HADLEY CONSULTANTS
a division of Wharehunga Enterprises Limited
Consulting Civil & Structural Engineers
21B Percy Street, Blenheim * Telephone (03) 578 2998 * Facsimile (03) 578 2996

18 May 2005

The General Manager
Marlborough District Council
P O Box 443
BLENHEIM

ATTENTION: Mr Bruno Brosnan **Your Reference:** U050178 & BC041864

Dear Bruno

REPORT ON SUITABILITY OF ASHTON PROPERTY, LOT 2, D.P. 2293, ENDEAVOUR INLET, QUEEN CHARLOTTE SOUND, TO ACCEPT SECONDARY TREATED FOUL EFFLUENT DISPOSAL TO A SUBTERRANEAN ABSORPTION BED.

General

This confirms that we inspected the above property, Lot 2, D.P. 2293, in the company of the owner, Mr Garry Ashton, on Wednesday, 30 March 2005. The purpose of our inspection was to ascertain whether secondary treated wastewater from an aerated wastewater treatment plant, disposed of to land on the allotment via a subterranean land disposal bed, would be an acceptable solution for the development proposed on this property.

The area of the allotment is quite small at 1492 square metres. It is proposed to construct a new four bedroom dwelling. The upper level floor plan of about 237 square metres shows three bedrooms, all with ensuite bathroom and toilet facilities. A kitchen and living area is contained in the balance of this area.

The lower floor basement area of about 154 square metres contains one bedroom with bathroom and toilet facilities and a rumpus and a family room with adjoining bathroom, laundry, and toilet facilities. The detail of the plan layout of the rooms is shown on the drawings, held by Council, on which Building Consent BC041864 was issued.

The two downstairs rooms, the rumpus and family room, are capable of being used as bedrooms so that effectively the dwelling could contain six bedrooms. There are sufficient bathrooms, five, and sufficient water closets, seven, for the dwelling to be treated as a six bedroom house.

The bedrooms and the rumpus and family rooms are all quite large at about 25 square metres. They are all capable of sleeping two persons per room. Thus, the wastewater treatment and disposal system needs to be designed for the load arising from occupancy of the dwelling by 12 persons.

Site Description

The property is located on the relatively gently sloping land at the head of Endeavour Inlet. It is bounded by the Sounds Foreshore Reserve in the west and by the Queen Charlotte Walkway in the east.

The rise from the Foreshore Reserve boundary to the highest point on the east boundary on the Walkway is about 4 metres.

There is a small knoll in the centre of the allotment close to the Walkway that is to be removed to provide a flat area on which to found the downstairs area of the dwelling.

The photographs, Plates 1, 2, and 3 give an indication of the current state of the allotment and show the knoll. As can be seen from these photographs the land over the allotment has been cleared of native vegetation over the area affected by future earthworks. Plate 1 shows the land to the north of the allotment where a small depression exists and the knoll on the right of the photograph. Plates 2 and 3 are views of the knoll from looking generally towards the north and northeast.

This knoll is to be removed by cutting the knob down to a level of about nominal level of R.L. 23.0 as shown on the Cuttriss Consultants Limited site plan dated May 2003. According to this site plan this will create about 345 cubic metres of cut. This cut will create a bank along the Walkway varying in height from about 2.5 metres to zero along the boundary between the Walkway and Lot 2, D.P.2293.

This material is to be retained on site as fill and is to be placed in an area towards the west of the allotment that is also shown on the Cuttriss site plan. The estimated fill volume is about 324 cubic metres. The difference between the cut and fill volumes suggests that the fill material will be compacted to a greater density that the insitu cut material. There is a well-defined watercourse crossing the triangular south end of the allotment. This watercourse carries a reasonable quantity of water. This watercourse is shown on the Cuttriss site plan.

There is also a second small depression toward the north boundary that carries water from a very small catchment and a spring that rises on Lot 2, Section 49, S.O. 449. Mr Garry Ashton also owns this allotment. The approximate position of this watercourse is shown on the site plan attached to this report.

Mr Ashton advised us that this small watercourse was more often than not effectively dry, particularly throughout the summer months. At the time of our inspection it was carrying a small flow that could have been comfortably accommodated in a 150 to 200 millimetre diameter PVC pipe built into a suitable headwork to ensure that the pipe could not become blocked with debris carried by higher flows. Mr Ashton advised that it was not proposed at this stage to pipe this watercourse though he was not averse to piping it presently or at some time in the future, should this become necessary.

