SPECIALIST REPORTS

3/6 Bantry Court, Eagleby QLD 4207

Lot 60 on SP305652

March 2026

Urban Planning | Urban Design
Project Management | Development Advice

Protest Geotechnical Pty Ltd
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1/9 Greg Chappell Drive,
Burleigh Heads, QLD, 4220

FINDASITE Town Planners
Level 2, 34 High Street,
Southport, QLD, 4215

Project Number: PTJ16/428
Letter Number: PTJ16/428 - 0001
Project Name: 132-134 Logan Street, Eagleby

Email: cwaning@findasite.net.au

Slope Stability Risk Assessment Report
132-134 Logan Street, Eagleby
RPD: Lot 1 & 2 on SP148367
Division: 12
Area: 7,317m^2
Regulatory Authority: Logan City Council

HAZARD CLASSIFICATION 'Low or better'

Figure 1 – Site Frontage

AIM

- To establish the hazard classification for the above block with regards to slope instability;
- To establish that a development will not adversely affect the stability of the above site; and
- To recommend any measures that would improve stability.

INTRODUCTION

Protest Geotechnical Pty Ltd were commissioned by Chris Waning from FINDASITE Town Planners to undertake a Geotechnical Stability Assessment at a residential property located at 132-134 Logan Street, Eagleby. The location of the site is shown in Figure 2 – *Site Location* below and was taken from Logan Interactive Mapping. As the figure shows, the property has a moderate landslide hazard rating.

The investigation and assessment comprised of determining the hazard risk of the natural slope due to proposed subdivision and earthworks. The slope assessed is show in Figures 3 & 4 – *Assessed Slopes* with a section of the slope derived from use of a zip level as shown in Figure 5 – *Slope Section.*

