedroom accommodation at his property located at Lot 1, D.P.416509 South East Bay, in the Pelorus Sound.

The purpose of this report is to present the results of site investigations carried out in relation to the on-site wastewater treatment and land application for the dwelling.

The site investigations were carried out on 03 July 2013.

3 Location & Site Description

The property is located on the eastern side of the Popoure Reach in a bay known as Pokokini (within South East Bay). The property is accessed only by boat.

The property borders the foreshore reserve and four privately owned properties (one of which is owned by Mr Delport).

Areas adjacent to the foreshore are gentle to moderate sloping topography and steeper slopes are associated with the land higher up the hillside.

The property has been occupied for many years and was once a farm. The farm has been overgrown with native bush. The client is in the process of clearing some of this bush to revert part of the property back to farm land.

There is an abandoned homestead in the centre of the properties foreshore boundary, at the head of the bay. The ultimate plan is to demolish the homestead and build a new house on the site. In the interim, the woolshed conversion is to provide suitable accommodation on the site.

Locations of all the features of the property are shown on the site plan attached in Appendix A.

4 Wastewater Assessment

The site investigation has identified that the property is suitable for wastewater disposal by primary treatment (septic tank), dose loaded (flout) coupled with shallow ETS bed land application.

The site is remote and maintaining secondary / pump systems will be costly and difficult, however primary treatment systems require little maintenance and have few moving parts. Hence our recommendation that a gravity fed system is used.

Two hand augured boreholes and excavated pit were put down in the proposed land application area. The exposed cut faces on the foreshore were also observed. Locations of observations are shown on the site plan provided in Appendix A.

Based on the soil assessment carried out, an average drainage category of 5 has been adopted. Logs of the representative soil properties are provided in Appendix B.

Groundwater was not encountered within the subsurface investigation and is anticipated to be at a depth greater than 2m below ground level. There is a stream located next to the abandoned homestead (approximately 220m south west of the woolshed) and a water carrying gully to the east of the woolshed. The foreshore is located approximately 40m below (south) of the woolshed. The wastewater field is more than 30m from these water features.

The site is exposed to both wind and sun.

An assessment of the best practical option has determined that primary treatment (septic tank) coupled a dose loaded (flout) and shallow ETS bed land application is appropriate for the site conditions and constraints.

The primary treatment system is expected to achieve the following treatment levels:

BOD after 5 days (average) < 150 g/m^3
Suspended solids (average) < 80 g/m^3

A wastewater design sheet is provided in Appendix B with the design calculation based on the following criteria for the proposed development:

- 4 person occupancy
- Loading of 660 litres/day.
- Soil category 5
- Design loading rate of 8mm/day
- Standard water reduction fixtures installed.

Standard water reduction fixtures are to be installed in accordance with note 2 in table H3 of AS/NZS 1547:2012 to assist in minimising water usage, such fixtures include:

Dual flush 11/5.5 litre water closets, shower-flow restrictors, aerator faucets (taps) and water conserving automatic washing machines.

Based on the criteria above, the minimum total area of the application field is 82.5m^2.

We therefore recommend the application field be a single bed, 34m long and 2.4m wide. Details of the application bed are shown in Appendix A.

5 Assessment of Environmental Effects

An onsite wastewater system is required as there is no reticulation in the area.

Because of the following reasons we do not envisage the wastewater becoming an environmental risk:

- Reduced water usage
- No ground water in the vicinity of the wastewater field
- Restrictive soil qualities (light clay)
- Large property size
- Remote Location
- The environmental buffering capacity of land

The proposed wastewater treatment system that will treat the wastewater created from the extension generally complies with AS/NZS 1547:2012 and the Council Guidelines.

Field percolation rates vary according to the soil type. We have classified the soil as a category 5 type soil which has limitations for on-site disposal due to a low percolation rate. The soil is prone to biological slime clogging of the clay pores, in dry weather shrinkage channels form in the upper layers of clay and effluent passes through the cracks without effective treatment. In order to overcome this issue adequate disposal area is required to provide long term disposal capacity.

The filter installed at the outlet of the septic tank will improve the BOD_5 and SS and lessen the risk of soil clogging.

The property is not permanently occupied and used mainly in the summer months as a holiday home. The effluent disposal system will work more efficiently during summer due to higher soakage and evaporation rates.

The risk from the wastewater system contaminating drinking water is negligible. The woolshed is adjacent to the foreshore and at close to the lowest part of the property, any water take would be located much higher up the catchments.

Public health risks from an underperforming on-site system in this location would come from unlikely contamination of the marine environment.

Due to the gentle to moderate slopes between the field and the foreshore the environmental buffering capacity of land is sufficient to treat the wastewater to a suitable standard to avoid risk to public health.

Coliform numbers, the indicators used to measure the various pathogens present in sewage effluent are not considered to be a concern as bacterial, (and viral etc), numbers are reduced exponentially with passage of effluent through mid-range textured soils. The distributed field assists in the effectiveness of this by reducing the quantity of effluent required to be treated by the soil in a single location. This will also provide a greater safety margin for accommodation of any fluctuations in discharge that may not be able to be accommodated or adequately treated by the soil within the existing field.

It is generally accepted that a "path length of 0.3 – 0.4 metres would be sufficient to reduce (bacterial) numbers to insignificant levels in normal soils i.e. soils that are of a mid-range texture, not too sandy or too clayey, and not saturated all the time".

The soil on the property, whilst at the upper end of the range (light clay) falls into this mid-range soil category. It is therefore our opinion that no significant adverse effect on the environment will result from the proximity to the sea.

The foreshore in this location is gravelly and rocky above low tide and silty mud below. There are limited numbers of shellfish for gathering and little opportunity for recreational use.

In the unlikely event of the system failure the effects will be less than minor.

A report titled Water and Sanitary Services Assessment 2005 produced by the Marlborough District Council also supports a minor effect in areas where there are less than 16 houses per square kilometre (as in this case).

In a system failure, it is likely the wastewater will seep above the field or track through the soils and create a seepage further down the slope, possibly to the existing track below the field. There will be an unpleasant odour and saturated unusable areas.

The effects will be easily identifiable, inhibit the applicant's use of the land and be generally unpleasant. The owner will want to address the failure and repair / install a new wastewater system.

The property is relatively large and more than 100% reserve area is available to relocate the field should the field fail.

The effect of a failed system will primarily affect the applicant's property. The land predominately falls towards the sea, probable infiltration into the topsoil before reaching the sea as well as the environmental buffering capacity of the land between the field and sea and will produce very minor effects to the foreshore.

Regular maintenance and inspection by the owner will ensure the onsite wastewater system is operating to a suitable standard.

Provided the proposed system is installed, operated and maintained any effects on the environment will be in accordance with the environmental outcome provided for by the Council guidelines.

6 Conclusion

There is sufficient area to treat and dispose of the wastewater created from the proposed 2 bedroom woolshed conversion.

The wastewater management system for the proposed dwelling should comprise a primary treatment unit (septic tank) fitted with a filter at the outlet and a flout in a dosing chamber. The wastewater should be distributed into a shallow ETS bed land application area.

The application area should be a single bed 2.4m wide and 34m long totalling a minimum of 82.5m^2 in area.

Installation is to be in accordance with the requirements and recommendations of AS/NZS 1547:2012.

7 Limitations

This report is valid for five years from the date of issue and covers the onsite wastewater treatment for a two bedroom woolshed conversion on D.P.416509 South East Bay, in the Pelorus Sound for Brent Delport. Any other areas are outside the scope of this report.

The reliance by other parties on the information or opinions in the report shall, without our prior review and agreement in writing, be at such parties' sole risk.