The allotment is quite narrow between the Foreshore Reserve boundary in the west and the Walkway boundary in the east. The maximum dimension in this direction is about 27 metres in the north and about 15 metres in the south. This trapezoidal area is where the new dwelling is positioned as can be seen on the Cuttriss site plan.

The areas on the allotment to the north and south of the dwelling position have limited potential for a land disposal area since the watercourse through the south end of the allotment limits land disposal in this region. Similarly, the small watercourse at the north end limits land disposal development in this region until such time as this watercourse is piped.

Site Evaluation

At the time of our inspection of the site, following a period of quite wet weather and during drizzle, we found the land had been disturbed by the removal of the vegetation for the area involved with the earthworks. There was ample evidence of the type of soil present over the site from disturbances caused by machinery used in the removal of the native vegetation.

Inspection disclosed that the soils were a consistent very friable silty sandy clay loam that varied little throughout the 1 metre depth exposed by the holes over the site. These soils appeared to continue through for at least another 600 millimetres below the bottom of the holes in the ground. These soils were mainly silts with an easily discernable sand fraction but with the typical clay fraction of around 15 to 20%. Plates 4 and 5 attached illustrate the type of soil over the site.

Soil permeability testing was not carried out. However, our visual inspection of these soils indicated that they might well be able to be classified as moderate to weakly structured well-drained Category 3 sandy loams in accordance with NZS 1547:2000 classifications. A more conservative classification might be that the soils are highly structured well-drained Category 4 clay loams.

The daily application rate per square metre per day for beds receiving secondary-treated effluent is given in Table 4.2A1 of NZS 1547 for weakly structured well-drained Category 3 loams as 30 millimetres while for moderately structured loams the rate is 50 millimetres. The application rate for well-drained moderate to highly structured Category 4 clay loams is also 30 millimetres.

We consider that an appropriate application rate for design at this site would be 30 millimetres per square metre per day for this site. We feel that this is a reasonable application rate in the situation at this property.

Design Criteria for Wastewater Treatment System

The design of this system is based upon the water supply being a reticulated water supply derived from taking water from the watercourse that crosses the south end of the allotment. There is an alternative water supply source from the creek that adjoins Lot 2 Section 49, S.O. 447 that could also be tapped if necessary.

The design of the system assumes that the new dwelling will be fitted with full water reduction facilities such as 6/3 litre water closets, shower flow restrictors, aerator faucets, front loading washing machines and flow and pressure control valves on all water use outlets as per Note 3 in Appendix 4.2D of NZS 1547:2000.

The wastewater flow design allowance from the new dwelling has been taken as 115 litres per person per day for twelve persons occupying the dwelling as per Appendix 4.2D of NZS 1547. Therefore, the total daily wastewater flow allowance is 1,380 litres per day.

If full water reduction fittings are not included in the dwelling and only standard water reduction fittings as per Note 2 of Appendix 4.2D are included, then the total daily flow allowance is 145 litres per person per day by twelve persons, resulting in a total of 1,740 litres per day.

Effluent Treatment System

The effluent treatment system will be a Stemphlow BM2 fully aerated wastewater treatment plant, including GAIBE media towers in the aeration chamber, produced, installed and maintained by Wastewater Services Limited, Nelson.

This plant is contained in a concrete multi-chambered tank that has a nominal capacity of 11,000 litres. The tank contains the following chambers:

First Primary Chamber (anaerobic and septic)

This chamber has a capacity of 3,000 litres. All domestic wastewater from the dwelling is piped to this chamber. Here, anaerobic and other oxidising bacteria break down suspended solid material. The anaerobic digestion achieves a reduction in biochemical oxygen demand (BOD) in this chamber by up to 40%. This chamber also receives activated aerated sludge from the clarifying chamber that stimulates the bacteria and enhances the level of solids digested.

Secondary Primary Chamber (anaerobic and septic)

This chamber has a capacity of 2,000 litres. The domestic wastewater is able to flow freely from the first primary chamber into this chamber. This allows for mixing of the partially treated wastewater and prepares it for the processes that follow. This wastewater passes through a proprietary Biotube filter before entering the aerobic chamber.