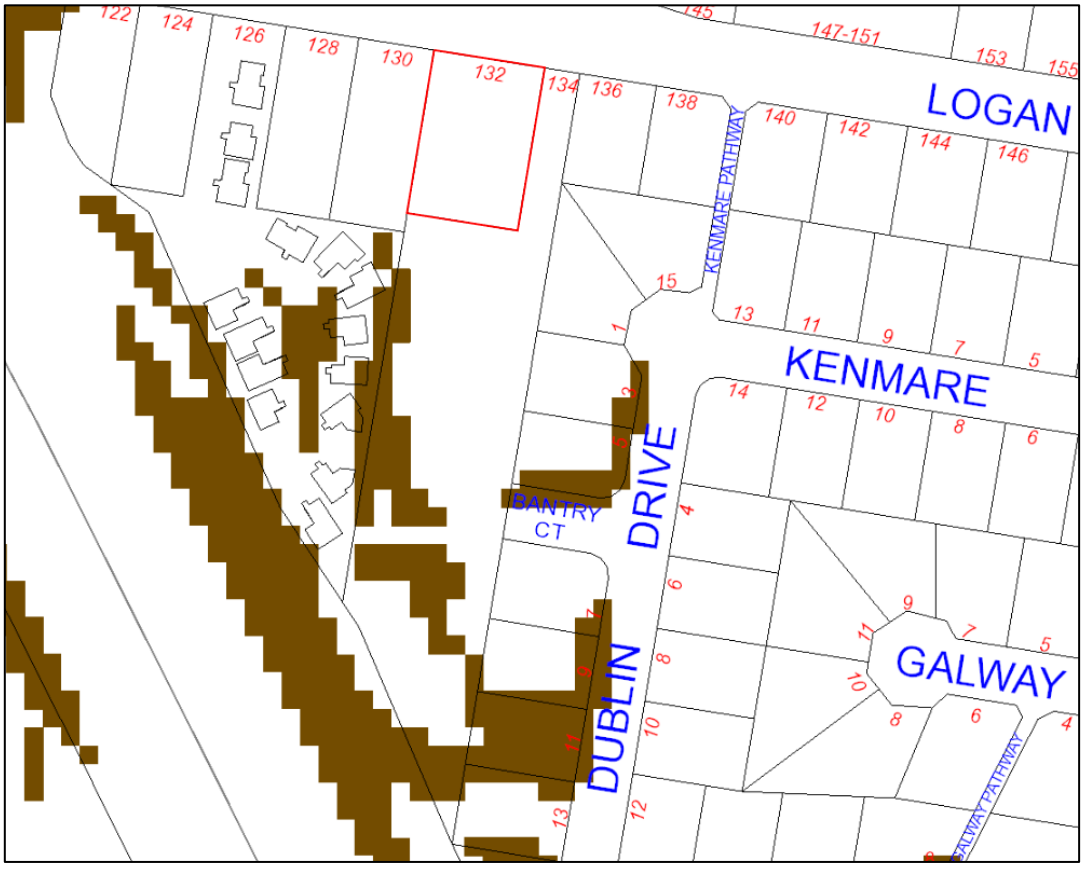

Figure 2 – Site Location

Figure 3 – Assessed Slope (sloping towards rear)

Figure 4 – Assessed Slope (looking from rear)

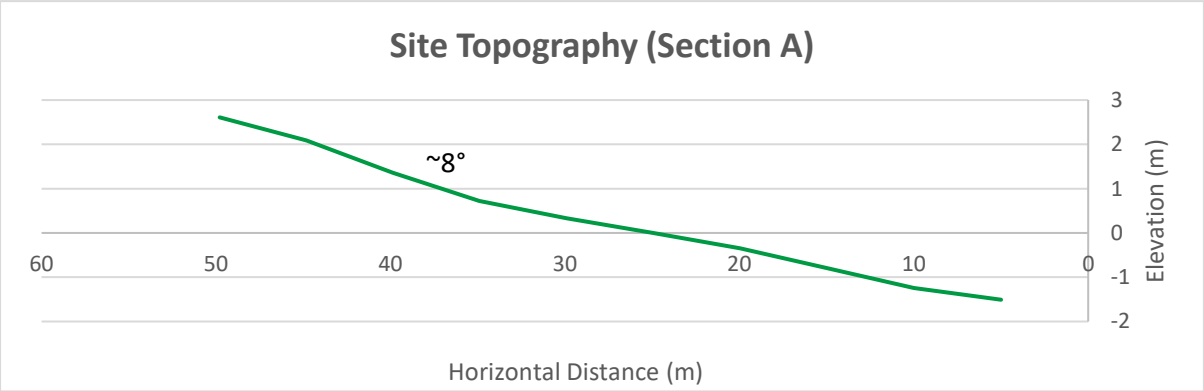

Figure 5 – Slope Sections

SOIL PROPERTIES

The bore logs undertaken by APOD Soil Testing Pty Ltd have been used as a basis for the natural soil and rock profile. The extremely weathered rock is generally located within 1 m of the surface level. These logs and their locations are provided in the report. There were no signs of groundwater or seepage on the natural slope of the site and drainage is considered very good as the slope runs down to a valley shaped creek.

RETAINING WALLS

All retaining walls should be designed as per AS4678. Any retaining walls are required to have a factor of safety of 1.5 minimum. This office does not take responsibility for the integrity of any existing retaining walls including rock walls, or future retaining walls unless specifically designed by this office.

EXISTING STRUCTURES

At the time of the site visit there were several existing structures such as existing rock retaining walls less than 1m height, existing cuts, existing old slab on ground concrete slabs. The removal and consideration of these structures will need to be resolved within the local Logan City Council guidelines. All existing cuts and fills should comply to council earthworks stability guidelines.

RECOMMENDATIONS

- From our findings, the hazard risk of the natural slope assessed at 132-134 Logan Street, Eagleby is considered to be **'Low or Better',** which is usually acceptable.
- Attached are drainage and earthworks recommendations as per the Australian Geotechnical Society examples of good hillside construction practices.
- Stormwater is to follow a stormwater management plan.

