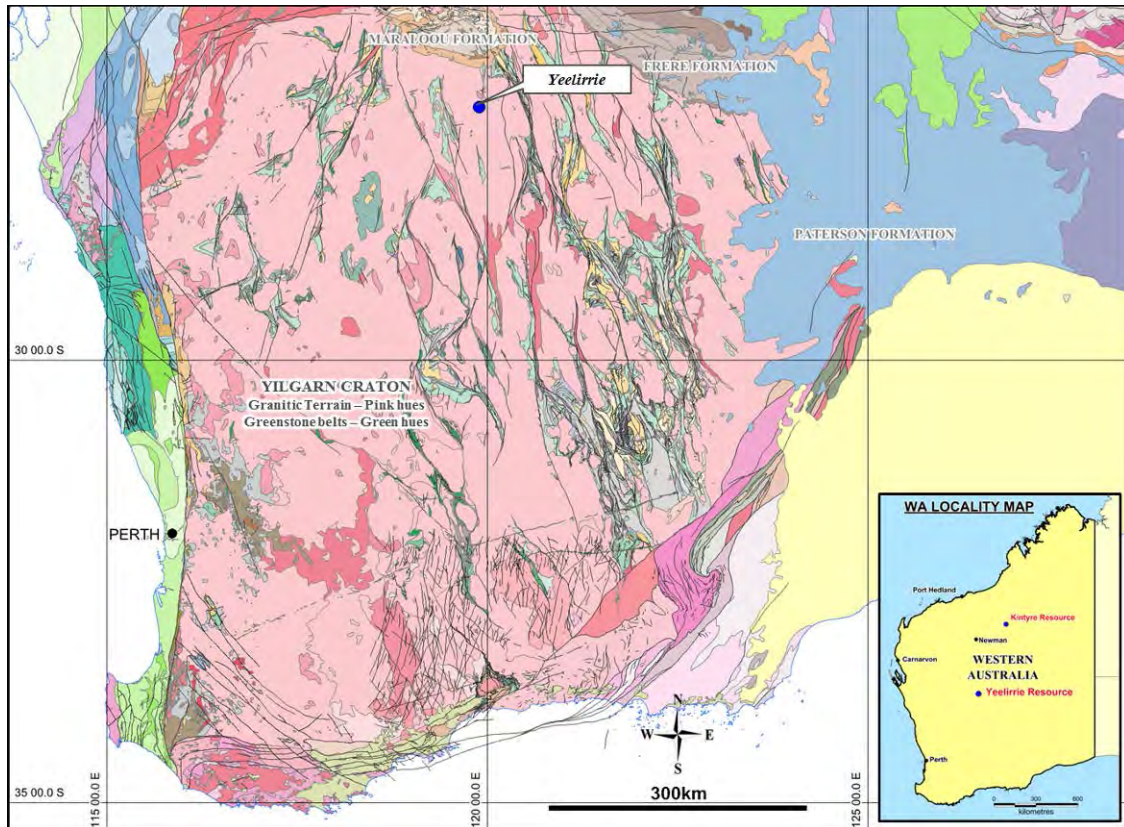
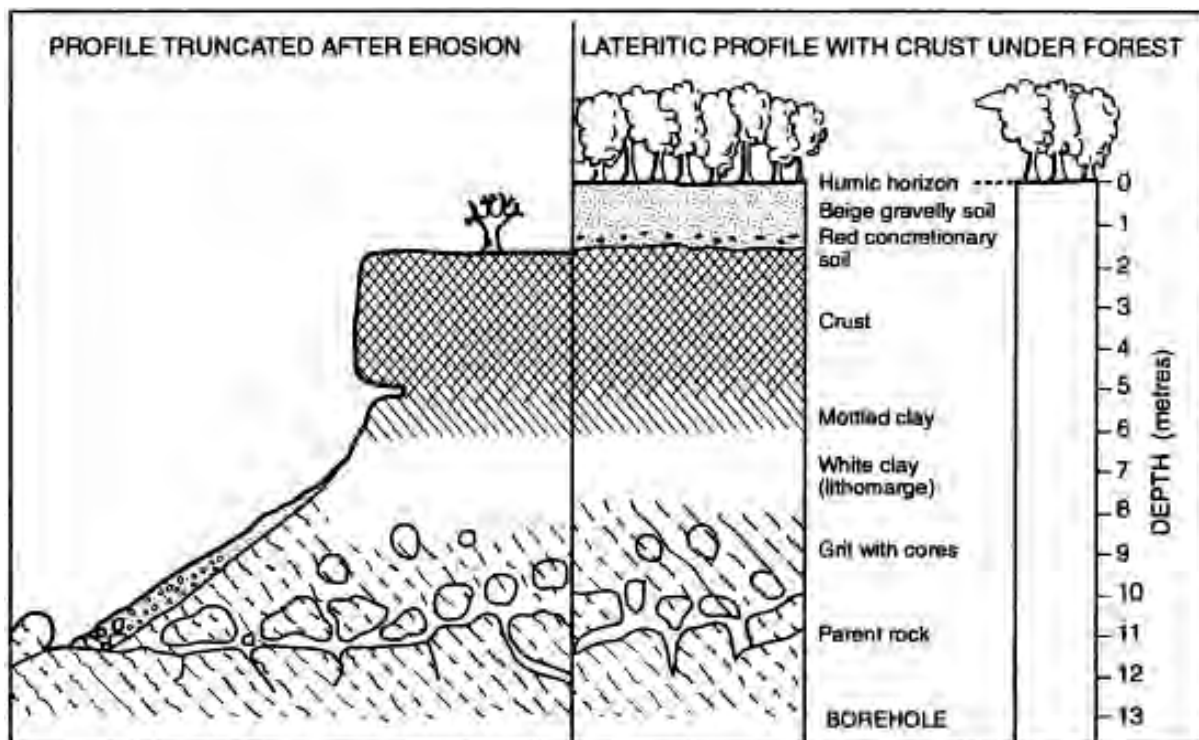