8 References

1. NZS 1547:2012 On-site Domestic Wastewater Management.

2. Marlborough District Council Guidelines for New On-site Wastewater Management Systems, July 2005.

3. Water and Sanitary Services Assessment 2005 – Marlborough District Council

4. Marlborough Sounds Resource Management Plan

SMART ALLIANCES LTD

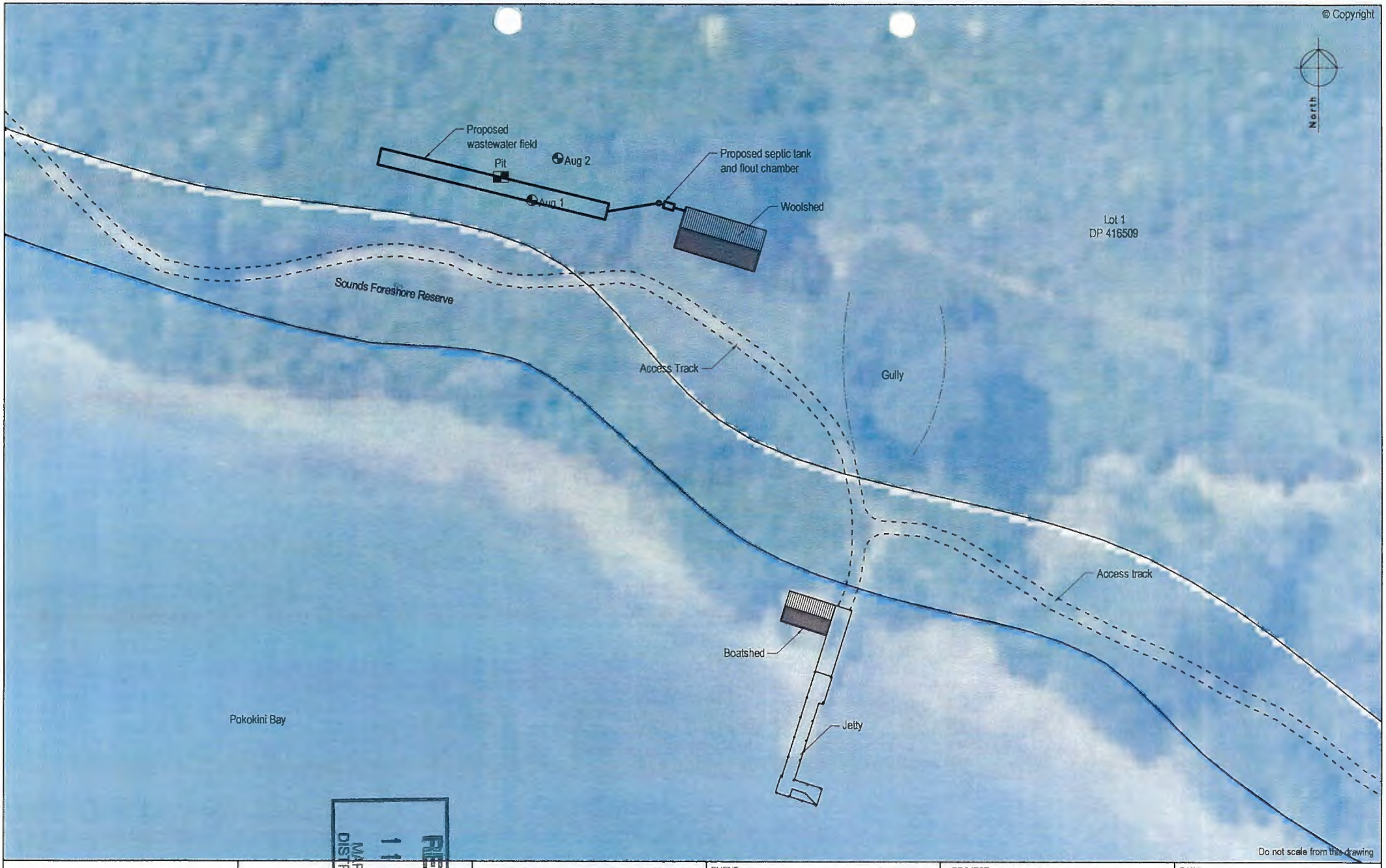
Khalid Suleiman
Engineer
15 July 2012

RECEIVED
11 SEP 2013
MARLBOROUGH
DISTRICT COUNCIL

smartalliances
ENGINEERING / RESOURCE MANAGEMENT / ARCHITECTS LTD

Appendix A - Drawings

- **Site Plan Drawing**
- **Typical bed application area details**



REV	DATE	DETAILS	REV	DATE	DETAILS

RECEIVED
11 SEP 2013
MARLBOROUGH DISTRICT COUNCIL

smartalliances LTD
1st Floor · River View House · 10 High Street · Blenheim · New Zealand
T: 03 579 6211 F: 03 579 6233 PO Box 546 · Blenheim · 7240
E: info@smartalliances.co.nz Website: www.smartalliances.co.nz

CLIENT
B DELPORT

ISSUE
REPORT

PROJECT
WOOL SHED CONVERSION
POKOKINI - SOUTH EAST BAY

DRAWING
SITE LAYOUT

DATE
15 JUL 13

SCALE (A3)
1:500

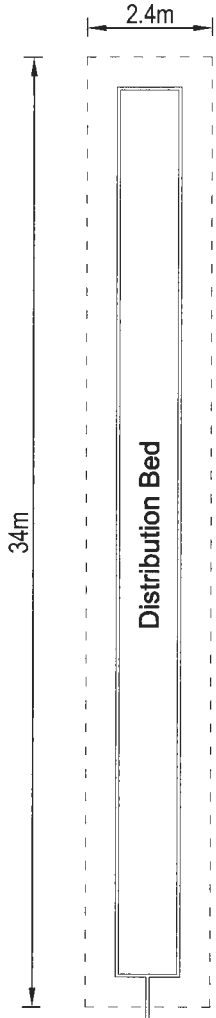
DRAWN
KL

REVISION

APPROVED
KS

DWG NO.
3967-C01

CAD FILE REF 3967/dwg/3967-01



SYSTEM USE & MAINTENANCE

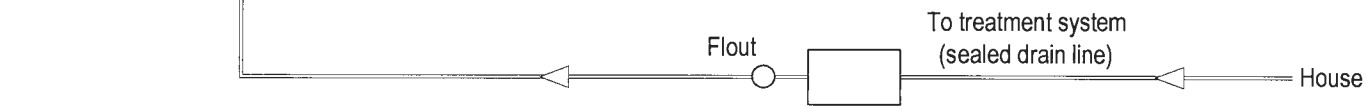
The household sewage should not contain anything other than human waste and toilet paper, and food material such as may go down a kitchen sink drain.

Garbage grinders are not recommended, although they need not be forbidden. More frequent de-sludging of the system may be needed if a garbage grinder is used.

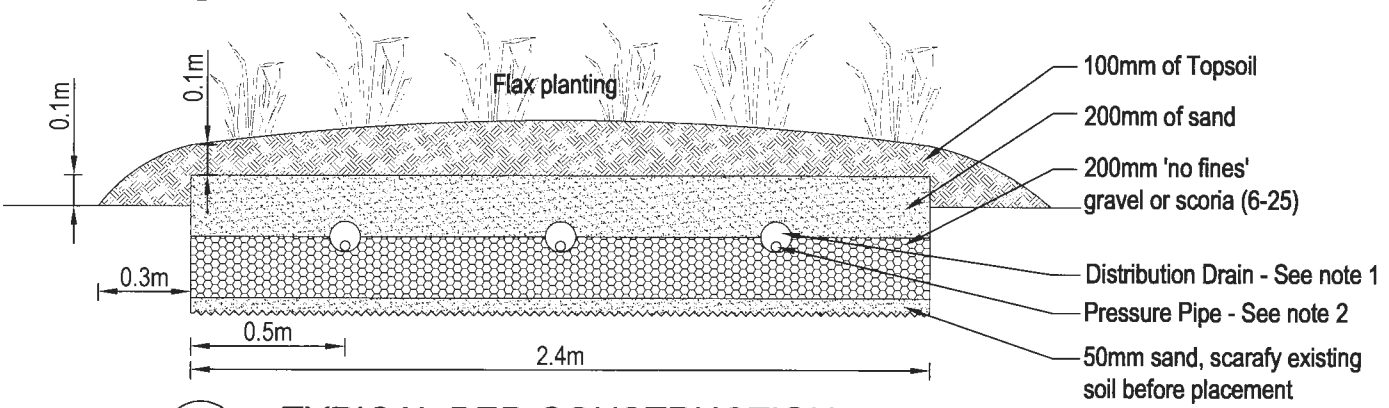
Normal use in the house of soaps, detergents, bleaches, plumbing fixture cleaners, drain cleaners and disinfectants will not harm the functioning of the system or the soil absorption system.

Prohibited discharge to the system:
* Oil/grease from a deep frier (for example).
* Stormwater or any drainage other than sewerage generated in the house.
* Petrol, oil or other flammable/explosive substances
* Garden, garage, and workshop chemicals (e.g. pesticides, paint cleaners,photographic chemicals, motor oil or trade waste.
* Disposable nappies & sanitary napkins.

It is an MDC requirement that any wastewater treatment system be regularly serviced and maintained by a contractor experienced in this field.



01 - TYPICAL BED LAYOUT
N.T.S



02 - TYPICAL BED CONSTRUCTION
N.T.S

Note:
1. Distribution drains to be U-PVC 100mmØ perforated pipe laid flat with perforations comprising at least 2% of surface area. (10mmØ slots at 100mm centres from 4 to 8 o'clock positions).
2. 32mmØ pressure pipe 3/3mmØ holes @ 1m c/c at 10, 12 & 2 o'clock positions test prior to backfilling

Do not scale from this drawing

REV	DATE	DETAILS

smartalliances LTD
ENGINEERING RESOURCE MANAGEMENT ARCHITECTS
1st Floor River View House 10 High Street Blenheim New Zealand
T: 03 579 6211 F: 03 579 6233 PO Box 546 Blenheim 7240
E: info@smartalliances.co.nz Website: www.smartalliances.co.nz

