Supplemental subsurface geological information presented in support of Resource Consent Application of Mainland Property (2004) Ltd, 82 Riccarton Road East

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1. In response to the Otago Regional Council submission I have carried out further investigation of the subsurface of the proposed platform of proposed New Lot 2. My findings indicate that, except for the greater than anticipated thickness of loess underlying the lower slope of New Lot 2, the subsurface geological character of New Lot 2 is essentially that inferred from rock and subsoil exposures within and adjacent to the property as examined in late 2015 and early 2016.

2. Together with surface information, four new test pits dug on 29 July 2016 by mechanical digger in the area where house construction is proposed within New Lot 2 show the thickness of loess subsoil as steadily increasing downslope from the ridge area where less than 0.5 m is preserved, to 2.8m beneath up to 40 cm of silt loam topsoil; all underlain at depth by relatively fresh schist boulder and cobble conglomerate (Henley Breccia). In all four pits the yellow-brown to grey loess deposit, except for sparse locally-derived volcanic and schist rock granules and pebbles, is quite homogenous and is firm to stiff. It lacks indications of previous or ongoing slope instability such as wet soft shear zones, or any traces of older soil horizons buried by over-riding slump runout masses.

3. In light of the thickness of insitu loess beneath the lower part of the proposed building platform defined on New Lot-2, the requirement for removal of subsoil materials above schist bedrock prior to building pad construction is considered unnecessary. It is recommended that any foundation construction constraints that have been applied to the strip of house lots bordering State Highway 1 immediately north of and adjacent to New Lot-2, are also applied to New Lot-2.

4. The question raised by Otago Regional Council (p.3) as to whether the area of known instability set-aside west of the proposed New Lot-2 building platform contains a '*deep-seated*' failure, is unsupported by field observations. This area was originally mapped by McKellar (1990) of NZ Geological Survey as a zone of small shallow individual failures and this interpretation is accepted.

5. Previous subsurface investigation pits centred on the two previously proposed building platforms in the upper ridge area (Robins 2003; Pit-1, & Pit-2) show a very thin veneer of soil and loess overlying schist rock. Robins' (2003) subsurface observations confirm the interpretation of the geology of the eastern part of the high ridge area from surface exposures, as presented earlier by Lindqvist (2015, 2016a). In light of the inherently strong, enduring rock types underlying this area, Otago Regional Council's (p.4) assertion that, '*Relying on a 10 year old assessment of land instability in relation to Lots 1 and 2, is not appropriate, particularly as the scale and characteristics of that risk may have changed in that time*' is considered to lack substance.