BORE LOGS

APOD Soil Testing Pty Ltd
ABN: 47 106 610 977 ACN: 106 610 977
ADDRESS: 53 Drapers Road, Eatons Hill Qld 4037
TELEPHONE: (07)3264 6995 FAX: (07)3264 6994

LOG SECTION
SITE ADDRESS: 134 LOGAN STREET EAGLEBY
JOB NO: 16-02-27697 DATE: 16/02/2016

TEST HOLE NO. 1 LOCATION: S27°42.657 E153°12.448

DEPTH mm	DESCRIPTION soil type-colour-consistency	FILL	DCP	PP kPa
100	GRAVELLY SILT(GM) (br-gy)*	↓		
200	dry & uncontrolled			
300	X.W.ROCK (lt.br)*			
400	dry & strong			
500				
600	U.T.P. - with power auger			
700	(ROCK)			
800				
900				
1000				
1100				
1200				
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				
2100				
2200				
2300				
2400				
2500				

TEST HOLE NO. 2 LOCATION: S27°42.636 E153°12.438

DEPTH mm	DESCRIPTION soil type-colour-consistency	FILL	DCP	PP kPa
100	GRAVELLY SILT(GM) (gy)*			
200	dry & medium dense			
300				
400	X.W.ROCK (lt.br-yell-gy)*			
500				
600				
700				
800				
900				
1000				
1100				
1200	dry & moderately strong			
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				
2100	END - with power auger			
2200				
2300				
2400				
2500				

TEST HOLE NO. 3 LOCATION: S27°42.626 E153°12.452

DEPTH mm	DESCRIPTION soil type-colour-consistency	FILL	DCP	PP kPa
100	GRAVELLY SILT(GM) (br-gy)*	↓	5	
200			12	
300			UTP	
400	dry & uncontrolled			
500				
600				
700	SILTY SAND(SM) (yell-br)*			
800	- fine to medium grained			
900	dry & loose			
1000	SILTY CLAY(CI) sl.moist & v.stiff (rd-br)*			600
1100	X.W.ROCK (lt.br)*			
1200	dry & strong			
1300				
1400	U.T.P. - with power auger			
1500	(ROCK)			
1600				
1700				
1800				
1900				
2000				
2100				
2200				
2300				
2400				
2500				

TEST HOLE NO. 4 LOCATION: S27°42.615 E153°12.455

DEPTH mm	DESCRIPTION soil type-colour-consistency	FILL	DCP	PP kPa
100	GRAVELLY SILT(GM) (yell-br-or-dk.gy)*	↓	15	
200	- with minor cobbles		10	
300			6	
400			3	
500			6	
600			7	
700	dry & uncontrolled		4	
800			3	
900			5	
1000			10	
1100			5	
1200	GRAVELLY SILT(GM) (br-gy)*		6	
1300	- with trace sand		5	
1400	dry & medium dense			
1500	SILTY CLAY(CH) moist & stiff (yell-br)*			200
1600	X.W.ROCK (lt.gy)*			
1700				
1800	dry & moderately strong			
1900				
2000	END - with power auger			
2100				
2200				
2300				
2400				
2500				

NOMENCLATURE
DCP=dynamic cone penetrometer PP=pocket penetrometer U.T.P.=unable to penetrate A=auger X.W.ROCK=extremely weathered rock. *br=brown gy=grey or=orange yell=yellow rd=red bl=blue bk=black wh=white gr=green Refer AS 1726 - 1993 Clause A2.4 for classifying soils. Some alluvial topsoils are indistinguishable from fill in boreholes. When these have similar bearing capacities to fill, they may be logged as fill.