Aerobic Chamber (aeration and oxygenation)

This chamber has a capacity of 3,000 litres. The semi-treated wastewater flows from the secondary primary chamber to the aeration chamber through the Biotube filter. The oxygen for this chamber is supplied via an air venturi powered by a submersible pump that operates off a solid state timer within the system.

The aeration chamber contains submerged GAIBE media towers. The GAIBE media is a porous natural mineral that attracts and enhances the bacteria, nitrobacter and nitrosomonas, that replenish free oxygen.

In addition to the ammonium contained in many wastewaters, the GAIBE media concentrates other compounds and metals contained in the wastewater during the ion exchange processes. The enhanced aerobic bacterial action results in a high level of aerobic treatment and a reduction in the accumulation of biological sludge.

Clarifying Chamber (settling)

This chamber has a capacity of 1,000 litres. The treated wastewater passes from the aerobic chamber to the clarifying chamber. Most of the remaining particles of suspended solids settle to the bottom of the chamber allowing largely clean odourless wastewater to pass to the irrigation chamber.

The suspended solids that sink to the bottom of the chamber are drawn back to the first primary chamber for further processing.

Pumping Chamber

This chamber has a capacity of 1,000 litres. The fully treated wastewater flows into the pumping chamber where it is pumped out at pre-set rates for dose loading onto irrigated gardens, landscaped, or other suitable areas.

The pumping chamber of the plant will be set up to dose load the subterranean land disposal area upon the accumulation of 200 to 400 litres between each dose loading or once daily which ever is the greater frequency.

Intermittent Use and Surge Loadings

The Stemphlow BM2 aerated wastewater treatment plant is designed to cope with fluctuations that arise from intermittent use and surge loadings.

The GAIBE media towers and the Biotube filters are installed in the treatment system to assist its ability to cope with intermittent use and surge loadings.

Where there may be extended periods of no use of the plant, in excess of 6 months, re-seeding of bacteria is recommended to assist in the recovery of the system. It should be noted that where the system is used intermittently the effluent quality leaving the system would remain of sufficient quality to allow it to be discharged through a dripper line.

Effluent Quality

A properly installed and maintained Stemphlow BM2 plant produces effluent for discharge through a covered surface dripper line that meets the standards required in NZS 1547:2000 and those required by the Resource Management Plans of the Marlborough District Council.

Testing undertaken by the manufacturers shows that these plants are producing effluent well within the BOD_5 and SS limits in both the NZ Standard and the Plan.

It should be noted that when ultraviolet sterilisation is incorporated downstream of the pumping chamber, tests show that the faecal coliform count of the ultraviolet treated effluent falls below 10 faecal coliforms per 100 millilitres of effluent. Council is familiar with this Stemphlow treatment system and the quality of the effluent it produces for discharge to land.

It should also be noted that the retention time for a 1,380 litre daily design load held within the aerated wastewater treatment plant is effectively contained within the system for a notional 7.25 days by the time introduced effluent is treated and discharged onto the land disposal area. If the daily design load is 1,740 litres then the notional retention time reduces to about 5.75 days. This is over double the retention time that would occur were the wastewater passed through a primary treatment septic tank of the capacity required by NZS 1547.

Land Disposal Area

The design loading for the land disposal area is 1,380 litres per day. The daily loading rate (DLR) in NZS 1547 for the two Categories of soil assessed is recorded in the preceding. For this design a DLR of 30 millimetres per square metre per day has been used to determine the base area of the beds.

Therefore, the area of the subterranean land disposal field required to meet the requirements of NZS 1547 is 46 square metres. If the design loading for land disposal is taken as 1,740 litres per day then to meet the requirements of NZS 1547 the area of the subterranean field is 58 square metres.

There is an area immediately in front of the dwelling to the southwest that is likely to be substantially flat when earthworks are completed that is about 27 metres long. This area is substantially under the upper floor deck of the building.

If the eastern edge of this bed is kept 2.0 metres off the exterior pile line of the lower floor and made 3.5 metres wide its western edge will be about 3.0 metres off the Foreshore Reserve Boundary at its closest point. The area of the bed will then be about 95 square metres. If a bed this size is built then this will provide an effective daily application rate per square metre of bed of 15 millimetres for a full water reduction system installed on the property and about 18 millimetres for a standard water reduction system on the property.