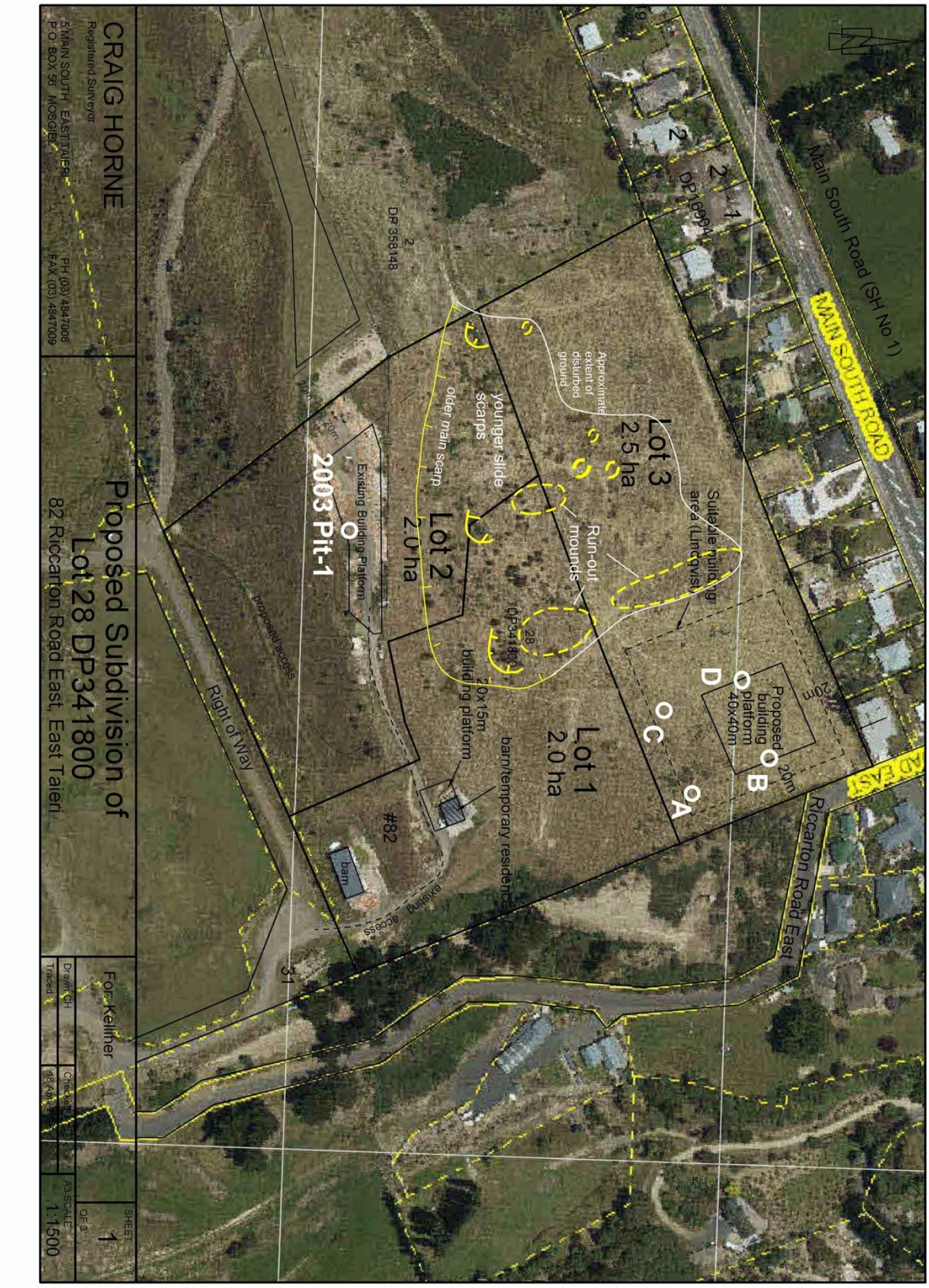
References

Lindqvist, J. K. 2015. Geotechnical Assessment of 82 Riccarton Road East, Dunedin [Ridge area west of and in the vicinity of the existing barn building]. Report prepared for C. Kelliher by Dr. JK Lindqvist, Geological Consultant. 19 November, 2015.