A6/2

APOD Soil Testing Pty Ltd

ABN: 47 106 610 977 ACN: 106 610 977
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LOG SECTION

SITE ADDRESS: 134 LOGAN STREET EAGLEBY
JOB NO: 16-02-27697 DATE: 16/02/2016

TEST HOLE NO. 5 LOCATION: S27°42.613 E153°12.465

DEPTH mm	DESCRIPTION soil type-colour-consistency	FILL	DCP	PP kPa
100	GRAVELLY SILT(GM) (br-gy)*			
200	dry & uncontrolled			
300				
400	X.W.ROCK (lt.br)*			
500	dry & strong			
600	U.T.P. - with power auger			
700	(ROCK)			
800				
900				
1000				
1100				
1200				
1300				
1400				
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1900				
2000				
2100				
2200				
2300				
2400				
2500				

TEST HOLE NO. 6 LOCATION: S27°42.596 E153°12.464

DEPTH mm	DESCRIPTION soil type-colour-consistency	FILL	DCP	PP kPa
100	SANDY SILT(SM) (br)*		3	
200	- with minor gravels		6	
300	dry & medium dense		5	
400	X.W.ROCK (yell-br-lt.gy)*			
500				
600				
700				
800				
900				
1000				
1100	dry & moderately strong			
1200				
1300				
1400				
1500				
1600				
1700				
1800	U.T.P. - with power auger			
1900	(ROCK)			
2000				
2100				
2200				
2300				
2400				
2500				

TEST HOLE NO. LOCATION:

DEPTH mm	DESCRIPTION soil type-colour-consistency	FILL	DCP	PP kPa
100				
200				
300				
400				
500				
600				
700				
800				
900				
1000				
1100				
1200				
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				
2100				
2200				
2300				
2400				
2500				

TEST HOLE NO. LOCATION:

DEPTH mm	DESCRIPTION soil type-colour-consistency	FILL	DCP	PP kPa
100				
200				
300				
400				
500				
600				
700				
800				
900				
1000				
1100				
1200				
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				
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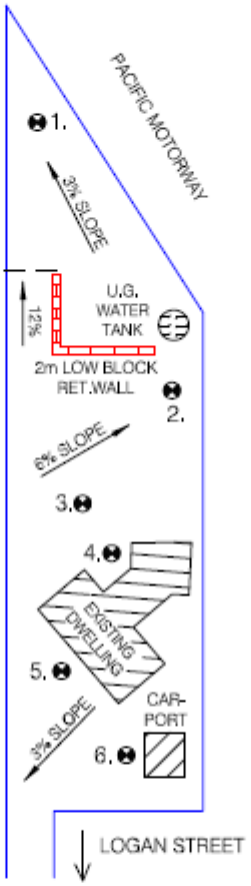
A6/2

APOD Soil Testing Pty Ltd	SITE SKETCH
ABN: 47 106 610 977 ACN: 106 610 977	SITE ADDRESS: 134 LOGAN STREET EAGLEBY
ADDRESS: 53 Drapers Road, Eatons Hill Qld 4037	
TELEPHONE: (07)3264 6995 FAX: (07)3264 6994	JOB NO: 16-02-27697 DATE: 16/02/2016

SITE SKETCH

NOT TO SCALE



TEST SITES — SLOPE DIRECTION

TEST METHODS:
Hand Auger ☐ Small Rig(100mm dia.) ☒

SITING:
Existing ☐ Gen Setback ☒ Plans ☐
Pegged ☐ Met on Site ☐ Cut/Fill Pad ☐

EXCAVATION PROBLEMS:
Shallow Rock ☒ Access to Site ☐
Rubbish in Fill ☐ Wet/Dry Collapse ☐
Gravels/Cobbles/Boulders ☐
Fluctuating Water Table ☐

VEGETATION: Moderate trees (>10m) and moderate grass cover.