It is proposed to install a single bed in this region about 27 metres long, 3.5 metres wide and about 450 to 500 millimetres deep. This bed is to contain four runs of 65 millimetre diameter draincoil set at about 900 millimetre centres with equal edge distances. The four draincoil runs are to be set on the horizontal centreline of the bed about 250 millimetres above the base in AP 25 granular fill over 50 millimetres of sand blinding. The vertical sides between the fill and the soils and the top of the fill is to be covered with A16 Bidum filter fabric. The bed is to be filled with topsoil and planted out with suitable species of natives from the attached schedule.

RAAM 17D dripper line, that has 3.5 litre per hour drippers at 1 metre centres, is to be laid inside the 65 draincoil. The effluent supply from the aerated wastewater treatment plant is to be run in 25 millimetre LDPE. The land disposal bed is to be dose loaded.

A typical cross section of the new subterranean beds is shown on the plan attached to this report. The downstream end of 65 draincoil shall be vented to increase the oxygen levels in the chip in the beds.

There is an area immediately north of the dwelling that measures about 17 metres long and 5 metres wide. This gives an area of 85 square metres that could be used as a reserve area for an extension to the subterranean bed if required in the future.

Proximity of Land Disposal Area to Waterbodies and Sea

The land disposal area is in close proximity to the sea as is the reserve land disposal area. It is well within the 30 metre minimum clearance stipulated in the Marlborough Sounds Resource Management Plan. This has never been a logical minimum distance from a waterbody or the sea but rather an arbitrary distance selected as a result of misinformation and/or a desire for the Plan to contain a provision that allowed the installation of a land disposal area as a Permitted Activity. Plan Change No. 7, on which submissions closed on 20 May 2005 eliminates this minimum distance from the Plan.

This report also relies upon Note 1 in Table 4.2B1 of NZS 1547:2000 in which it is acknowledged that the number of faecal coliforms reduces by an order of magnitude for every 50 millimetres that effluent travels through soils. Thus a path length of 300 to 400 millimetres is sufficient to reduce coliform numbers to insignificant levels in normal soils.

Maintenance Schedule

The Stemphlow BM2 aerated wastewater treatment plant will be required to be maintained on a six monthly basis or as otherwise required by Council and Wastewater Services Limited, Nelson. The format of the report to Council will follow the reporting procedures already established between Council and Wastewater Services Limited, Nelson.

Construction Monitoring

The undersigned or his authorised representative will monitor the construction of the subterranean land disposal bed when the bed has been excavated and when it is filled with granular fill.

Conclusions

This report confirms that a Stemphlow BM2 aerated wastewater treatment plant and its associated subterranean land disposal bed of an area of 95 square metres will adequately service the new dwelling proposed on this property. Our Professional Opinion on the treatment and disposal to land of the foul effluent from the proposed new Ashton dwelling on Lot 2, D.P. 2293 is provided to Council with this report.

The Stemphlow BM2 aerated wastewater treatment plant and the subterranean absorption bed described in this report will comply with the provisions of NZS 1547:2000 in all respects and with the provisions of the Council Guide-lines for New On-site Wastewater Management Systems as well as comply with the Proposed Plan Change No. 7 to the Marlborough Sounds Resource Management Plan.

It is also our opinion, as a result of our inspection and investigation of Lot 2, D.P. 2293 that the development of this land, by way of a wastewater treatment plant and subterranean land disposal area, will not render this land, or any land surrounding it that could be considered to affect this land, subject to, or likely to be subject to, any of the conditions listed in Section 106(1)(a) of the Resource Management Act 1991 or Section 71(3) of the Building Act 2004 nor will the use of this land as described, accelerate, worsen, or result in any of the conditions listed in Section 106(1)(b) of the Resource Management Act 1991 or Section 71(3) of the Building Act 2004.

We trust this and the attached information is sufficient for your purposes and that you are now able to issue Resource Consent for Discharge to Land on this property. However, should you require any clarification of the matters raised in the report please feel free to contact us directly.

Kind regards
HADLEY CONSULTANTS

Jim Hadley
Director

cc Mr and Mrs Garry Ashton
Mr Mardy Audier, Wastewater Services, P O Box 1508, Nelson.