CLIENT
BRENT DELPORT

PROJECT
WOOLSHED CONVERSION
SOUTH EAST BAY

DRAWING
WASTEWATER FIELD DETAILS

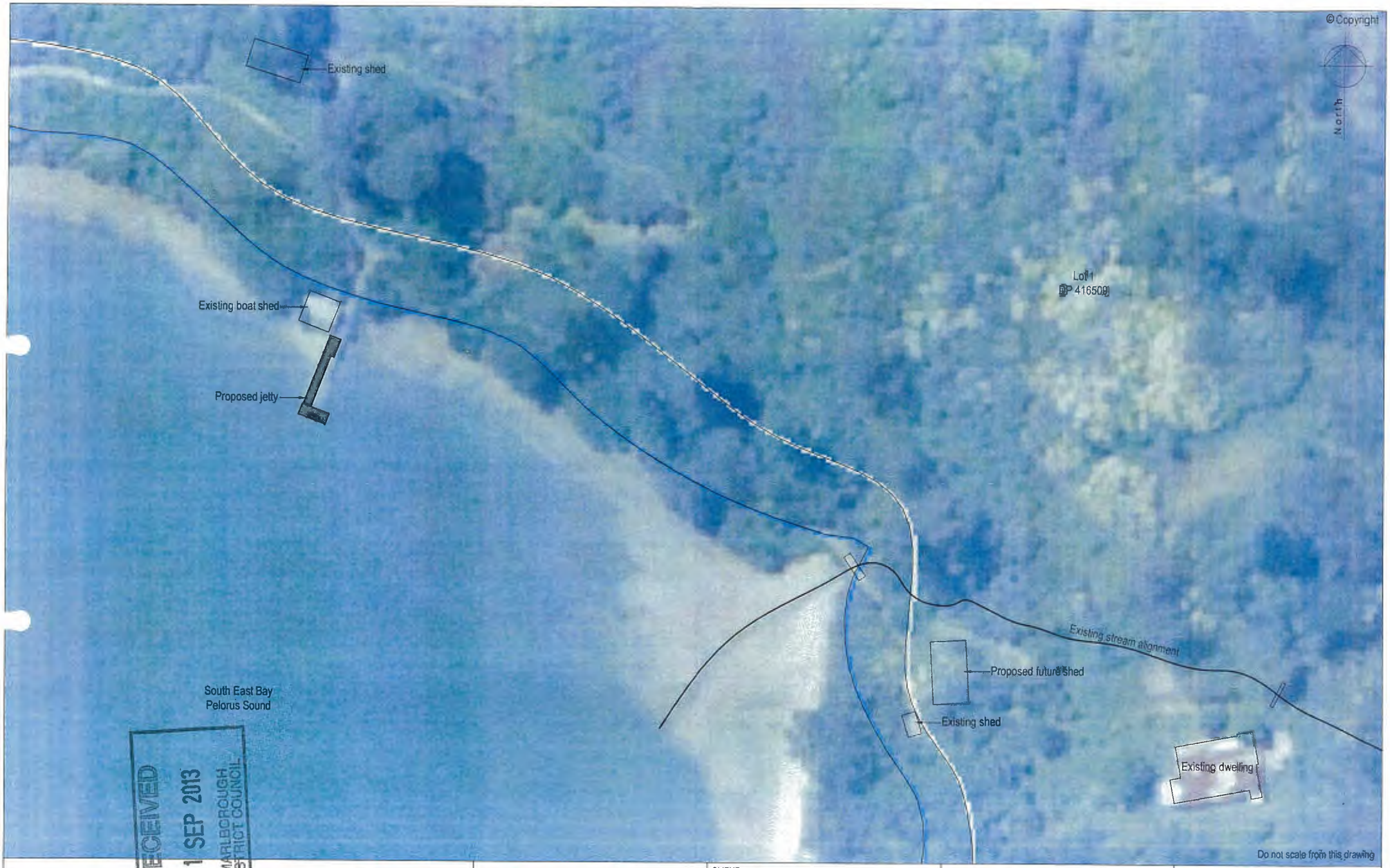
ISSUE
REPORT

DATE	SCALE (A4)
15/07/13	N.T.S
DRAWN	REVISION
KL	**01**
APPROVED	DWG NO.
KS	**3967-C10**

CAD FILE REF: P:/3967-wastewater-01

smartalliances
ENGINEERING / RESOURCE MANAGEMENT / ARCHITECTS LTD

Appendix B – Wastewater Details, Calculations and Logs



REV	DATE	DETAILS
01	05/06/13	ISSUED FOR CONSENT

REV	DATE	DETAILS

smartalliances LTD
1st Floor River View House 10 High Street Blenheim New Zealand
T: 03 579 6211 F: 03 579 6233 PO Box 546 Blenheim 7240
Website www.smartalliances.co.nz

CLIENT
BRENT & NICOLA DELPORT

ISSUE
CONSENT

PROJECT
DELPORT JETTY
SOUTH EAST BAY

DRAWING
SITE PLAN

DATE
05/06/13

SCALE (A3)
1:750

DRAWN
KL

REVISION
01

APPROVED
KS

DWG NO.
3967-C00

CAD FILE REF: P:/ 3967 - Jetty

11 SEP 2013
MARLBOROUGH DISTRICT COUNCIL

REV	DATE	DETAILS

REV	DATE	DETAILS

smartalliances LTD
1st Floor · River View House · 10 High Street · Blenheim · New Zealand
T: 03 579 6211 F: 03 579 6233 PO Box 546 · Blenheim · 7240
E: info@smartalliances.co.nz Website: www.smartalliances.co.nz

CLIENT
B DELPORT

ISSUE
REPORT

PROJECT
WOOL SHED CONVERSION
POKOKINI - SOUTH EAST BAY

DRAWING
SITE LAYOUT

DATE
15 JUL 13

SCALE (A3)
1:1000

DRAWN
KL

REVISION

APPROVED
KS

DWG NO.
3967-C00

CAD FILE REF: 3967/dwg/3967-01

smartalliances
ENGINEERING / RESOURCE MANAGEMENT / ARCHITECTS LTD

Project: Woolshed Conversion
Client: Brent Delport
Location: South East Bay
Date: 15/07/2013
File No: 3967

WASTEWATER SYSTEM DESIGN SHEET

To AS/NZS 1547:2012

Intended water Supply:

~~Public Supply~~ *Bore/Stream/Dam* ~~Rain water (roof collection)~~

Site Conditions:

Gentle slopes, grassed
The site is exposed to both wind and sun - northwest facing slopes

Septic Tank or similar (Primary treatment):

OK when installed properly with a correctly sized level drainage area and maintained.

Secondary treatment:

Produce high quality effluent suitable for irrigation. Increased loading rate can be used if trench disposal is used - less disposal area required

Recommendation for this site: ***New septic tank, filter on outlet, pump in pump chamber and ETS bed field***

DRAINAGE CONTROLS:

Need for surface water collector / cut-off drains? ***No***

AVAILABILITY OR RESERVE / SETBACK AREAS

Reserve area available for extensions, % of design area: ***100%***

Setback distance? (between development and disposal system): ***N/A***

Ksat, (m/day): ESTIMATED SOIL CATEGORY: ***Category 5***

Design

Design Loading Rate: ***8.0*** mm/day

Occupancy: **4** persons ***165*** **660** L/day from Table L1 AS/NZS 1547:2012

DESIGN DAILY FLOW: **660** L/day

AREA REQUIRED: **82.5** m^2

LENGTH REQUIRED: **34** m with **2.4** metre wide beds

RESERVE AREA REQUIRED: ***100%*** of specified drainage area

RECOMMENDATION :

trade me 626820740PROJECT	Woolshed Conversion		
CLIENT :	Brent Delport		
REF:	3967	Eng:	KS
DATE:	15 July 13	Page:	1 of 1

Soil Evaluation

South East Bay - Pelorus

smartalliances ENGINEERING / RESOURCE MANAGEMENT / ARCHITECTS LTD
Smart Alliances Ltd
PO Box 546
Blenheim, 7240
T:03 579 6211
F: 03 579 6233
E: info@smartalliances.co.nz
W: ww.smartalliances.co.nz

Aug 1

Horizon	Lower depth (mm)	Moisture content	Colour	Classification	Textural class	Course fragments % volume	Structure	Strength	Stickiness	Soil Category
A	350	Dry	Light brown	Silty loam	ZL	<5%	Single grain	Very firm	slightly	2
B	600	Dry	Pale Brown	Loam	L	10-20%	Single grain	firm	Non	5

Aug 2

Horizon	Lower depth (mm)	Moisture content	Colour	Classification	Textural class	Course fragments % volume	Structure	Strength	Stickiness	Soil Category
A	400	Dry	Light brown	Silty loam	ZL	<5%	Single grain	Very firm	slightly	2
B	600	Dry	Pale Brown	Loam	L	10-20%	Single grain	firm	Non	5

Pit

Horizon	Lower depth (mm)	Moisture content	Colour	Classification	Textural class	Course fragments % volume	Structure	Strength	Stickiness	Soil Category
A	350	Dry	Light brown	Silty loam	ZL	<5%	Single grain	Very firm	slightly	2
B	600	Dry	Pale Brown	Loam	L	10-20%	Single grain	firm	Non	5

Moisture content: Dry, moist, very moist, saturated
Structure: Single grain (non coherent) or massive (coherent)
Strength: Loose, very weak, weak, firm, very firm, strong, very strong, rigid
Stickiness: Non, slightly, moderately, very

smartalliances
ENGINEERING / RESOURCE MANAGEMENT / ARCHITECTS LTD

SmartAlliances Ltd
PO Box 546
Blenheim, 7240

T: 03 579 6211
F: 03 579 6233
E: info@smartalliances.co.nz
W: www.smartalliances.co.nz

09 September 2013

Alan Anderson
Marlborough District Council
PO Box 443
Blenheim 7240

Dear Alan

Addendum Engineering Report, B and N Delport, Proposed Development, South East Bay, Pelorus Sound. Our Ref 3967

This report is an addendum to the Engineering Report dated 15 July 2013, Reference 3967, Lot 1 DP 416509, South East Bay, Pelorus Sound and relates to the Onsite Wastewater Management System for the Main House.

The application for resource consent includes request for consent replacement of the house and some form of provision for domestic wastewater discharge on the site that is sufficient to enable the Council to grant consent with conditions to this house prior to design of the wastewater system.

The reason for this approach is the design of the house has not yet been determined which has not enabled the waste water system to be designed. Provision for a replacement house is intended to avoid the requirement for a resource consent for the house as a 2nd dwelling at a later date.

We have however inspected the locality of the existing house and carried out initial sampling sufficient to enable formation of an opinion that the site is capable of accommodating a waste water system associated with a new house on the site. The existing wastewater system consists of a concrete septic tank at the rear of the house, and likely discharge into a soakpit or the adjacent stream (no pipe was identified). This system is not acceptable and would need to be decommissioned and a new system installed.

Three hand augured boreholes were put down behind the existing derelict house within an area of pine trees. Based on the soil assessment carried out, an average drainage category of 4 is expected.