ON SITE DRAINAGE:
Poor ☐ Poor/Fair ☐ Fair ☐
Fair/Good ☒ Good ☐

SLOPE:
Virtually flat ☐ Slight ☒ Gentle ☒
Moderate ☒ Steep ☐ Very steep ☐

A7/0

SECTION LOCATION

Table 1 – Assessment Data

Criteria	**COMMENT**
History:	The Logan City Plan Interactive Mapping landslide overlay classifies the site as moderately at risk of landslide.
Current Stability:	No signs of instability in the slope.
Stability of Adjoining Properties:	Medium-Large residential blocks with proposed subdivision and earthworks. Will have no stability effects on surrounding properties.
Requirement for Retaining Structures:	Dependant on excavations and design and not to exceed 2.5m high without consultation from this office.
Special Design Features Required:	Cut to fill required. Road construction through the centre of the site.
Special Surface or Sub-Surface Drainage Measures:	Nil.
Evidence of Previous Instability:	Nil.
Assessment of Surface Drainage:	Very Good – Upper Slope with flow generally heading towards the rear of the properties. Attached is an example of prudent site drainage measures.
Assessment of Sub-Surface Drainage:	Not aware of any springs, swampy areas, wet grass or presence of any confined aquifer in the construction area or existing terracing.
Building Site Stability:	With respect to the assessed hazard risk, Protest Geotechnical zone this site as 'Low or Better'.
Long Term Stability of Building Site and Building:	Provided the (soil) information is correct, good practice for surface drainage is followed, the engineer designs were carefully followed, the site and dwelling stability should be considered as '**Low of better'** hazard.

Table 2 – Site Information

COMMISION	As requested, a geotechnical engineer from Protest Geotechnical visited the site on the 1st of March 2017. The weather was humid/clear.
SITE	Residential urban sized blocks (7,317m^2). The site is currently used for residential purposes.
GEOLOGY	Referencing the 1:500 000 Moreton Geology Map the geology of the site is; Neranleigh-Fernvale Beds (Mudstone, shale, greywacke, chert, jasper, conglomerate, basic metavolcanics and pillow lava).
CONCENTRATION OF WATER RUN-OFF	Upper Slope. Run off generally towards the rear of the property.
EFFLUENT DISPOSAL	To be town sewer in redevelopment.
GROUND WATER	Nil.
INFLUENCING HAZARD FEATURES OUTSIDE THE BLOCK	Nil.
EXISTING EARTHWORKS	Existing Fillings, existing residence on No.132 with a dwelling previously present on No.134 and small retaining walls and concrete slab present.

Table 3 – Landslide Susceptibility Analysis

Criteria	Description	Level	Factor
Natural Surface Slope	Between 5 and 15 degrees	Moderate	0.5
Slope Shape	Planar/Convex	Moderate	0.9
Site Geology	Low Grade Metamorphic rock	Moderate	1.0
Soils	Residual soil <1m deep	Low	0.5
Fill Height	Less than 1m	Moderate	1.1
Evidence of Groundwater	None apparent	Low	0.7
Wastewater Disposal	Fully sewered	Moderate	1.0
Stormwater Disposal	All stormwater piped into road drainage	Low	0.7
Evidence of Instability	No sign of instability	Low	0.8
Relative Susceptibility			0.097

Relative Susceptibility	0.097
Hazard Rating	Very Low
Hazard Risk Acceptance	Low or better