Plate 1: General View of North End of Lot 2, Knoll on Right of Photograph.

Plate 2: View of Knoll about the Centre of Lot 2, D.P. 2293.

Plate 3: General View of Knoll Looking North Over Allotment.

Plate 4: Close Up View of Friable Soils Over Lot 2, D.P. 2293.

Plate 5: Close Up View of Soils Over Allotment on Lot 2, D.P. 2293 .

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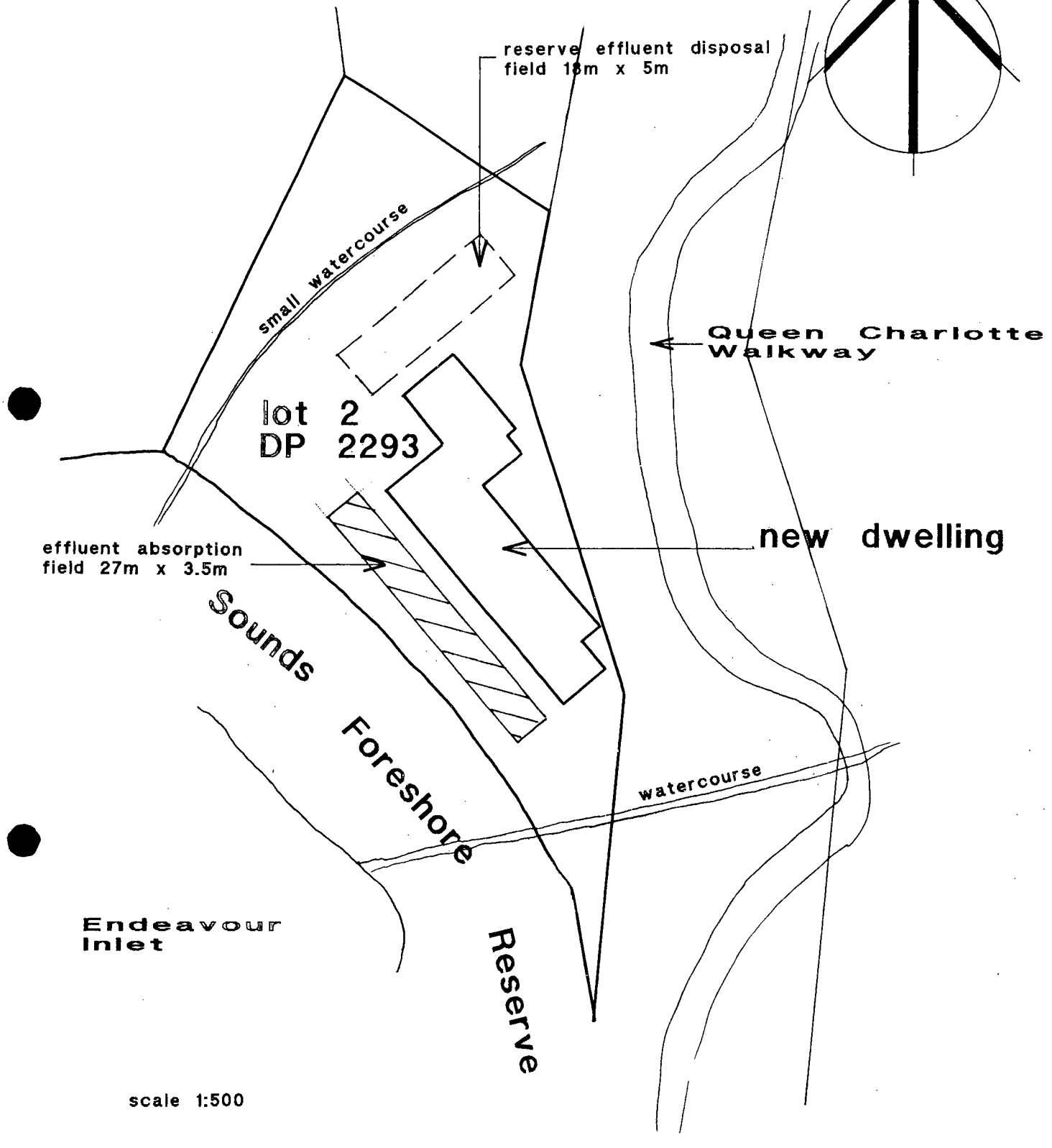

