SUPPLEMENTARY REPORT FOR PLANNING APPLICATION TO DEVELOP A SINGLE DWELLING AT 5 – 9 HUNT STREET, SWINDON

1. Introduction — Swindon Borough Council have requested additional information relating to the issue of on-going movement identified by inclinometers installed in the late 1980's and whether the proposed development will increase instability by acting as a destabilising force.

2. Preamble — The proposed single storey style of building, using the roof space for additional accommodation, built off of a reinforced self supporting slab founded on end bearing bored piles at a level below any likely deep rupture surface has been carefully chosen to maximise the building's allowable foundation displacement i.e. total settlement, tilting and differential movement as well as to provide high tensile resistance to lateral movement. The construction method also provides minimal disturbance to local properties and utility services and will minimise any additional loading on the filled area thereby ensuring that the building does not act as a destabilising force by adding to overburden pressure.

3. Ongoing Movement

The most relevant inclinometer readings for the site in question are from borehole 39 which is adjoining the northern boundary of the area to be developed with boreholes 14, 44 and 46 providing further information on the downhill section of the site. The down slope (face AB) readings have recorded settlement and any slope movement with the cross slope (face CD) readings primarily recording only settlement. The following readings have been taken:-

a) Borehole 39 -

Depth	15m
Base file	15 March 1989.
Period of readings	10 years 5 months,
Depth of fill	12m.
Maximum downslope movements	2.2mm face A at 1m 1.0mm face B at 3m 0.7mm face A at 6m 0.9mm face B at 11m
Maximum downslope variation	0.5mm at 1m 1.0mm at 3m 0.7mm at 6m 0.6mm at 11m
Maximum across slope movement	3.8mm at 6m
Maximum across slope variation	1.2mm at 6m

b) Borehole 14 -

Depth	27.3m
Base file	8 February 1987
Period of readings	6 years
Depth of fill	6.6m

		Maximum downslope movements (ignoring Nov 92 readings)	5.6mm face A at 1m 2.0m face A at 5m 1.9m face A at 17m 2.1m face B at 21m
		Maximum downslope variation	0.9mm
		Maximum across slope movement	3.8mm
		Maximum across slope variation	3.8mm
c)	Borehole 44 -	Depth	24.5m
		Base file	23 March 1995
		Period of readings	4 years 5 months
		Maximum downslope movement	3.0mm at 6.5m
		Maximum downslope variation	2.2mm at 6.5m
		Maximum across slope movement	2.6mm at 4.5m
		Maximum across slsope variation	2.3mm at 4.5m
d)	Borehole 46 -	Depth	11m
		Base file	28 March 1995
		Period of readings	4 years 5 months
		Maximum downslope movement	1.7mm at 3m
		Maximum downslope variation	1.5mm at 4m
		Maximum across slope movement	2.8mm at 6m
		Maximum across slope variation	2.3mm at 8m

In appendix A extracts from Geotechnical and Foundation Engineering design and construction by Robert W Day have been reproduced, table 7.1 produced by Sowers in 1962 shows allowable settlements up to 5cm can be provided for in masonry walled structures and differential movement of 2.4cm where L=12m this is described in greater detail in Table 7.2. Allowable lateral movement is shown by figure 10.1 as being between 3mm and 25mm, the least susceptible foundation being a reinforced mat foundation due to its high tensile resistance.

4. Destabilising force of new development

The removal of existing ground to provide for the new building's foundations will provide for a reduction in overburden of approximately 504 tonnes the weight of the building will replace this and any future settlement of the fill or soil below the self supporting slab will cause any weight of the new building carried by the soil mass to be transferred to the piles thereby reducing any increase in overburden pressure to a negligible level.

5. Conclusion

The above information confirms that the extent of the minimal movement recorded by the inclinometers is well within the allowable limits for the type of building proposed and that the building could sustain further movements of the level recorded with a safety factor in excess of 20. As these movements have been recorded over a 10 year period it is reasonable to assume if the movements continue at the same rate that the proposed building would have a potential life in excess of 200 years.

Appendix A