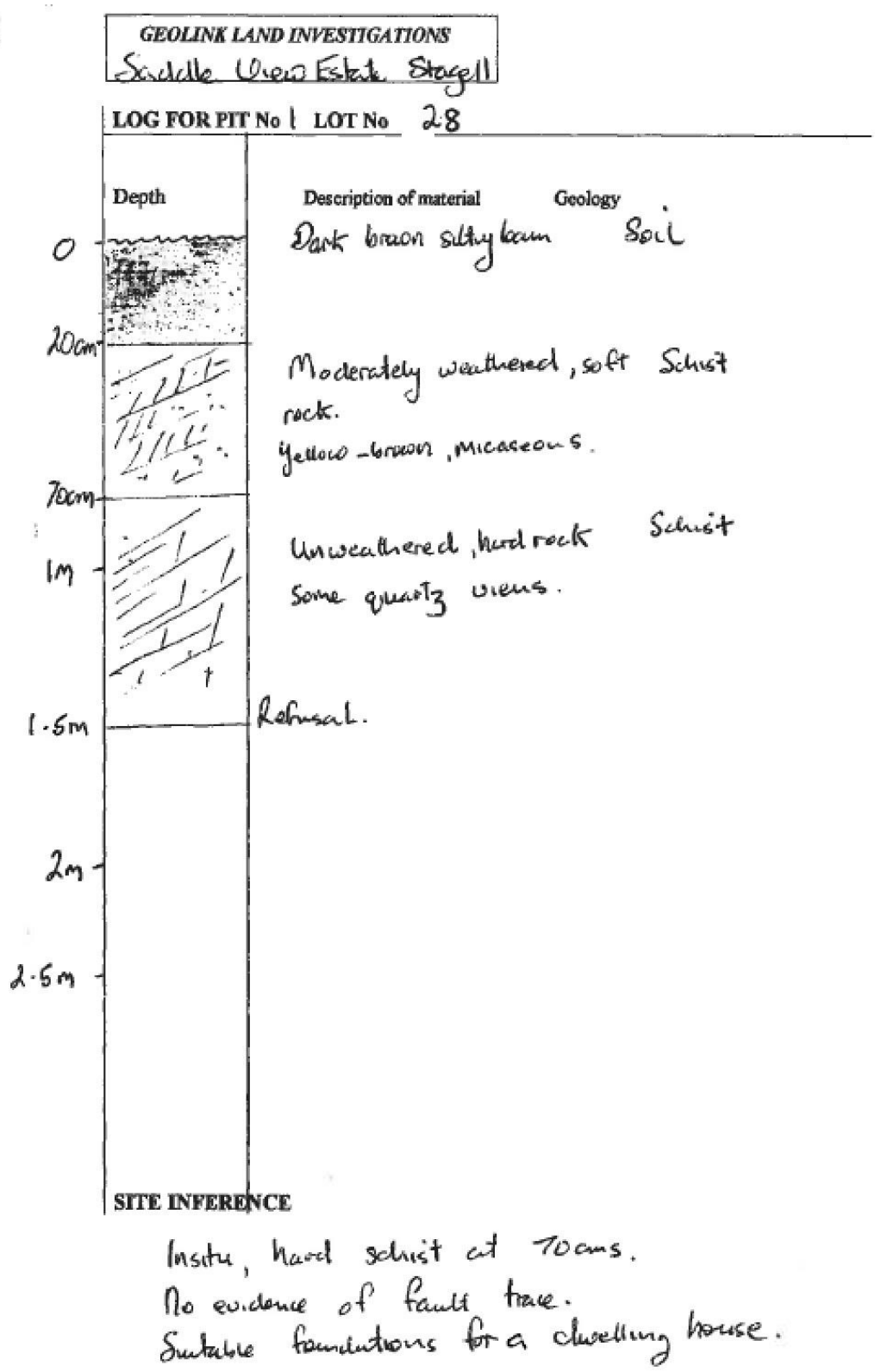
Lindqvist, J. K. 2016a. Addendum to Report: Geotechnical Assessment of 82 Riccarton Road East, Dunedin [East flank of ridge area below barn building]. Report prepared for C. Kelliher by Dr. JK Lindqvist, Geological Consultant, 8 January 2016.

Lindqvist J.K. 2016b; amended 18 May 2016. Geotechnical Assessment of Lot-3, part 82 Riccarton Road East, Dunedin. Report prepared for C. Kelliher by Dr. Jon Lindqvist, Geological Consultant.