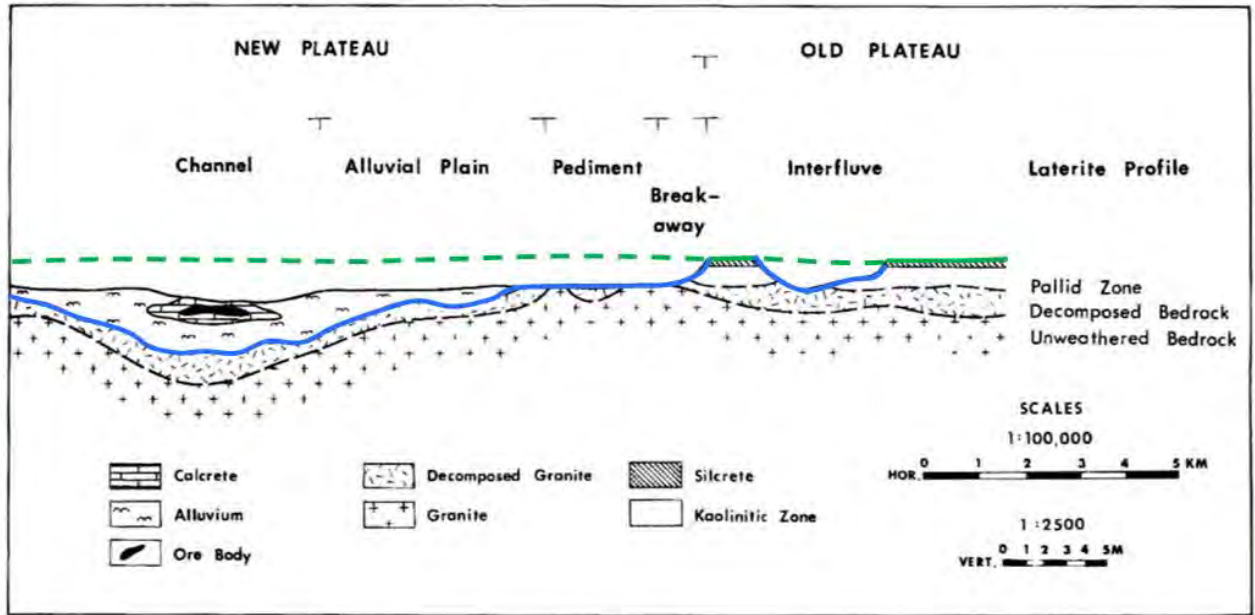
**Figure 2.1** Location map



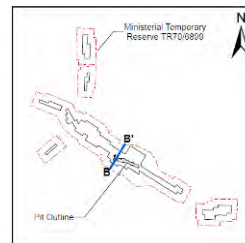
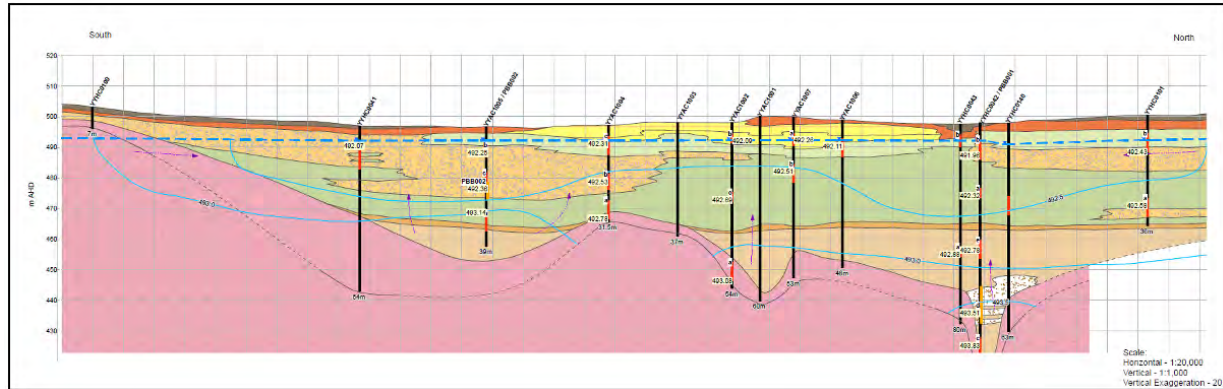
**Figure 2.2** Regional geology map of Western Australia.  
 (The Yeelirrie channel and deposit are located on the northern portion of the Archaean aged Yilgarn Craton)



**Figure 2.3** Typical “laterite” profile developed under humid, tropical climatic conditions. (When exposed to an arid weathering environment the regolith profile becomes variably eroded (left of figure) resulting in preserved siliceous/ferruginous caps on hill tops and exposed saprolite on piedmonts, as is observed within the Yeelirrie catchment. Bourman and Ollier (2002).

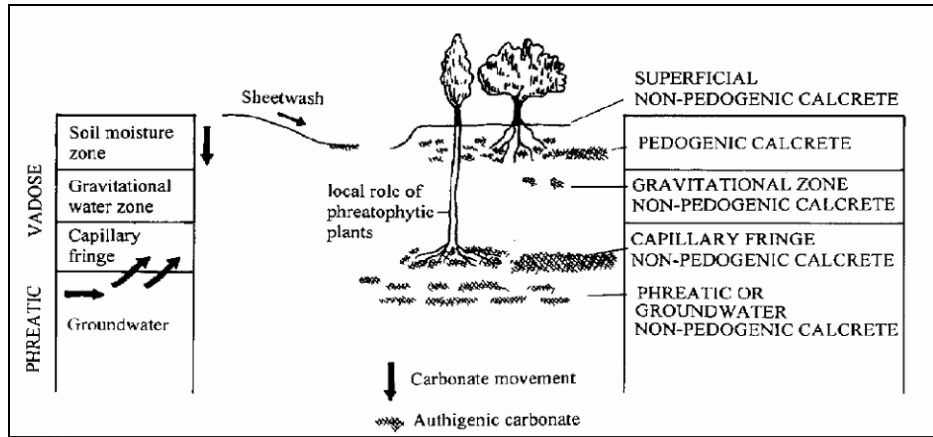


**Figure 2.4** Stylised regional geomorphological section from the Yeelirrie District. (Cartoon illustrates the relationship between the Old Plateau (green line) and the New Plateau (blue line) and the paleochannel geomorphology. (WMC, 1975))



**Figure 2.5** Lithological interpretation completed to assist with hydrological modelling. (From URS, 2011a).

(Geology is adapted from Johnson et al., 1999. This interpretation demonstrates the highly variable topography of the channel base. The carbonate body hosting uranium mineralisation is shown in yellow sitting perched at the surface in the channel fill. Note the interpreted groundwater flow lines in purple. Modified from URS, 2011a).