The site investigation has identified that the property is suitable for wastewater disposal by either primary treatment (septic tank), dose loaded (flout) coupled with shallow ETS bed land application on the more gentler slopes in front of the house, or secondary treatment and dripper line on the steeper slopes behind the house.

The property is large (119ha) and there is more than sufficient area to accommodate the wastewater field. In view of my site investigations and initial wastewater assessment, it would be appropriate from an engineering perspective to grant resource consent for location of a house within (or immediate locality) of the existing house subject to receipt of resource consent and wastewater design specifically associated with that house.

Yours faithfully,

Khalid Suleiman
Civil Engineer

Department of Conservation
Te Papa Atawhai

Attachment 5

File: SAR-05-59-11-01

2nd September 2013.

Smart Alliances Limited
P O Box 546
Blenheim 7240

Attention Mark Batchelor

Resource Consent application for a replacement boatshed, conversion of a shearing shed to accommodation, & installation of a waste water system

The Department of Conservation has been fully consulted about the development proposed in this application. The Department has signed off for the building of a shed within the 8 meter set back and through this process obtained the restoration of the Sounds Foreshore Reserve with the sowing of grass seed over all bare soil, planting of natives to screen the development, and the removal of pines that could be a threat to the assets proposed.

To comment on the individual components of the application;

Boat Shed

The boat shed is proposed to be the same size as the existing one but with some additional decking, both for ease on maintenance and ease of use. It has been offered that the building will be stained a dark colour to blend in with the back ground. The placement of a retaining wall behind the boat shed will not increase the visual intrusion but will increase the safety of the structure.

The Department has not objection to this boat shed replacement and with the upgrade of the jetty will improve the vista from the water particularly if the jetty remains unpainted.

Wool Shed

At the end of the process this building is planned to be a second residence for a property of almost 200 hectare made up of two sections, one of 119 hectares and the other of 70 hectares. From a visual and practical sense it is perfectly logical to concentrate the buildings on the most favourable site physically and retain the natural character of the coast over the balance of the property's frontage.

The use of colour to blend the building into the back ground should be a requirement as should the protection of native vegetation in front of it to help screen it from the sea. The Department of Conservation does not object to the redevelopment of the wool shed into accommodation.

1277095
Department of Conservation *Te Papa Atawhai*
Sounds Area Office
P O Box 161, Picton 7250, New Zealand
www.doc.govt.nz

Wool Shed waste water discharge

The proposed waste water system is well away from the Sounds Foreshore. A band of native vegetation has been retained between the formed track and the Sounds Foreshore Reserve and the soakage field so this is a good feature. According to the archaeological website there are no archaeological sites shown in South East Bay so this is not a factor.

In summary this application is one of renewal rather than new development. Provided the conditions offered in both this application and the new shed are followed the impacts are very much at the minor end of the spectrum.

Robin Cox
Ranger Conservation Partnerships
03 520 3002 | rcox@doc.govt.nz

smartalliances
ENGINEERING / RESOURCE MANAGEMENT / ARCHITECTS LTD

SmartAlliances Ltd
PO Box 546
Blenheim, 7240

T: 03 579 6211
F: 03 579 6233
E: info@smartalliances.co.nz
W: www.smartalliances.co.nz

26 August 2013

Marlborough District Council
P.O Box 443
Blenheim 7240

Attachment 6

ATTENTION: Alan Anderson

Dear Alan

Subject: Delport – South East Bay Pelorus Sound – U130496 – Further Information
Our ref: 3967

Thank you for your request for further information dated 23rd August 2013. The information you requested is provided below.

The application has also been altered and replaced with the attached document in order to more comprehensively address each of the components of the proposal. This includes addressing a number of the matters in respect of which you have requested additional information.

1. **I note that you have applied for the discharge of domestic wastewater from 2 dwellings, however, no engineering details are provided for the homestead discharge. Please clarify if you want to apply for it in this application.**

The application is for consent to one domestic waste water discharge associated with conversion of the wool shed to a dwelling.

Replacement of the existing old house at a time after the wool shed has been converted into a dwelling may result in the replacement of the old house technically becoming a 2nd dwelling proposal and needing a further resource consent.

The condition referred to in Section 1.7 of the application is concerned with avoiding this by enabling the Council to grant consent to replacement of the old house as part of this proposal without having details of the new house or its waste water discharge treatment system designed yet.

The design of the waste water system for replacement of the old house is not able to be provided yet due to details of the new house not having been developed.

The effect of the condition offered in the application is to restrain replacement of the old house until consent for its waste water system has been obtained.

Preliminary engineering inspection has enabled the advice attached to the application to be provided. This has been provided to enable the Council to consider this aspect of the application on the basis of its requirement being able to be satisfied and the effects of the

replacement for the existing house in this regard not occurring until consent for a waste water system has been granted.

2. **Please confirm if there are any historic sources of soil contamination within the vicinity of the woolshed building such as sheep dips, fuel/ agricultural storage areas.**

A Preliminary Site Inspection (PSI) has been carried out. This is attached.

3. **Please confirm the volume and location of excavation associated with construction of the 2nd dwelling at the woolshed site. Please investigate if consent is required under the National Environmental Standard for the Management of Contaminated Soil.**

No excavation around the wool shed is proposed.

4. **Provide a plan showing the footprint of the new 2nd dwelling in relation to the former woolshed.**

The 2nd dwelling is proposed to be fully accommodated within the envelope of the existing woolshed. Decking is proposed to be attached around the outside of the existing building. The plans attached to the application illustrate this.

5. **Provide further information on the areas of vegetation removal within 20 metres of the Coastal Marine Area. Please outline the proposed landscaping to be undertaken around the site to mitigate visual effects of vegetation removal.**

The site and locality plan attached to the application shows areas where vegetation has been removed which includes area within 20 metres of the CMA and located within the SFR. These areas are proposed to be replanted in accordance with the agreement with DOC in relation to resource consent U130487.

6. **Please investigate if any additional resource consents are required for development of the site, for example; installation of culverts or bridges, land disturbance in stream beds, telecommunication structures located in the Coastal Marine Area, etc.**

Stormwater culvert;

A culvert has been installed below the track running along and within the SFR between the locality of the house and the boat shed and wool shed. This collects water from the paddock above and drainage in the track and discharges it down the bank into the CMA. Photographs of this are provided in the application.

Bridges;

No additional bridges are proposed to be installed. The bridge crossing the bottom of the stream within the SFR is a replacement of the original bridge in this location. These are shown in the application.

Land disturbance;

No land disturbance has been carried out in stream beds. Tracks have been upgraded including excavation. Clearance of vegetation and grass at various locations around the site has included shallow excavation as a result of scrapping.

Telecommunications structures;

No telecommunications structures are proposed to be located within the CMA.

Tracks;

The tracks are not new they existed as part of the farm. They are visible in the Councils aerial photographs of the site.

Work has been carried out on the tracks to repair them and make them more useable. This work has comprised leveling and clearing of overgrowth, shaping and drainage to control water run-off. These are shown in the application.

Culvert;

A culvert has been installed under the track within the SFR running along the bank between the beach front and the locality where the boat shed and wool shed are located. This is collecting stormwater from the paddock on the upper landward side of the track before it flows onto the track. The culvert discharges down the bank of the SFR to the shoreline. This has been carried out to prevent overland flow stormwater in this location eroding the track and discharging sediment onto the shoreline.

Crossings or ramps across the SFR between the CMA and the applicant's property;

These are shown in the application.

Land disturbance in stream beds;

This has not been carried out. Earthworks and vegetation clearance on the site has included building up of loose earth along the bank of the stream running past the southern side of the house to the beach. This is shown in the application.

The nature of this presents potential for it to collapse into the stream channel. This has been addressed in the application by a requirement for loose material to be pulled back from the stream and planted.

7. **Provide a more detailed site plan (1:100 is suggested) of the proposed boatshed, to show the location of the boatshed, deck and retaining wall in relation to the existing shed, proposed jetty, existing shoreline and any other notable existing and proposed (eg. access track) features.**

A plan of this is provided with the application.

8. **Provide a typical cross section or side elevation drawing of the boatshed, deck and retaining wall sufficient to illustrate the foundations of these structures and existing and proposed ground/foreshore levels.**

These plans are provided with the application.

9. **Provide a description of the items to be stored in/uses to be made of the boatshed and an explanation of how vessels are to be launched and retrieved from the facility. In this respect I note the area of decking to the rear and west side of the shed appear to inappropriate uses of the coastal marine area; wherever possible storage activities should be undertaken on land rather than in the coastal marine area.**

The proposal is essentially replacement of the existing jetty.

Recent further examination of the position fo the boat shed has revealed it is predominantly located within the SFR with a small part located within the CMA.

The boat shed is proposed to be used in the similar manner as other boat sheds. This includes storage of equipment associated with boat access to the property and use and enjoyment of the CMA (Coastal Marine Area) by occupants of the property.

Access to the shed is proposed via the double doors on the southern or seaward and eastern sides across the decks and the jetty. This provides accessibility from the jetty recently granted resource consent and directly from the sea via the southern doors. Access up the slipway is also proposed to be used to pull boats up or down between the sea and the shed.

The applicant presently has recreational equipment stored in the shed including canoes and other water craft and stores his tender when visiting the property. This is proposed to continue in the same manner as most other boat sheds after re-development and occupation of the property.

Heavy recreational equipment such as jet skis and the applicants tender are proposed to be lifted into the shed from the sea and launched by davits via the southern seaward deck and doors. This also avoids the need for a slipway or ramp to extend out from the shed, thus avoiding any further increase in occupation of the CMA that may otherwise be required by these.