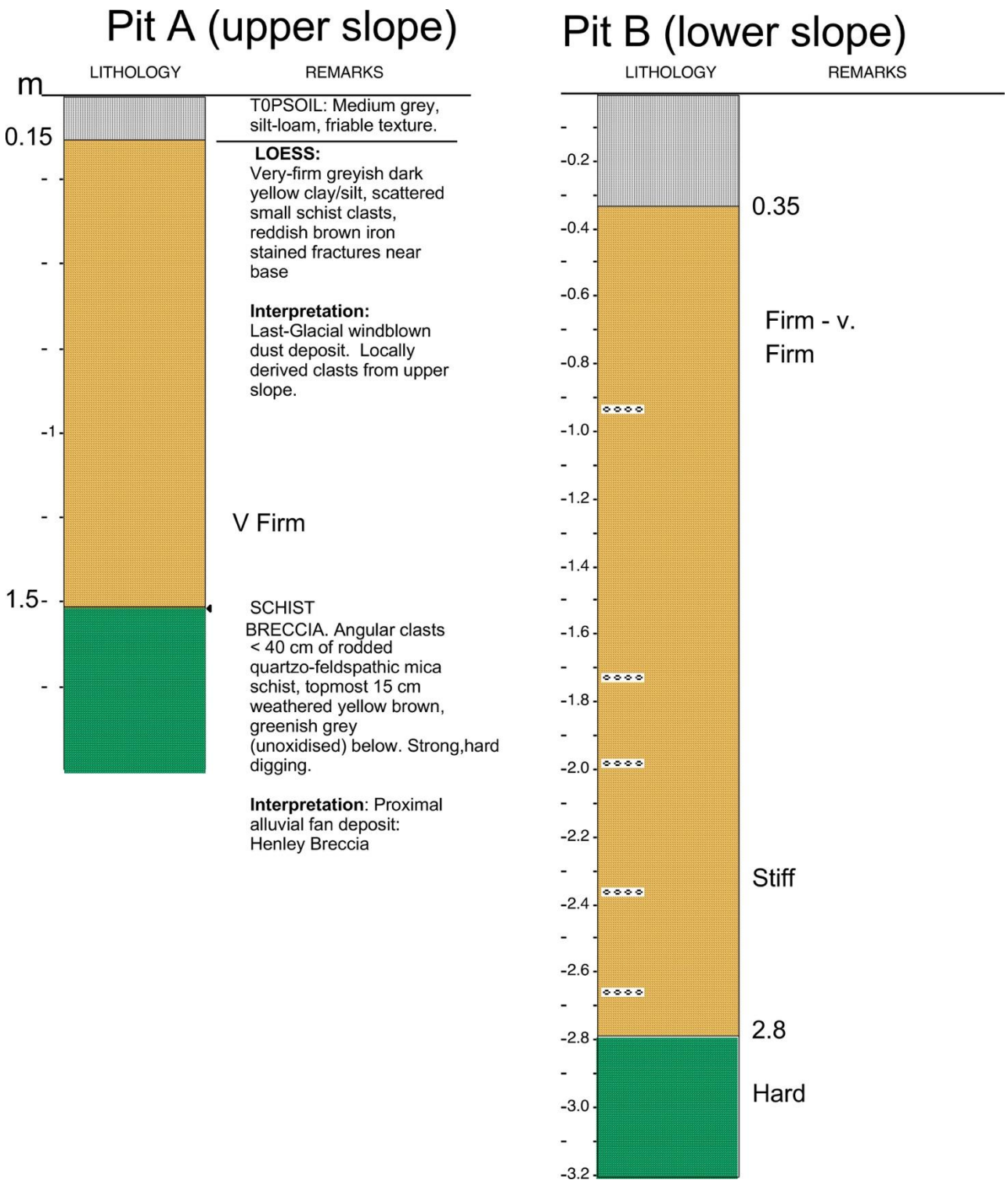
Robins, M. J. 2003. Geotechnical Report for Saddle View Estate Subdivision Stage ll & lll. Geolink Land Investigations Ltd report.