**Figure 2.6** Classification of calcretes by hydro-geologic setting applicable to Yeelirrie. (The Yeelirrie calcrete forms within the capillary fringe and phreatic zones. From Chen et al. (2002); adapted from Carlisle (1984) & Tucker (1991)).

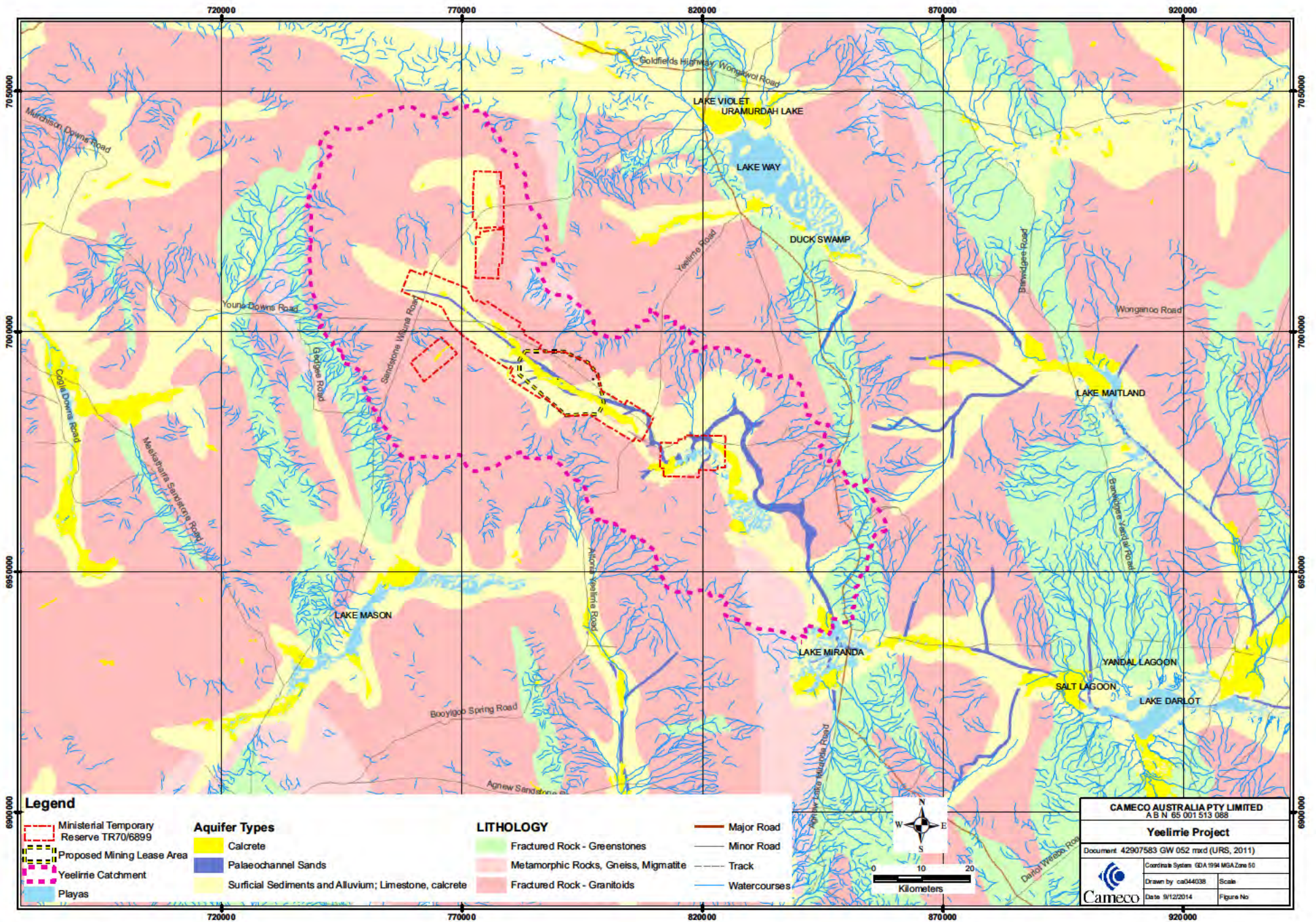
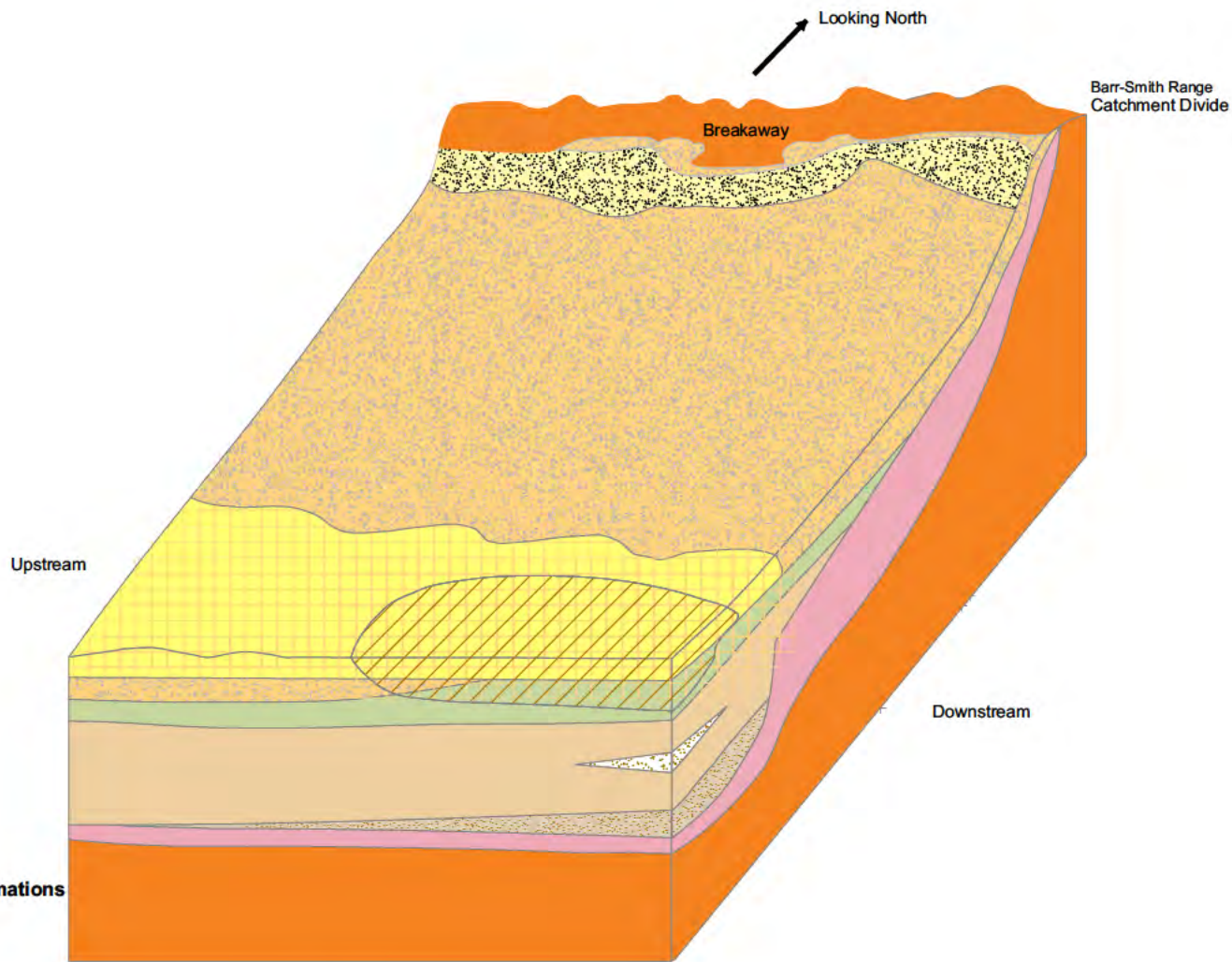