In addition to boating equipment, the shed is also proposed to be used as parking for the applicant's quad bike and trailer that is used for transport of equipment and goods and people that is required to be delivered by boat between the jetty and houses and other parts of the property. Accommodation for this equipment is at this position is practical as this is where first and last point of access occurs.

The deck and retaining wall along the landward side of the shed is proposed to assist access to and past the shed along the shoreline in a more convenient and safe manner than at present and provide protection to the shed from the effects of continuing collapse of the bank.

At present, access along the shoreline is between the bank and the shed up some steps onto the SFR. Otherwise there is no practicable access along the shore line past the shed and jetty and onto the SFR.

The area between the shed and bank is subject to occasional blockage from collapse of the bank resulting from erosion by the sea. This makes this route temporarily inaccessible during these times until the sea has washed the collapsed soil away. This also makes this route relatively unsafe. The collapses also present potential for damage to the boat shed. As an access route along the shoreline, this area also has little appreciable amenity.

The shed enclosure is proposed to be reduced in size with the resulting setbacks from the existing edge of the boat shed being used as deck areas. The other deck areas around the shed are an integral part of this accessibility and use of the shed. In addition to providing accessibility around the shed as an access route along the shoreline to the SFR and jetty, they also provide the deck space required to access the shed and moving equipment into and out of the shed. They do not cover any more area than the existing jetty.

Yours sincerely

Mark Batchelor

PROJECT:	**Woolshed Conversion**		
LOCATION:	**South West Bay - Pelorus**		
CLIENT :	**B & N Delport**		
OUR REF:	**3967**	**Date:**	**09 Sept 13**
MDC REF:	**U130496**	**Eng:**	**KS**

smartalliances
ENGINEERING / RESOURCE MANAGEMENT / ARCHITECTS LTD
SmartAlliances Ltd
PO Box 546
Blenheim, 7240
T:03 579 621
F:03 579 6233
E:info@smartalliances.co.nz
W: www.smartalliances.co.nz

Basic Preliminary Site Investigation

1. Site Identification

1.1. Street Number, street name, suburb and town.
Woolshed site - South East Bay, Pelorus Sound

1.2. Legal description and Certificate of Title Reference.
Lot 1 DP416509

1.3. Geographic co-ordinates.
1678327.511 , 5449614.933

1.4. Current site plan. ☒

1.5. Locality map. ☒

2. Site History

2.1. History of the site and previous uses – present day to initial use.
The property has been used historically as a farm. The property has been left derelict and has been largely covered in regenerating native bush. The current owners are in the process of reverting part of the property back to farm.

2.2. Outline of contaminants associated with each land use.
Potential for contamination from sheep dip / wastewater.

2.3. Details of relevant permits, licences, resource consents.
U130496

2.4. Review of aerial/site photographs ☒

2.5. Review of environmental reports ☐

2.6. Summary of local knowledge of site by staff/residents, present & former
As outlined in section 2.1.

2.7. Historical uses of adjacent land.
Farmland / commercial forest

2.8. Complaint history.
No complaints known

2.9. Details/location of underground and above ground storage tanks.
There are no known storage tanks on the site apart from water tanks located upslope of the existing main house, and the septic tank associated with the house away from the woolshed.

2.10. On-off site disposal locations.
Wastewater – adjacent to main house.

3. Site condition and surrounding environment

3.1. General site condition, topography, current use.
Many buildings, fill and excavated areas.

3.2. Condition of buildings and roadways.
Older building in poor repair.

3.3. Presence of drums, wastes and fill materials.
Some amounts of waste associated with the main building, domestic.

3.4. Odours
None

3.5. Visible signs of contamination such as identifiable waste products, discolouration or staining of soil, bare soil patches – on-site and at boundary.
Some amounts of waste associated with the main building, domestic.

3.6. Visible signs of plant stress
None observed.

3.7. Location of chemical storage, bunding, waste storage area.
None known

3.8. Location of former buildings, processes or activities on site.
The woolshed subject of this report exists and is not proposed to be replaced. Other buildings, processes and activities on the site comprise farm paddocks around the wool shed and possibly yards, although no evidence of these remains except palings under the shed.

Facilities commonly associated with wool sheds and yards including sheep dips have not been identified and there is no evidence of them being in this location.

Reference to potential for lead paint has been made in the Council request for further information. The building was built in the 70s, (Building Consent being applied for in 1977). The outside of the building was stained. The remnants of the staining are evident on the cladding and shown in the photographs of the shed provided in the application.

3.9. Adjacent and surrounding land use and the potential for contamination from these sources.
Only potential contamination from wastewater the existing house and sheep dip, the latter being thought to have been located on the flat ground below the house. Very low probability of contamination is therefore expected around the wool shed.

4. Risk Assessment

4.1. Land use contamination potential.
Low potential for contamination.

4.2. Hot spot contamination potential.
Low potential for contamination

5. Environmental Setting

5.1. Geology – Description of types of strata, soil types and fill information.
Clay and historic landslip debris over alluvial gravels

5.2. Hydrogeology – location of springs, wells groundwater.
Stream to the south, groundwater expected to be sporadic, seepages etc

5.3. Hydrology – Surface water i.e. drains, storm water channels.
Surface water controlled by tracks

6. Conclusions and Recommendations

6.1. Brief summary of relevant findings.
The Council has requested a preliminary site investigation be carried out. This report has been provided to satisfy this request.

The findings reported are as follows;

- There is potential for a range of contaminants on the site from existing and historical activities, these are largely associated with the area associated with the main house, some distance from the woolshed.

6.2. Assumptions made in making conclusions.
Farming had ceased at the site in the early to mid 1990's.

6.3. Clear statement that the consultant considers site suitable for the current and where applicable the proposed use.
We consider the woolshed site suitable for the proposed development.

6.4. A statement detailing all limitations and constraints on the use of the site.
It is likely that the excavation associated with the woolshed development will be in virgin soil, however it is recommended that any excavation on this site is monitored by the contractor and notification given if any soil contamination is encountered.

6.5. Recommendations for further work, if appropriate.
None – only if contaminants discovered during excavation (unexpected).

Khalid Suleiman
Engineer

09 September 2013

SmartAlliances Ltd
PO Box 546
Blenheim, 7240

T: 03 579 6211
F: 03 579 6233
E: info@smartalliances.co.nz

Brent Delport

Engineering Report

- **Onsite Wastewater Management System**

Lot 1, D.P. 416509, South East Bay, Pelorus Sound

15 July 2013 Our ref: 3967

Brent Delport
Woolshed Conversion
South East Bay, Pelorus Sound.

Contents

Issue No.	1	2	3	4	5	6
Date	15.07.13					
Prepared By	KS					
Approved By	RE					

1 Executive Summary

Smart Alliances have carried out an engineering appraisal of the on-site wastewater management criteria for the proposed woolshed conversion for Brent Delport (the client) at Lot 1, D.P.416509 South East Bay, in the Pelorus Sound.

The client wishes to convert an old woolshed into two bedroom accommodation.

There is sufficient area to treat and dispose of the wastewater created from the house.

The wastewater management system for the proposed dwelling should comprise:

- A primary treatment unit (septic tank)
- Filter at the tank outlet
- Flout in a dosing chamber.
- Shallow ETS bed land application area.

The application area should be a single bed totalling a minimum of 82.5m^2 area.

Installation is to be in accordance with the requirements and recommendations of AS/NZS 1547:2012.

The recommendations listed above should not be taken in isolation and must be read in conjunction with the remainder of this report and the context of the proposed residential development at the site.

2 Introduction

Mr Delport proposes to convert an old woolshed into two bedroom accommodation at his property located at Lot 1, D.P.416509 South East Bay, in the Pelorus Sound.

The purpose of this report is to present the results of site investigations carried out in relation to the on-site wastewater treatment and land application for the dwelling.

The site investigations were carried out on 03 July 2013.

3 Location & Site Description

The property is located on the eastern side of the Popoure Reach in a bay known as Pokokini (within South East Bay). The property is accessed only by boat.

The property borders the foreshore reserve and four privately owned properties (one of which is owned by Mr Delport).

Areas adjacent to the foreshore are gentle to moderate sloping topography and steeper slopes are associated with the land higher up the hillside.

The property has been occupied for many years and was once a farm. The farm has been overgrown with native bush. The client is in the process of clearing some of this bush to revert part of the property back to farm land.

There is an abandoned homestead in the centre of the properties foreshore boundary, at the head of the bay. The ultimate plan is to demolish the homestead and build a new house on the site. In the interim, the woolshed conversion is to provide suitable accommodation on the site.

Locations of all the features of the property are shown on the site plan attached in Appendix A.

4 Wastewater Assessment

The site investigation has identified that the property is suitable for wastewater disposal by primary treatment (septic tank), dose loaded (flout) coupled with shallow ETS bed land application.

The site is remote and maintaining secondary / pump systems will be costly and difficult, however primary treatment systems require little maintenance and have few moving parts. Hence our recommendation that a gravity fed system is used.

Two hand augured boreholes and excavated pit were put down in the proposed land application area. The exposed cut faces on the foreshore were also observed. Locations of observations are shown on the site plan provided in Appendix A.

Based on the soil assessment carried out, an average drainage category of 5 has been adopted. Logs of the representative soil properties are provided in Appendix B.

Groundwater was not encountered within the subsurface investigation and is anticipated to be at a depth greater than 2m below ground level. There is a stream located next to the abandoned homestead (approximately 220m south west of the woolshed) and a water carrying gully to the east of the woolshed. The foreshore is located approximately 40m below (south) of the woolshed. The wastewater field is more than 30m from these water features.