Site Plan to accompany Ashton Effluent Treatment and Disposal Report at Endeavour Inlet

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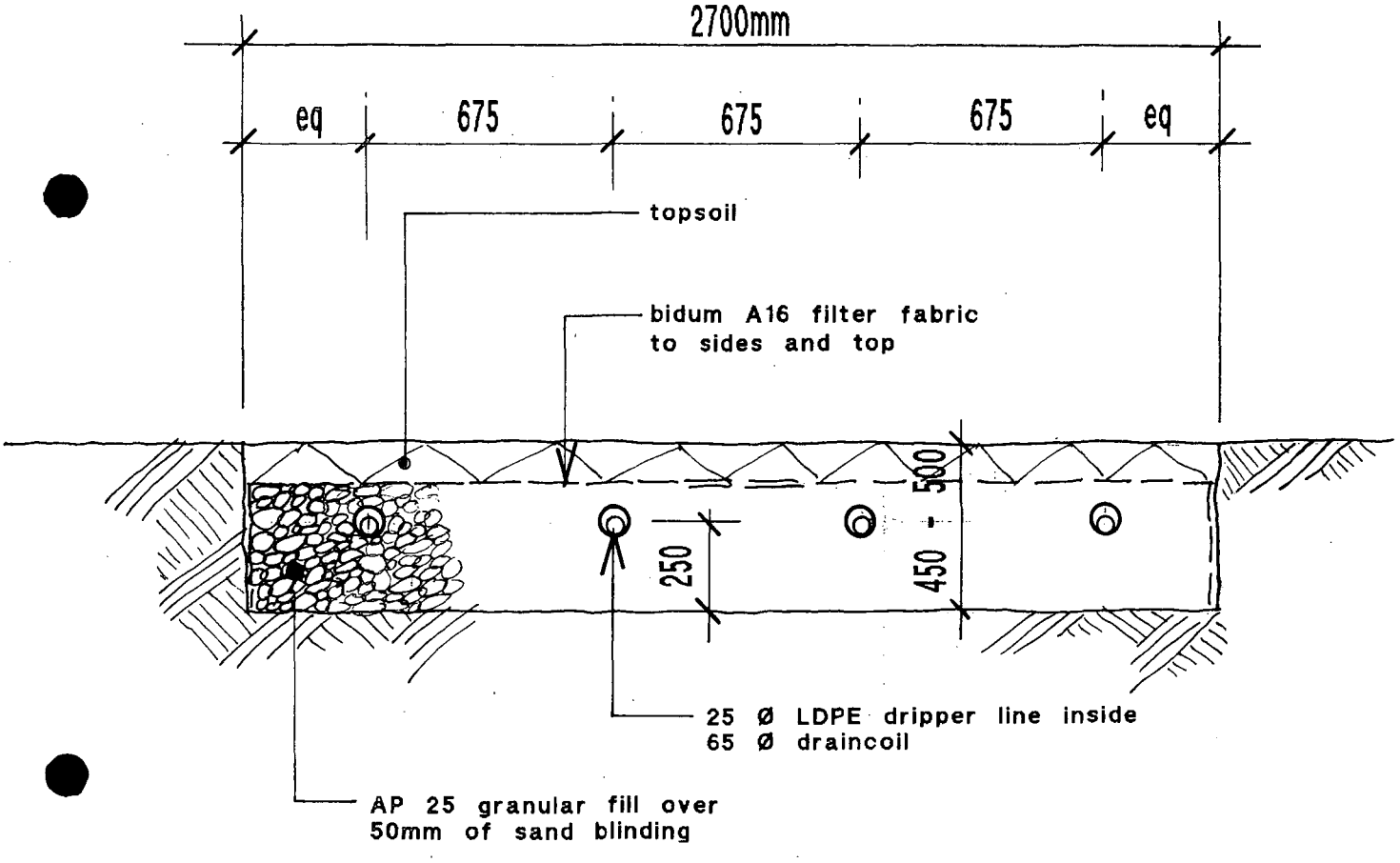

Drainage Details to accompany Ashton Effluent Treatment and Disposal Report at Endeavour Inlet

PLANTING SCHEDULE

SUITABLE PLANT SPECIES TO MAXIMISE EVAPOTRANSPORATION

The following has been compiled from the recommendations given in the Auckland Regional Council publication TP 58 entitled On-Site Wastewater Disposal from Households and Institutions.

