



Figure 3.5a Cave on Tintara with broken covering **Figure 3.5b** Current covering is inefficient and shrubs

3.4.2 Case Study 2 – Emerald Estate

Emerald Estate is a new housing development within the rural karst belt of Wanneroo. It borders Yanchep National Park and has a high concentration of karstic features. Within the estate, approximately 48 caves have been identified (Figure 3.6). Upon entering Emerald, there are no warning signs about caves or other karst features. None of the caves are marked, signed or fenced. This is a hazard as both property owners and visitors may be unaware of the terrain, potentially leading to injury. Lighting at night is scarce and walking through properties is unsafe.

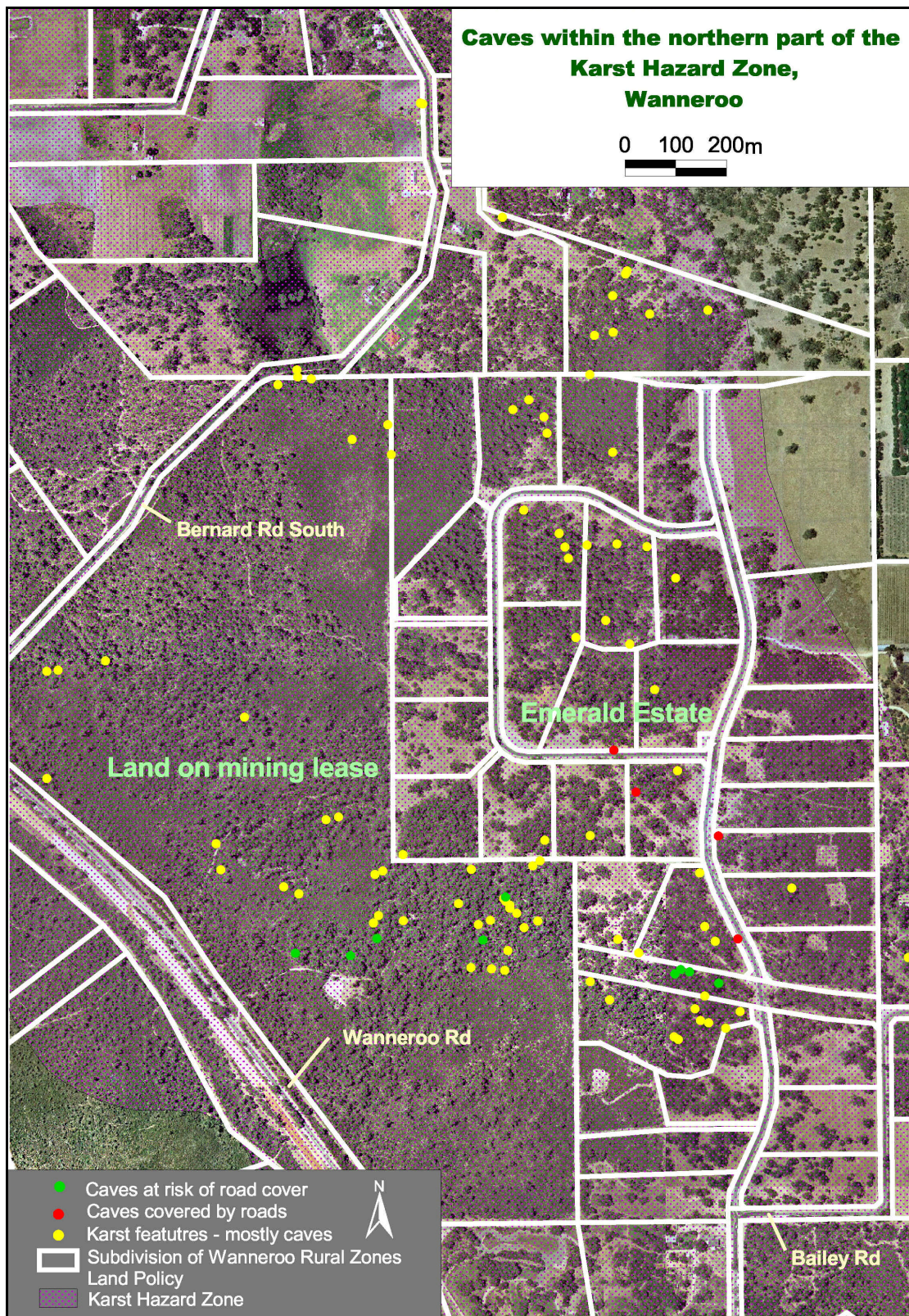


Figure 3.6 Location of caves within Emerald Estate (mapped by Lex Bastian)

A small sinkhole at Emerald, roughly 2m in diameter was filled with rubble. Within the sinkhole a cave approximately 8m in depth exists (Figure 3.7). The entrance hole to the cave was originally small (child size), sloping into the cave. However, by tipping rubble into the sinkhole, the cave entrance increased in size and currently an adult can fit through the hole (Bastian, 2003). The rubble has also caused the cave entrance to now be vertical. This feature has now been left in a more dangerous condition due to the partial filling of the hole and changing the size and gradient of the cave entrance.



Figure 3.7 Sinkhole with limestone rubble and vertical cave entrance

3.4.3 Case Study 3 - Bernard Rd South

A fissure type cave, 4m in depth is situated approximately 50cm off Bernard Rd South (Figure 3.8). It is not marked or covered and could be a hazard if cars were to pull over or park on the side of the road. Vibrations from cars could alter the cave structure, enlarging it or causing it to cave in.