Figure 2.7 Distribution of aquifer types in the Yeelirrie area



Not to Scale

**Legend**

**Quaternary / Recent - Superficial Formations**

- Yeelirrie Uranium Mineralisation
- Recent Colluvium / Scree
- Loam and Hardpan and Calcrete
- Sandy Alluvium
- Clayey Alluvium (Incl Clay Quartz)

**Early - Tertiary - Yeelirrie Palaeochannel**

- Palaeochannel Clay (Perkolilli Shale)
- Mid Palaeochannel Sand
- Basal Sand (Wollubar Sandstone)

**Archaean - Yilgan Shield**

- Weathered Granite
- Granite (Fresh)

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Document 42907583 GW 009 mxd (URS, 2011)		
	Coordinate System	
	Drawn by ca044038	Scale
	Date 9/12/2014	Figure No

Figure 2.8 Schematic block diagram of the hydrostratigraphic setting at Yeelirrie



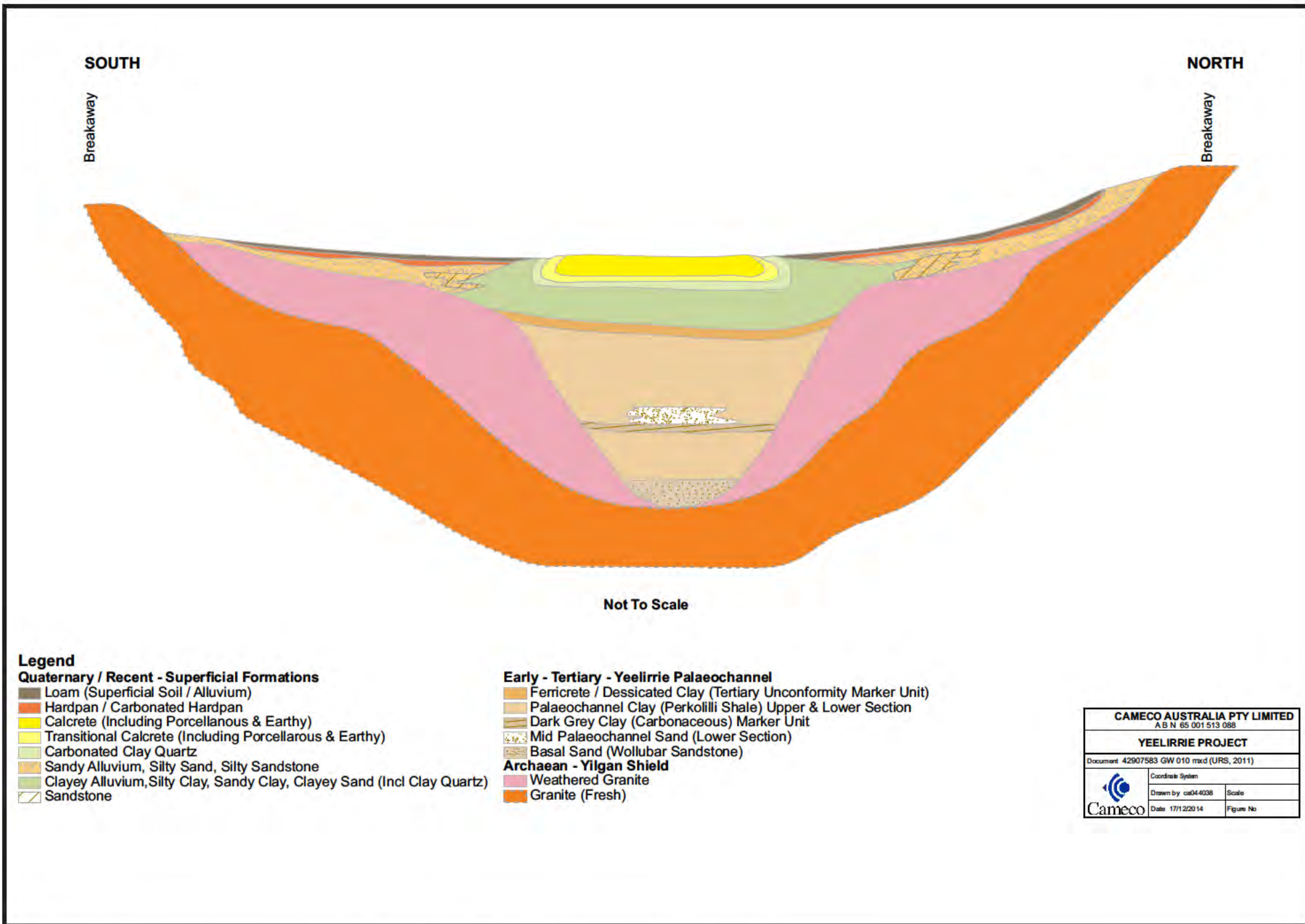
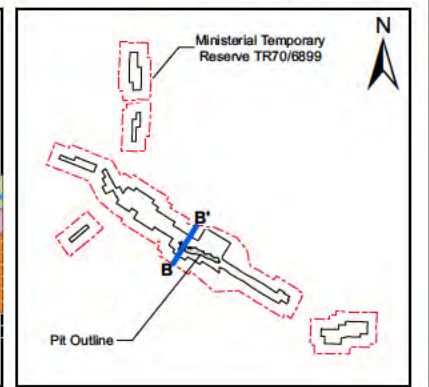
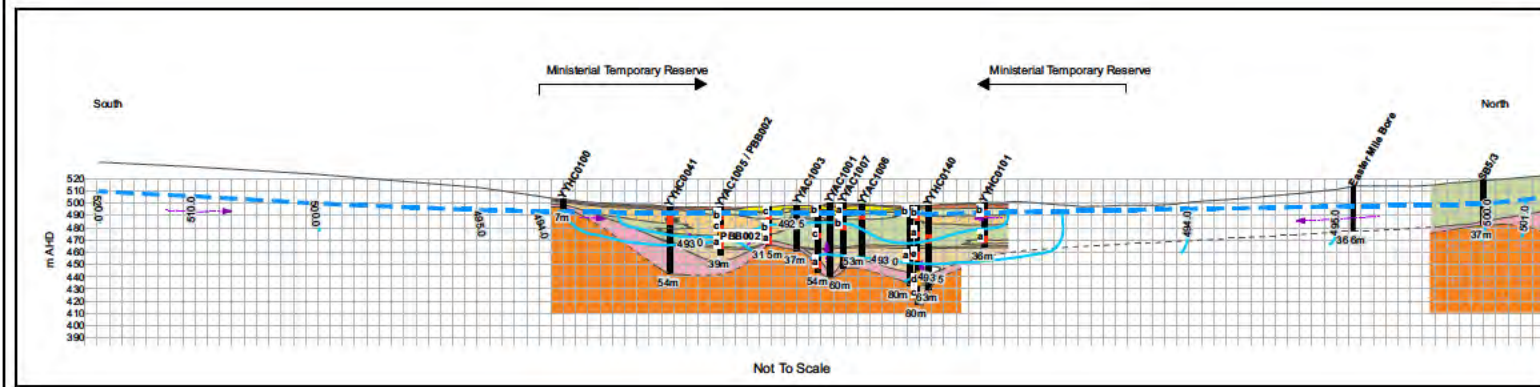
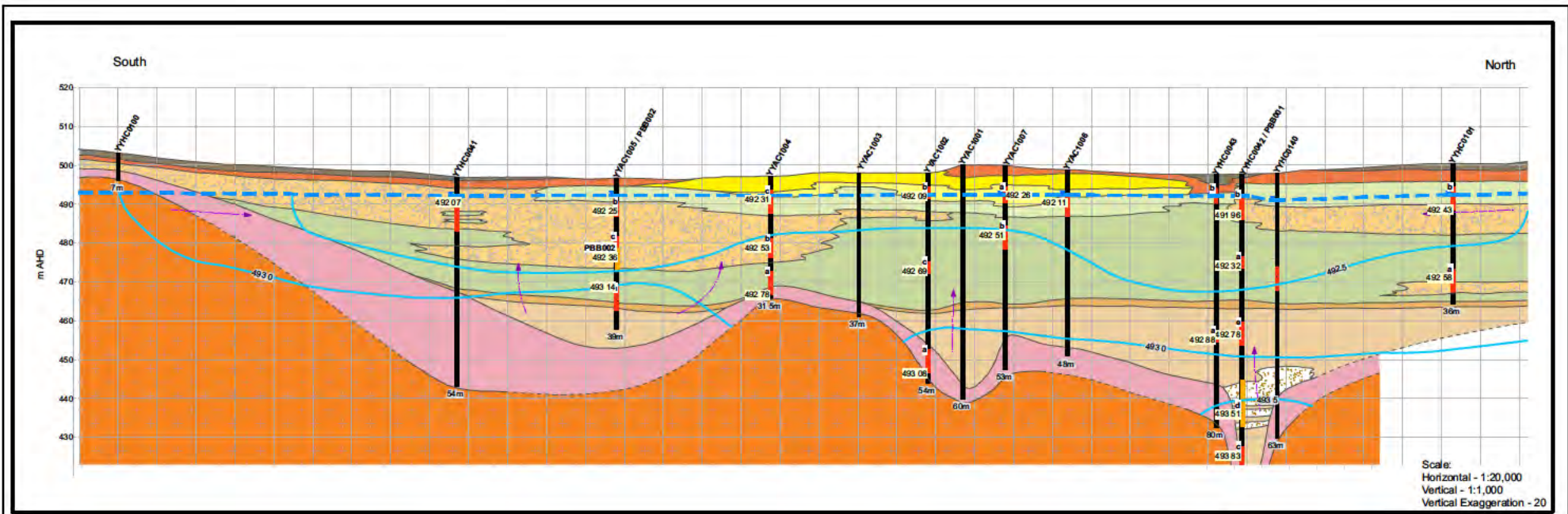