The information given in this publication was originally prepared for the regions of Northland, Auckland, Bay of Plenty and Coromandel.

It has been modified for the littoral area of the Marlborough Sounds. That is the area in close proximity to the coastal marine area. The list is not exhaustive and could be expanded by a landscape architect with experience and knowledge of the transpiration uptake of species.

The key to the species listing is as follows:

Height

1. Around 1 metre or lower.
2. Around 2 metres.
3. Above 3 metres.

Durability

A. Very hardy.
B. Hardy.
C. Soft.

Trees generally

Trees should preferably be evergreen although some deciduous trees offer good transpiration
.

Trees generally

Pohutukawa 3A
Red Gum 3A
Willow species 3A (Hort Research Palmerston North have developed new willow species with excellent transpiration.)

Shrubs and fringe trees

Kawakawa 3A
Karaka 3A
Kohekohe 3A (but frost sensitive)
Lemonwood 3A
Kohuhu 3A
Ngaio 3A
Karo 3A
Broadleaf 3A
Oleria 3A
Akeake 3A

Plants and evergreens

Canna 1B
Rock Lily (Arthropodium) 1B
Rangiora 2A
Fuschia 2A
Philodendrons (large range & in shelter) 1C
Flax (phormium tenax) 2A
Flax (phormium cookianum) 1A
Agapanthus 1B
Kaka Beak (Clianthus) 1-2A
Swan Plant 2-3A
Gunneras (larger varieties) 1-2A

Grasses

Paspaium (will tolerate extreme wet and dry)
Yorkshire Fog
Crested Dog Tail (Cynosurus cistatus)
Poa species

Ground covers

Mercury Bay Weed
Yellow Clovers (or psuedo clovers) good where extra wet

PRODUCER STATEMENT for DESIGN

ISSUED BY: J A Hadley, Director, of Hadley Consultants, 21B Percy Street, Blenheim.

TO: Marlborough District Council, P O Box 443, Blenheim.

IN RESPECT OF: The specific engineering design of the effluent treatment and disposal system incorporating a proprietary aerated wastewater treatment plant producing secondary treated effluent and the subterranean land disposal area for the new Ashton dwelling at Endeavour Inlet, Queen Charlotte Sound.

AT: Endeavour Inlet, Queen Charlotte Sound.

LEGAL DESCRIPTION: Lot 2, D.P. 2293.

DESIGN FIRM: Hadley Consultants, 21B Percy Street, Blenheim

CLIENT: Mr and Mrs Garry Ashton, Paraparaumu.

The Client has engaged the Design Firm to undertake the calculations for the above described land disposal area incorporating a subterranean absorption bed for the new Ashton dwelling at Endeavour Inlet, Queen Charlotte Sound, to ensure that the parts of the work covered by this Statement comply with the relevant requirements of the New Zealand Building Regulations 1992.

The relevant requirements of the New Zealand Building Code 1993, in particular, Clauses B1 and G13 have, where the provisions of this Clause are applicable, been met in the design.

The structural engineering design has been prepared using the following New Zealand Standard as Verification Methods and/or Acceptable Solutions as set out in the Building Code. This New Zealand Standard is NZS 1547:2000.

The design work, including work not covered by this Producer Statement, has been detailed and/or specified in the Hadley Consultants report dated 18 May 2005 to the Marlborough District Council.

As an independent design professional covered by a current policy of Professional Indemnity Insurance to a minimum of $250,000, **I believe on reasonable grounds**, that subject to:

(i) all proprietary products meeting performance specifications requirements, and

(ii) all work to the land disposal area being carried out in accordance with the Hadley Consultants report dated 18 May 2005, and NZS 1547:2000, and best trade practice, and

(iii) the work associated with the above described effluent land disposal system being monitored at appropriate times during construction by the undersigned or its authorised representative,

the drawings, specifications and other documents according to which the new dwelling is proposed to be constructed comply with the Building Code and the Building Regulations.