The site is exposed to both wind and sun.

An assessment of the best practical option has determined that primary treatment (septic tank) coupled a dose loaded (flout) and shallow ETS bed land application is appropriate for the site conditions and constraints.

The primary treatment system is expected to achieve the following treatment levels:

BOD after 5 days (average) < 150 g/m^3
Suspended solids (average) < 80 g/m^3

A wastewater design sheet is provided in Appendix B with the design calculation based on the following criteria for the proposed development:

- 4 person occupancy
- Loading of 660 litres/day.
- Soil category 5
- Design loading rate of 8mm/day
- Standard water reduction fixtures installed.

Standard water reduction fixtures are to be installed in accordance with note 2 in table H3 of AS/NZS 1547:2012 to assist in minimising water usage, such fixtures include:

Dual flush 11/5.5 litre water closets, shower-flow restrictors, aerator faucets (taps) and water conserving automatic washing machines.

Based on the criteria above, the minimum total area of the application field is 82.5m^2.

We therefore recommend the application field be a single bed, 34m long and 2.4m wide. Details of the application bed are shown in Appendix A.

5 Assessment of Environmental Effects

An onsite wastewater system is required as there is no reticulation in the area.

Because of the following reasons we do not envisage the wastewater becoming an environmental risk:

- Reduced water usage
- No ground water in the vicinity of the wastewater field
- Restrictive soil qualities (light clay)
- Large property size
- Remote Location
- The environmental buffering capacity of land

The proposed wastewater treatment system that will treat the wastewater created from the extension generally complies with AS/NZS 1547:2012 and the Council Guidelines.

Field percolation rates vary according to the soil type. We have classified the soil as a category 5 type soil which has limitations for on-site disposal due to a low percolation rate. The soil is prone to biological slime clogging of the clay pores, in dry weather shrinkage channels form in the upper layers of clay and effluent passes through the cracks without effective treatment. In order to overcome this issue adequate disposal area is required to provide long term disposal capacity.

The filter installed at the outlet of the septic tank will improve the BOD_5 and SS and lessen the risk of soil clogging.

The property is not permanently occupied and used mainly in the summer months as a holiday home. The effluent disposal system will work more efficiently during summer due to higher soakage and evaporation rates.

The risk from the wastewater system contaminating drinking water is negligible. The woolshed is adjacent to the foreshore and at close to the lowest part of the property, any water take would be located much higher up the catchments.

Public health risks from an underperforming on-site system in this location would come from unlikely contamination of the marine environment.

Due to the gentle to moderate slopes between the field and the foreshore the environmental buffering capacity of land is sufficient to treat the wastewater to a suitable standard to avoid risk to public health.

Coliform numbers, the indicators used to measure the various pathogens present in sewage effluent are not considered to be a concern as bacterial, (and viral etc), numbers are reduced exponentially with passage of effluent through mid-range textured soils. The distributed field assists in the effectiveness of this by reducing the quantity of effluent required to be treated by the soil in a single location. This will also provide a greater safety margin for accommodation of any fluctuations in discharge that may not be able to be accommodated or adequately treated by the soil within the existing field.

It is generally accepted that a "path length of 0.3 – 0.4 metres would be sufficient to reduce (bacterial) numbers to insignificant levels in normal soils i.e. soils that are of a mid-range texture, not too sandy or too clayey, and not saturated all the time".

The soil on the property, whilst at the upper end of the range (light clay) falls into this mid-range soil category. It is therefore our opinion that no significant adverse effect on the environment will result from the proximity to the sea.

The foreshore in this location is gravelly and rocky above low tide and silty mud below. There are limited numbers of shellfish for gathering and little opportunity for recreational use.

In the unlikely event of the system failure the effects will be less than minor.

A report titled Water and Sanitary Services Assessment 2005 produced by the Marlborough District Council also supports a minor effect in areas where there are less than 16 houses per square kilometre (as in this case).

In a system failure, it is likely the wastewater will seep above the field or track through the soils and create a seepage further down the slope, possibly to the existing track below the field. There will be an unpleasant odour and saturated unusable areas.

The effects will be easily identifiable, inhibit the applicant's use of the land and be generally unpleasant. The owner will want to address the failure and repair / install a new wastewater system.

The property is relatively large and more than 100% reserve area is available to relocate the field should the field fail.

The effect of a failed system will primarily affect the applicant's property. The land predominately falls towards the sea, probable infiltration into the topsoil before reaching the sea as well as the environmental buffering capacity of the land between the field and sea and will produce very minor effects to the foreshore.

Regular maintenance and inspection by the owner will ensure the onsite wastewater system is operating to a suitable standard.

Provided the proposed system is installed, operated and maintained any effects on the environment will be in accordance with the environmental outcome provided for by the Council guidelines.

6 Conclusion

There is sufficient area to treat and dispose of the wastewater created from the proposed 2 bedroom woolshed conversion.

The wastewater management system for the proposed dwelling should comprise a primary treatment unit (septic tank) fitted with a filter at the outlet and a flout in a dosing chamber. The wastewater should be distributed into a shallow ETS bed land application area.

The application area should be a single bed 2.4m wide and 34m long totalling a minimum of 82.5m^2 in area.

Installation is to be in accordance with the requirements and recommendations of AS/NZS 1547:2012.

7 Limitations

This report is valid for five years from the date of issue and covers the onsite wastewater treatment for a two bedroom woolshed conversion on D.P.416509 South East Bay, in the Pelorus Sound for Brent Delport. Any other areas are outside the scope of this report.

The reliance by other parties on the information or opinions in the report shall, without our prior review and agreement in writing, be at such parties' sole risk.

8 References

1. NZS 1547:2012 On-site Domestic Wastewater Management.

2. Marlborough District Council Guidelines for New On-site Wastewater Management Systems, July 2005.

3. Water and Sanitary Services Assessment 2005 – Marlborough District Council

4. Marlborough Sounds Resource Management Plan

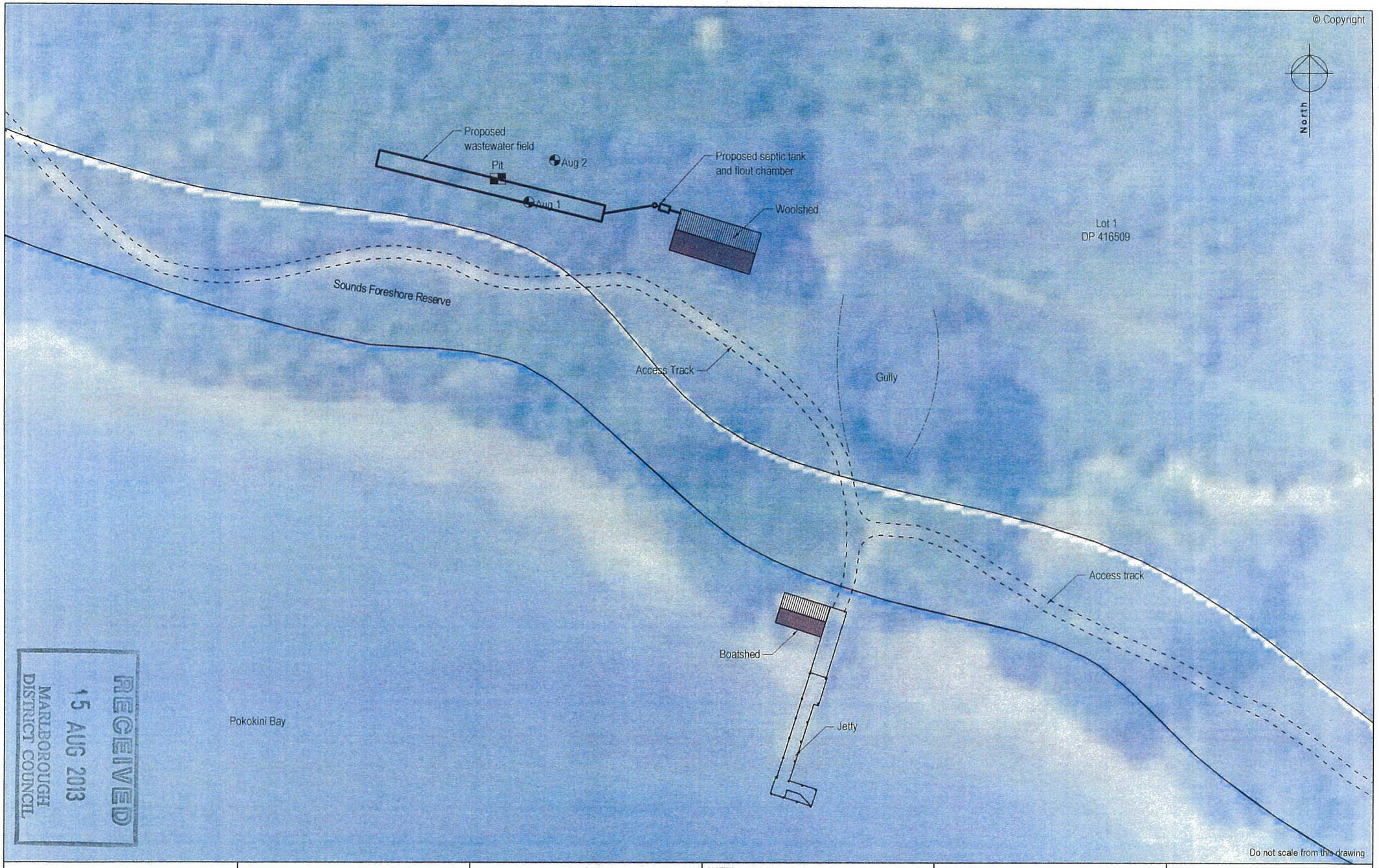
SMART ALLIANCES LTD

Khalid Suleiman
Engineer
15 July 2012

smartalliances
ENGINEERING / RESOURCE MANAGEMENT / ARCHITECTS LTD

Appendix A - Drawings

- Site Plan Drawing
- Typical bed application area details



Do not scale from this drawing

REV	DATE	DETAILS

REV	DATE	DETAILS

smartalliances LTD
1st Floor · River View House · 10 High Street · Blenheim · New Zealand
T: 03 579 6211 F: 03 579 6233 PO Box 546 · Blenheim · 7240
E: info@smartalliances.co.nz Website: www.smartalliances.co.nz