ProTest Geotechnical Pty Ltd

Blake Thomas
Geotechnical Engineer

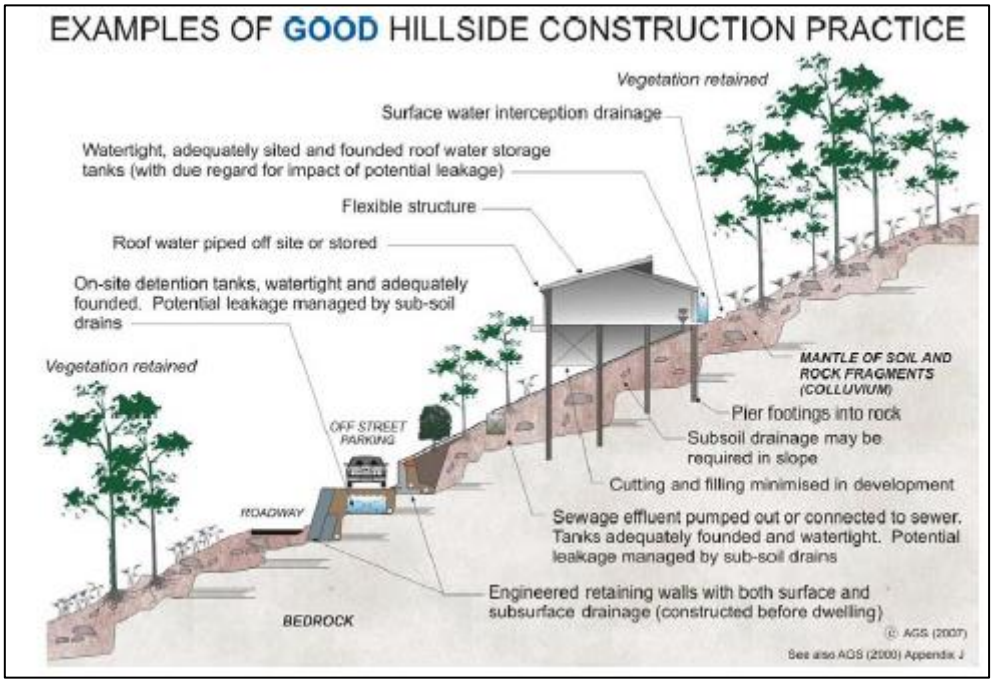
Approved By:

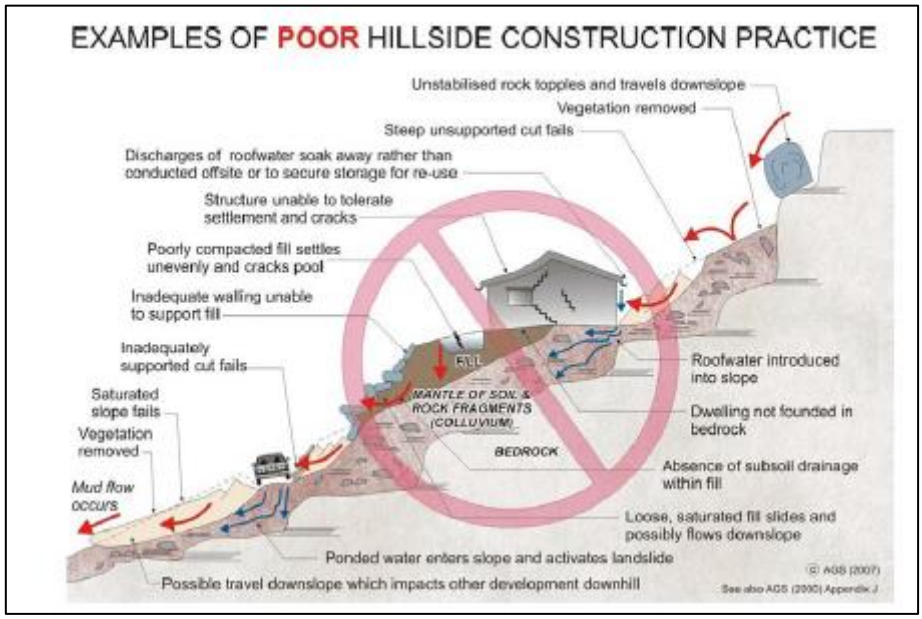
JJ Tayler RPEQ1407

James Tayler RPEQ#1407
Checking Engineer for Protest Geotechnical Pty Ltd

Attachments: 1: Hillside Construction
2: Effluent and Surface Water Disposal

Attachment 1 – Hillside Construction (As per AGS):





Attachment 2 – Effluent and Surface Water Disposal (As per ASG):

AUSTRALIAN GEOGUIDE LR9 (EFFLUENT DISPOSAL)

EFFLUENT AND SURFACE WATER DISPOSAL

EFFLUENT AND WASTEWATER

All households generate effluent and wastewater. The disposal of these products and their impact on the environment are key considerations in the planning of safe and sustainable communities. Cities and townships generally have reticulated water, sewer and stormwater systems, which are designed to deliver water and dispose of effluent and wastewater with minimal impact on the environment. However, many smaller communities and metropolitan fringe suburbs throughout Australia are un-sewered. Some of these are located in hillside or coastal settings where landslides present a hazard.