.....
J A Hadley, Director, Hadley Consultants

DATE: 22 May 2005

QUALIFICATIONS: M.E., B.Sc., M.I.P.E.N.Z.(Civil & Struct), CPEng., IntPE(NZ),**CPEng REGISTRATION No.** 37913

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22 May 2005

The General Manager
Marlborough District Council
P O Box 443
BLENHEIM

ATTENTION: Mr Bruno Brosnan

Dear Bruno

STATEMENT OF PROFESSIONAL OPINION ON SUITABILITY OF LAND FOR RESIDENTIAL BUILDING DEVELOPMENT AND EFFLUENT DISPOSAL.

I, James Alexander Hadley, Director, of Hadley Consultants, Consulting Civil and Structural Engineers, 21B Percy Street, Blenheim, with respect to the Ashton application for Resource Consent and Building Consent for the development of Lot 2, D.P. 2293, at Endeavour Inlet, Queen Charlotte Sound owned by Mr and Mrs Garry Ashton of Paraparaumu, hereby confirm that:

1. The above named is a Registered Engineer experienced in the field of soils engineering and more particularly land and foundation stability, and our firm is covered by a current policy of Professional Indemnity insurance to a minimum value of $250,000, and that,

2. We understand that the purpose of this professional opinion is to assist the Marlborough District Council in fulfilling its statutory obligations under the Building Act 2004 and the Resource Management Act 1991, and that,

3. Based upon our inspection of the site, our knowledge of local conditions, and our observations at the property on 30 March 2005 and the information contained in our engineering report of 18 May 2005, numbered 05028, on the allotment referred to above, and that,

4. This opinion is based upon the assumption that the information obtained from our inspection and observations is representative of the whole area under consideration and it is our opinion that it is reasonable for Council to accept this assumption as valid, and that,

5. Detailed architectural and engineering drawings and specifications have been prepared for the proposals to develop Lot 2, D.P. 2293, and that,

6. In our professional opinion, not to be construed as a guarantee, this allotment is capable of being developed with a residential dwelling and its associated on-site wastewater treatment system and subterranean absorption land disposal system meeting the requirements of NZS 1547:2000, without destabilising the land in any way, provided all construction works are built in accordance with accepted trade and engineering principles and practice, and provided that the requirements contained in our aforementioned engineering report are adopted, and that,

7. This professional opinion is furnished to the Marlborough District Council for its purposes alone. It may not be relied upon by any other person or entity. It is based on the conditions presently found on the site at the time of our inspection and is consistent with standards and/or engineering principles and practices currently being applied to engineering work of this nature, and that,

8. This professional opinion shall remain current for a maximum period of two years.

Yours faithfully
HADLEY CONSULTANTS

J A Hadley
Director

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20 May 2005

The General Manager
Marlborough District Council
P O Box 443
BLENHEIM

ATTENTION: Mr Bruno Brosnan

Your Reference: U050178 & BC041864

Dear Bruno

SEDIMENTATION CONTROL DURING EXCAVATIONS AND FILLING AT ASHTON PROPERTY, LOT 2, D.P. 2293, ENDEAVOUR INLET, QUEEN CHARLOTTE SOUND.

Our client, Mr Garry Ashton, has asked us to address your request for further information on the control measures proposed for the cutting and filling excavation works on the confined Ashton property in Endeavour Inlet.

You need to appreciate that we have not been commissioned to undertake the design of this work. This has already largely been completed by Cuttriss Consultants Limited, Engineers, of Wellington.

Insofar as on site control measures are concerned we suggest you recommend that Council made the Resource Consent for Land Disturbance conditional upon its usual requirement that sedimentation control be in accordance with the Auckland Regional Council publication entitled "Erosion and Sedimentation Control of Construction Sites."

We find this a very useful guide for earthmoving contractors. It provides sound methods for sedimentation control on earthworks sites.

We suggest that you photocopy this A3 coloured publication to Cuttriss Consultants and ask them to distribute it to contractors pricing the excavation works. We are certain that if they do not already have a copy of this ARC publication then they will write any specification, or notes on their drawings, to include sedimentation control measures that follow the methods indicated in this document.

Kind regards
HADLEY CONSULTANTS

Jim Hadley
Director

cc Mr Garry Ashton
Mr Dan Rodie, Cuttriss Consultants