CLIENT
B DELPORT

ISSUE
REPORT

PROJECT
WOOL SHED CONVERSION
POKOKINI - SOUTH EAST BAY

DRAWING
SITE LAYOUT

DATE
15 JUL 13

SCALE (A3)
1:500

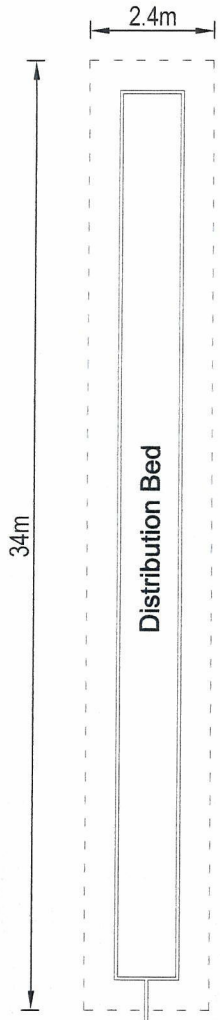
DRAWN
KL

REVISION

APPROVED
KS

DWG NO.
3967-C01

CAD FILE REF 3967/dwg/3967-01



SYSTEM USE & MAINTENANCE

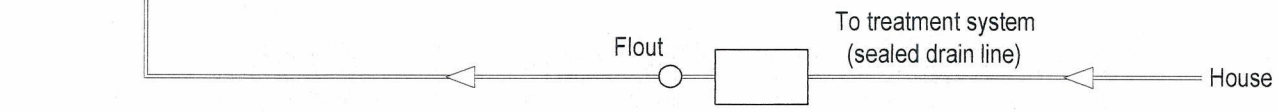
The household sewage should not contain anything other than human waste and toilet paper, and food material such as may go down a kitchen sink drain.

Garbage grinders are not recommended, although they need not be forbidden. More frequent de-sludging of the system may be needed if a garbage grinder is used.

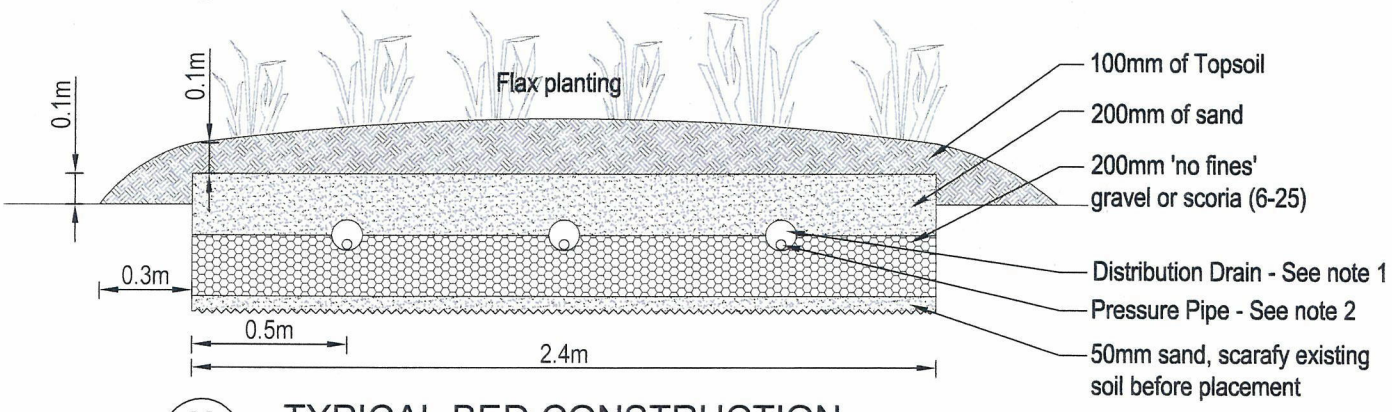
Normal use in the house of soaps, detergents, bleaches, plumbing fixture cleaners, drain cleaners and disinfectants will not harm the functioning of the system or the soil absorption system.

Prohibited discharge to the system:
* Oil/grease from a deep frier (for example).
* Stormwater or any drainage other than sewerage generated in the house.
* Petrol, oil or other flammable/explosive substances
* Garden, garage, and workshop chemicals (e.g. pesticides, paint cleaners,photographic chemicals, motor oil or trade waste.
* Disposable nappies & sanitary napkins.

It is an MDC requirement that any wastewater treatment system be regularly serviced and maintained by a contractor experienced in this field.



01 - TYPICAL BED LAYOUT
N.T.S



02 - TYPICAL BED CONSTRUCTION
N.T.S

Note:
1. Distribution drains to be U-PVC 100mmØ perforated pipe laid flat with perforations comprising at least 2% of surface area. (10mmØ slots at 100mm centres from 4 to 8 o'clock positions).
2. 32mmØ pressure pipe 3/3mmØ holes @ 1m c/c at 10, 12 & 2 o'clock positions test prior to backfilling

Do not scale from this drawing

REV	DATE	DETAILS

smartalliances LTD
ENGINEERING / RESOURCE MANAGEMENT / ARCHITECTS
1st Floor River View House 10 High Street Blenheim New Zealand
T: 03 579 6211 F: 03 579 6233 PO Box 546 Blenheim 7240
E: info@smartalliances.co.nz Website: www.smartalliances.co.nz

CLIENT
BRENT DELPORT

PROJECT
WOOLSHED CONVERSION
SOUTH EAST BAY

DRAWING
WASTEWATER FIELD DETAILS

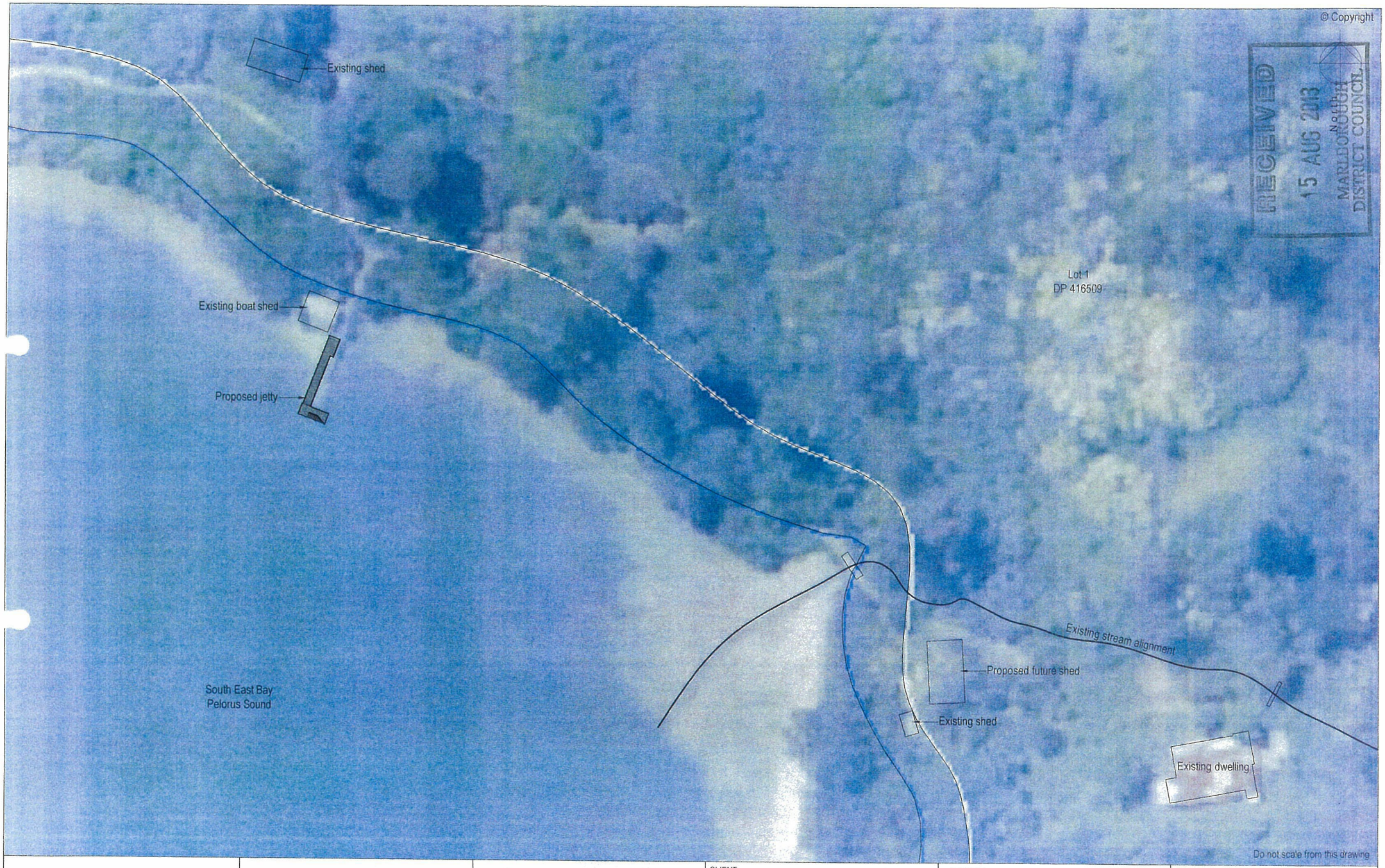
ISSUE
REPORT

DATE	SCALE (A4)
15/07/13	N.T.S
DRAWN	REVISION
KL	**01**
APPROVED	DWG NO.
KS	**3967-C10**

CAD FILE REF: P:/ 3967-wastewater-01

smartalliances
ENGINEERING / RESOURCE MANAGEMENT / ARCHITECTS LTD

Appendix B – Wastewater Details, Calculations and Logs



REV	DATE	DETAILS
01	05/06/13	ISSUED FOR CONSENT

REV	DATE	DETAILS

smartalliances LTD
1st Floor River View House 10 High Street Blenheim New Zealand
T: 03 579 6211 F: 03 579 6233 PO Box 546 Blenheim 7240
E: info@smartalliances.co.nz Website: www.smartalliances.co.nz