Processes by which wastewater can affect slope stability

As explained in GeoGuides LR3 and LR5, groundwater variations have a significant impact on slope stability. Inappropriate disposal of effluent and wastewater may result in the ground becoming saturated. The result is equivalent to a localised rise of the groundwater table and may have the potential to cause a landslide (GeoGuides LR2, LR5 and LR8).

On-site effluent disposal

In un-sewered areas disposal of effluent must be achieved through suitable methods. These methods usually involve containment within the boundaries of the site ("on-site disposal"). State environment protection agencies and local government authorities can usually provide advice on suitable disposal systems for your area. Such systems may include:

- *Septic systems*, which involve a storage/digestion tank for solids, with disposal of the liquid effluent via absorption trenches and beds, leach drains, or soak wells. Such systems are best suited to areas not prone to landslides.
- *Aerobic treatment units* which incorporate an individual household treatment plant to aid breakdown of the waste into a higher quality effluent. Such effluent is further treated and disposed of by surface or sub-surface irrigation, sub-soil dripper, or shallow leach drain system.
- *Nutrient retentive leaching systems* which utilise septic tanks to process the solid and liquid wastes in conjunction with discharge of the effluent through sand filters, media filters, mound systems and nutrient retentive leaching systems, which strip the effluent of nutrients.

Toilet (and sometimes kitchen) waste is known as *black water*. Other, less contaminated, wastewater streams from showers, baths and laundries are known as *grey water*. *Grey water re-use systems* allow a household to conserve water from bathrooms, kitchens and laundries, for re-use on gardens and lawns.

Recommendations for effluent disposal

In areas prone to landslide hazard, it is recommended that whatever effluent disposal system is employed, it should be designed by a qualified professional, familiar with how such a system can impact on the local environment. Local council, and in some instances state environment protection agency, approval is usually required as well. Many local authorities require a site assessment report, which covers all relevant issues. If approved, the report's recommendations must be incorporated in the system design. Reduction in the volume of effluent is beneficial so composting toilets and highly rated (i.e. low consumption) water appliances are recommended. It should be noted that in some state and local government jurisdictions there are restrictions on the alternative measures that can be applied. Consideration should be given to applying treated wastewater to land at low rates and over as large an area as possible. Further guidance can be found in Australian Standard AS/NZS 1547:2000 On-site domestic wastewater management.

Effluent disposal fields should be sited with due consideration to the overall landscape and the individual characteristics of the property. Some guidance is provided. In particular, effluent fields should be located downslope of the building, away from stormwater, or *grey water*, discharge areas and where there is minimal potential for downstream pollution. Set backs and buffer distances vary from state to state and local requirements should be adhered to. All systems require regular maintenance and inspection. Efficient operation of the system must be a priority for property owners/occupiers to ensure safe and sustainable communities. Responsibility for maintenance rests with owners.

SURFACE WATER DRAINAGE

Attention to on-site surface water management is also important. Runoff from developments, including buildings, decks, access tracks and hardstand areas should be collected and discharged away from the development and other effluent disposal fields. Particular care must be given to the design of overflows on water tanks, as this is often overlooked. Discharge from any development should be spread out as much as possible, unless it can be directed to an existing natural water course. Ponding of water on hillsides and the concentration of water flows on slopes must be avoided.

It is recommended that a specific drainage plan and strategy should be developed in conjunction with the effluent disposal system for sites with a high potential for slope instability. Maintenance of the surface water drainage system is as important as maintenance of the effluent disposal system and again the responsibility rests with owners.