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PRELIMINARY LANDSLIDE RISK ASSESSMENT

283 Sandfly Road, Margate, TAS, 7054

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1.0 Introduction

The author has been engaged by the Owners of 283 Sandfly Road, Margate ('the Owners") to undertake a Landslide Risk Assessment related to cut and fill excavation works associated with the installation and construction of a shipping container and attached lean-to structure. The Landslide Risk Assessment has been requested by Kingborough Council ('Council') in a letter to the Owners dated 14 November 2023. The relevant extract relating to this report is from item 3 of the letter and is included below:

"It is acknowledged that the shipping container and lean-to have been included in this application for retrospective approval and that the elevations for the structures have been provided. The extent of any cut and fill is unclear from the plans submitted. However, a recent site visit by Council officers indicates that the height of fill located to the south of the container/lean-to exceeds 2m and is partially located in a Landslide Hazard Area (Low). To enable an assessment of the lean-to and associated cut and fill, please provide the following further information:

> ***(b) A Landslide Risk Assessment by a suitably qualified person in accordance with the Australian Geomechanics Society - Practice Note Guidelines for Landslide Risk Management 2007 addressing Clauses 26.4.3 P3 (c), E3.7.1 P1 and E3.7.3 P1 (where applicable)"***

Further to the above, the author sought clarification of Council's specific requirements for this report via a telephone conversation on 15 January 2024 with Hannah (Environmental Planner at Council). Hannah advised of her presence at the Council site visit referred to in the extract above. It was acknowledged during this telephone call that a full Landslide Risk Assessment in accordance with the Australian Geomechanics Society guidelines above would be disproportional to the subject works undertaken, and in this instance, that Council would accept a Preliminary Landslide Risk Assessment report completed by a suitably qualified Civil Engineer that addressed the relevant planning scheme clauses. Hence, this report has been provided in accordance with the above advice.

The author has assessed risks associated with the cut and fill works in the vicinity of the shipping container and lean-to structure. The area of cut and fill works related to this report are nominally highlighted in Figure 1 below.

Figure 1 – *ListMap* aerial imagery of the Owners' property. Subject area of cut and fill works highlighted. Low hazard band from Landslide Planning Map shown yellow.

2.0 Purpose

The purpose of this document is to provide Council with a response to their clarified request for a Preliminary Landslide Risk Assessment (refer Section 1.0). This assessment has been undertaken proportional to the scale of the subject cut and fill works that have occurred in the vicinity of the subject shipping container and lean-to structure at the property.

As shown in Figure 1 above, the subject cut and fill works partially fall within the 'Low' Landslip Hazard Code Overlay mapping. As such, Council have requested the following clauses of the Planning Scheme are addressed (where relevant):

26.4.3 P3 (c)

26.4.3 Design

Objective:	
To ensure that the location and appearance of buildings and works minimises adverse impact on the rural landscape.	
Acceptable Solutions	**Performance Criteria**
A3 The depth of any fill or excavation must be no more than 2 m from natural ground level, except where required for building foundations.	**P3** The depth of any fill or excavation must be kept to a minimum so that the development satisfies all of the following: (a) does not have significant impact on the rural landscape of the area; (b) does not unreasonably impact upon the privacy of adjoining properties; (c) does not affect land stability on the lot or adjoining areas.

E3.7.1 P1

E3.7 Development Standards for Buildings and Works

E3.7.1 Buildings and Works, other than Minor Extensions

Objective:	
To ensure that landslide risk associated with buildings and works for buildings and works, other than minor extensions, in Landslide Hazard Areas, is: (a) acceptable risk; or (b) tolerable risk, having regard to the feasibility and effectiveness of measures required to manage the landslide hazard.	
Acceptable Solutions	**Performance Criteria**
A1 No acceptable solution.	**P1** Buildings and works must satisfy all of the following: (a) no part of the buildings and works is in a High Landslide Hazard Area; (b) the landslide risk associated with the buildings and works is either: (i) acceptable risk; or (ii) capable of feasible and effective treatment through hazard management measures, so as to be tolerable risk.