CLIENT
BRENT & NICOLA DELPORT

ISSUE
CONSENT

PROJECT
DELPORT JETTY
SOUTH EAST BAY

DRAWING
SITE PLAN

DATE
05/06/13

SCALE (A3)
1:750

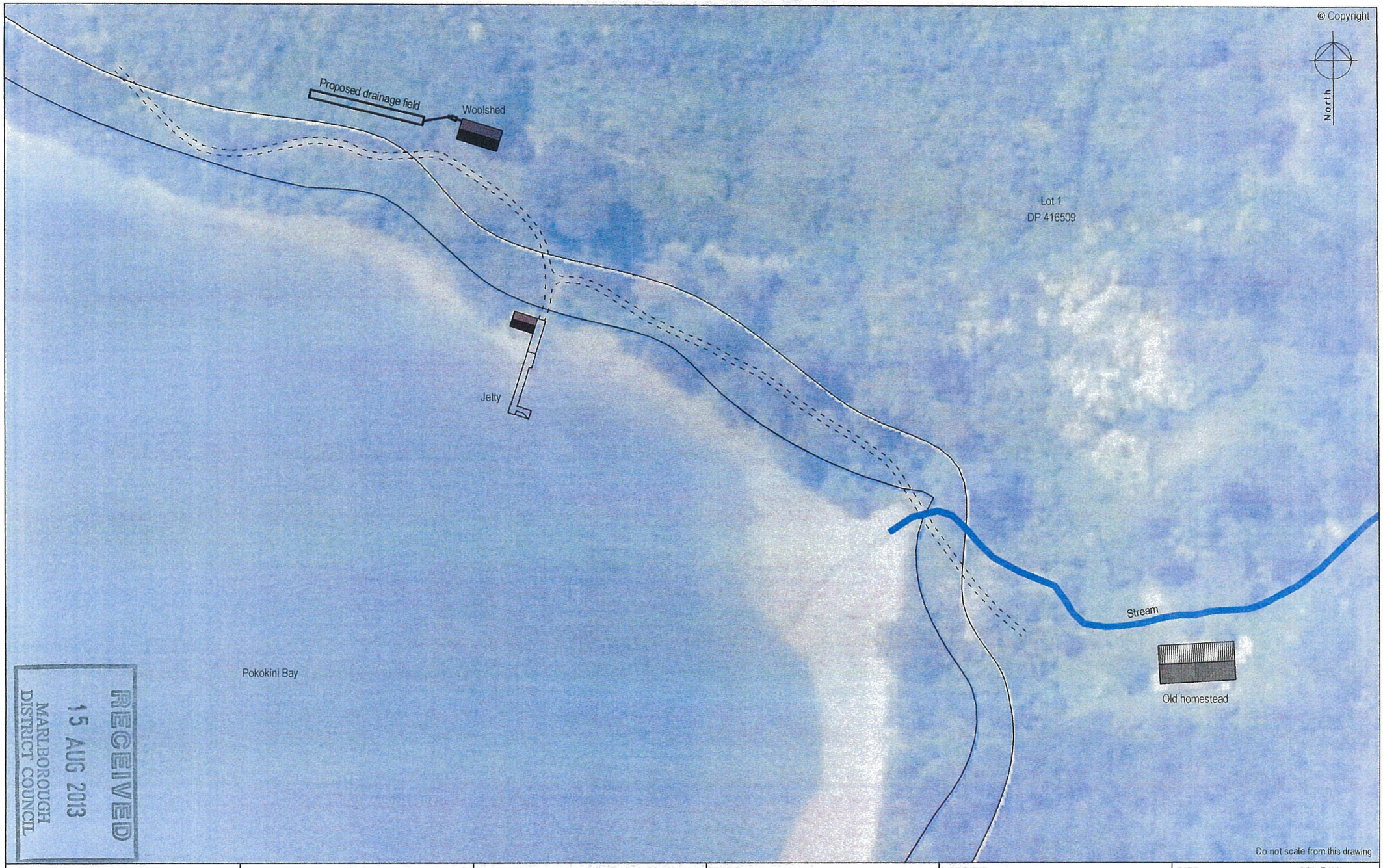
DRAWN
KL

REVISION
01

APPROVED
KS

DWG NO.
3967-C00

CAD FILE REF P:/3967 - Jetty



REV	DATE	DETAILS	REV	DATE	DETAILS

smartalliances LTD
1st Floor · River View House · 10 High Street · Blenheim · New Zealand
T: 03 579 6211 F: 03 579 6233 PO Box 546 · Blenheim · 7240
E: info@smartalliances.co.nz Website: www.smartalliances.co.nz

CLIENT
B DELPORT

ISSUE
REPORT

PROJECT
WOOL SHED CONVERSION
POKOKINI - SOUTH EAST BAY

DRAWING
SITE LAYOUT

DATE
15 JUL 13

SCALE (A3)
1:1000

DRAWN
KL

REVISION

APPROVED
KS

DWG NO
3967-C00

CAD FILE REF 3967/dwg/3967-01

smartalliances
ENGINEERING / RESOURCE MANAGEMENT / ARCHITECTS LTD

Project:	Woolshed Conversion
Client:	Brent Delport
Location:	South East Bay
Date:	15/07/2013
File No:	3967

WASTEWATER SYSTEM DESIGN SHEET

To AS/NZS 1547:2012

Intended water Supply:

~~*Public Supply*~~ *Bore/Stream/Dam* ~~*Rain water (roof collection)*~~

Site Conditions:

Gentle slopes, grassed

The site is exposed to both wind and sun - northwest facing slopes

Septic Tank or similar (Primary treatment):

OK when installed properly with a correctly sized level drainage area and maintained.

Secondary treatment:

Produce high quality effluent suitable for irrigation. Increased loading rate can be used if trench disposal is used - less disposal area required

Recommendation for this site: ***New septic tank, filter on outlet, pump in pump chamber and ETS bed field***

DRAINAGE CONTROLS:

Need for surface water collector / cut-off drains? ***No***

AVAILABILITY OR RESERVE / SETBACK AREAS

Reserve area available for extensions, % of design area: ***100%***

Setback distance? (between development and disposal system): ***N/A***

Ksat, (m/day):

ESTIMATED SOIL CATEGORY: ***Category 5***

Design

Design Loading Rate: ***8.0*** mm/day

Occupancy:	**4** persons	***165***	**660**	L/day from Table L1 AS/NZS 1547:2012
DESIGN DAILY FLOW:			**660**	L/day
AREA REQUIRED:			**82.5**	m²
LENGTH REQUIRED:			**34** m	with **2.4** metre wide beds
RESERVE AREA REQUIRED:			***100%***	of specified drainage area

RECOMMENDATION :

trade me 626820740PROJECT	Woolshed Conversion		
CLIENT :	Brent Delport		
REF:	3967	Eng:	KS
DATE:	15 July 13	Page:	1 of 1

Soil Evaluation

South East Bay - Pelorus

smartalliances
ENGINEERING / RESOURCE MANAGEMENT / ARCHITECTS LTD
Smart Alliances Ltd
PO Box 546
Blenheim, 7240
T:03 579 6211
F: 03 579 6233
E: info@smartalliances.co.nz
W: ww.smartalliances.co.nz

Aug 1

Horizon	Lower depth (mm)	Moisture content	Colour	Classification	Textural class	Course fragments % volume	Structure	Strength	Stickiness	Soil Category
A	350	Dry	Light brown	Silty loam	ZL	<5%	Single grain	Very firm	slightly	2
B	600	Dry	Pale Brown	Loam	L	10-20%	Single grain	firm	Non	5

Aug 2

Horizon	Lower depth (mm)	Moisture content	Colour	Classification	Textural class	Course fragments % volume	Structure	Strength	Stickiness	Soil Category
A	400	Dry	Light brown	Silty loam	ZL	<5%	Single grain	Very firm	slightly	2
B	600	Dry	Pale Brown	Loam	L	10-20%	Single grain	firm	Non	5

Pit

Horizon	Lower depth (mm)	Moisture content	Colour	Classification	Textural class	Course fragments % volume	Structure	Strength	Stickiness	Soil Category
A	350	Dry	Light brown	Silty loam	ZL	<5%	Single grain	Very firm	slightly	2
B	600	Dry	Pale Brown	Loam	L	10-20%	Single grain	firm	Non	5

Moisture content: Dry, moist, very moist, saturated
Structure: Single grain (non coherent) or massive (coherent)
Strength: Loose, very weak, weak, firm, very firm, strong, very strong, rigid
Stickiness: Non, slightly, moderately, very