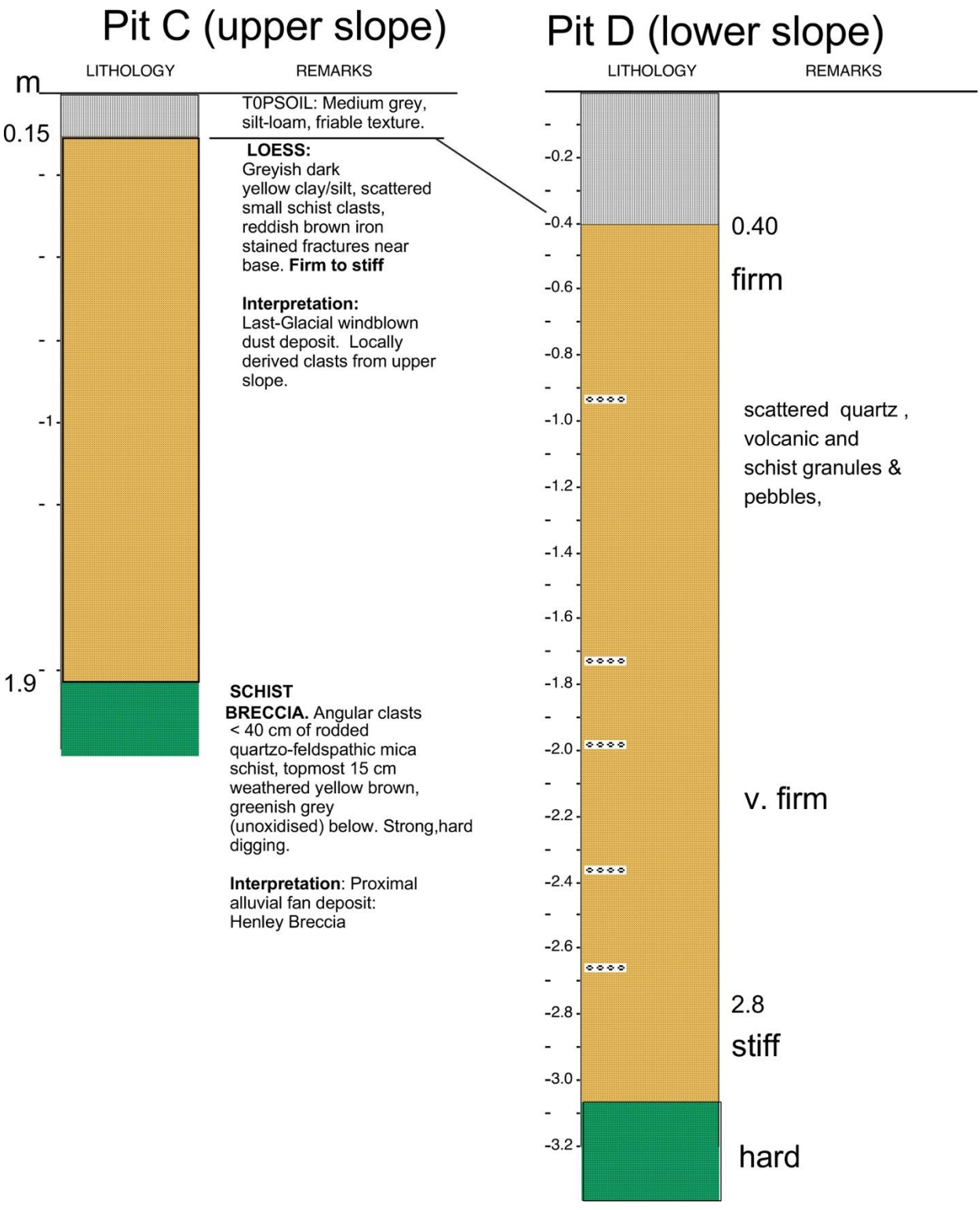
Subsurface investigation pit location map.



Subsurface log of Pit-1, from the western upper ridge area, extracted from Robins (2003). See previous page for location.



Logs of new investigation trenches, northeast zone of 82 Riccarton Road East



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