E3.7.3 P1 –

This clause deals with '*Major Works*' and is therefore deemed irrelevant.

3.0 Observations

3.1 Site photos of the following observations are provided in Appendix A.

3.2 The site of the subject shipping container, lean-to structure, and surrounds was generally viewed. Some cut and fill earthworks have occurred to allow the installation of the structures on level ground.

3.3 The only fill in the vicinity of the subject works is to the south of the shipping container and lean-to where spoil from the adjacent cut excavation has been placed.

3.4 The subject fill has been placed on the southern side of a previously existing access track, running approximately east-west, to the immediate south of the shipping container structure. Neither the access track nor any of the adjacent structures are supported by the placed fill.

3.5 No failure or slumping of the fill was observed, and vegetation has started to establish on parts of the fill embankment.

3.6 The fill material, where observed, is doleritic clayey gravel with fragments of extremely weathered dolerite rock and occasional hard rock cobbles.

3.7 The southern batter of the placed fill is approximately 1H:1V. The height of the fill varies, as the natural ground below is moderately sloped toward the south to south-east. As such, the apparent height on the southernmost edge of the fill appears greater than the actual height of the fill, which was estimated to be a maximum of 1.5 m vertically above the previously existing/natural ground surface. Refer Figure 2 below.

3.8 The in place volume of the fill is estimated to be in the range of 20-30m^3, with the majority of this being less than 1 m in height above the previously existing/natural ground surface (noting this is sloped). This is considered relatively minor earth works.

3.9 The highest vertical depth of fill occurs where the fill is mounded higher than the surrounding fill along its southern edge – it is important to note that this only occurs for a very short width of approximately 0.5-1.0 m.

3.10 The Owners informed the author that the subject fill was compacted via track rolling by the 13 tonne excavator which was used to undertake the works. The fill would also have been naturally consolidating since placement.

3.11 The roof of the subject structure is drained via a roof gutter and down pipe which is connected to a grated drain which outfalls to the south of the subject area. Generally, surface water appears to be able to drain away from the area of fill via the grated drain, which the surrounding area is generally graded towards. Given the sloped nature of the site, other general surface rainfall runoff would tend to freely drain down the slope to the south/south-east.

3.12 The excavation that has occurred at the site of the subject structure is a maximum of approximately 1.2 m in height (along the northern elevation). The excavation was observed to contain a slight backslope from the vertical and has occurred into natural ground, generally being, weathered dolerite rock, doleritic gravels, and clay.

3.13 A secondary nearby excavation, similar in nature to that noted above, was observed to the western side of the existing shed/garage. It was estimated to be approximately 1.5 m maximum in height. A dry stone wall partially covers the excavated face.

3.14 No concerning erosion or slumping was observed to the excavated faces.

3.15 The author's review found that there are no Mineral Resources Tasmania landslide polygons, polylines, or points viewed on LISTmap within a 4 km radius of the site. This shows that there is no known landslide activity within the local area.

3.16 As identified by Council, and also depicted in Figure 1 above, and the attached site plan (refer Appendix A) - a 'Low' Landslide Hazard Area mapping overlay is nominally shown across part of the subject area where the cut and fill works have occurred. We note the extent of these hazard bands are rather arbitrarily applied based on broad scale estimations of slope and general geology. The subject overlay information table is shown below:

Feature	
Disclaimer	While the data in this map are regularly updated, the relevant authority should be consulted prior to making decisions based on the data
Overlay Name	Landslide Hazard Area
Overlay Code	120.LDS
Planning Scheme Code	120
Planning Scheme	Kingborough Interim Planning Scheme 2015
Description	Remaining areas slopes 11-20deg
Class	Low
Planning Scheme Date	1/07/2015
Comments	

4.0 Assessment

Given the site observations noted above, it is contended that the fill does not exceed 2 m in height as suggested by Council. A sketch diagram is provided in Figure 2 below to assist in illustrating the effect of placing fill over the naturally sloping ground, with the perceived height of fill tending to appear much greater than the actual height of the fill. The subject fill, is in no location, estimated to exceed 2 m in height above the natural ground level. The subject excavations in the local area also do not, in any location, exceed 2 m in depth from the natural ground level. This being the case, the works are deemed to comply with acceptable solution clause 26.4.3 A3, and the performance criteria clause 26.4.3 P3 (c) is therefore irrelevant.

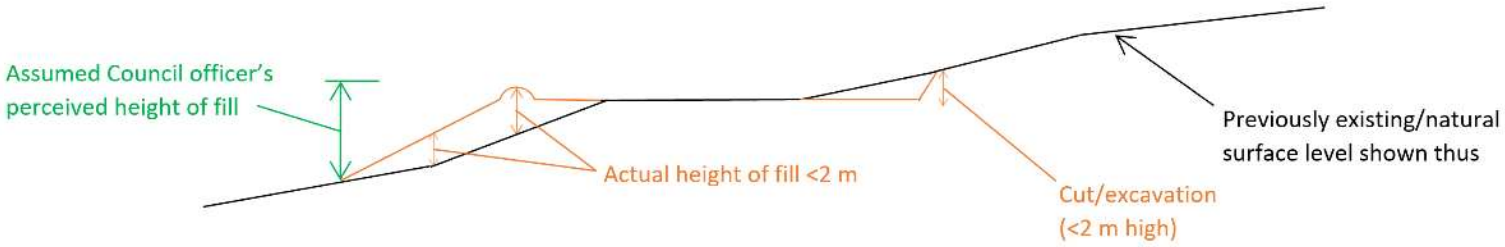

Figure 2 – Explanatory fill height diagram – nominal cross section through centre of subject cut and fill area.

Given the works are not 'major works', E3.7.3 is deemed irrelevant.

This only leaves clause E3.7.1 P1 to address, with the performance criteria items a) and b) spoken to below:

a) No part of the subject buildings and works is in a High Landslide Hazard Area – **Deemed to comply**.
b) The landslide risk associated with the buildings and works is deemed, as detailed in this report, to be an acceptable risk – **hence the works comply.**

No unacceptable landslide risks have been identified within the subject site area.

In preparing this report, the following possible landslide scenarios/hazards have been considered: rock fall, rockslide, rock topple, earth slide and earth slumping. There was no evidence to suggest that any of these hazards had occurred at the site, and given the site observations; small scale of the subject works; and the nature of their location (distant from any habitable structures on the property or neighbouring properties); it is considered that there is a very low to negligible risk posed by the works. Hence any risk is considered acceptable for the terms of satisfying the requirements of the Planning Scheme as discussed above.

5.0 Conclusion

The subject cut and fill works in their current form are deemed to present a very low to negligible risk in relation to landslide hazard at the property and hence the risk is considered acceptable for the purposes of satisfying Clause E3.7.1 P1. As discussed within this report, Clause 26.4.3 P3 (c) and E3.7.3 are deemed irrelevant due to the fill height and excavations not exceeding 2 m, and the relatively minor scale of the works.

The land stability on the lot (and adjoining areas) is not deemed to have been adversely affected by the works. It is also to be noted that the cut and fill works are distant to, and in no way affect, any nearby habitable dwellings.

Should you wish to discuss any of the above further, please feel free to contact me.

Yours faithfully,

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Appendix A –

Photographs and Project Drawings

Photo 1: Looking west along the southern elevation of the shipping contain/lean-to structure (and access track). Note subject fill to left side of picture.

Photo 2: Eastern end of subject fill viewed from downslope.

Photo 3: Eastern end of fill looking west. Previously existing/natural ground can be observed.

Photo 4: Western end of fill looking east.

Photo 5: Looking north along western elevation of subject structure. Note excavation, roof drainage, and grated surface drain.

Photo 6: Looking west along northern elevation of shipping container/lean-to. Note excavation.

Photo 7: Nearby excavation along western elevation of adjacent shed/garage.

Project Drawings