Figure 2.9 Schematic cross section illustrating the hydrostratigraphy at Yeelirrie



**Legend**

<ul style="list-style-type: none"> <li><span style="color: blue;">—</span> Fresh Water Head Contours</li> <li><span style="color: purple;">—</span> Interpreted Groundwater Flow Lines</li> <li><span style="border-bottom: 1px solid black; width: 20px; display: inline-block;"></span> Well</li> <li><span style="border-bottom: 1px dashed black; width: 20px; display: inline-block;"></span> Inferred Boundary</li> <li><span style="border-bottom: 1px solid black; width: 20px; display: inline-block;"></span> Lithological Boundary</li> <li><span style="border-bottom: 1px solid black; width: 20px; display: inline-block;"></span> Groundwater Level</li> <li><span style="border-bottom: 1px solid blue; width: 20px; display: inline-block;"></span> (Typically for Shallowest Screened Interval)</li> <li><span style="border-bottom: 1px solid orange; width: 20px; display: inline-block;"></span> Monitoring Well Slotted Interval and measured fresh-water head (m AHD)</li> <li><span style="border-bottom: 1px solid yellow; width: 20px; display: inline-block;"></span> Production Well or Multipiezometer Slotted Interval</li> </ul>	<p><b>Quaternary/Recent</b></p> <ul style="list-style-type: none"> <li><span style="background-color: #808080; width: 15px; height: 10px; display: inline-block;"></span> Loam (Superficial Soil / Alluvium)</li> <li><span style="background-color: #FF8C00; width: 15px; height: 10px; display: inline-block;"></span> Hardpan / Carbonated Hardpan</li> <li><span style="background-color: #FFFF00; width: 15px; height: 10px; display: inline-block;"></span> Calcrite (Including Porcellanous &amp; Earthy)</li> <li><span style="background-color: #FFD700; width: 15px; height: 10px; display: inline-block;"></span> Transitional Calcrite (Including Porcellanous &amp; Earthy)</li> <li><span style="background-color: #90EE90; width: 15px; height: 10px; display: inline-block;"></span> Carbonated Clay Quartz</li> <li><span style="background-color: #FFDAB9; width: 15px; height: 10px; display: inline-block;"></span> Sandy Alluvium, Silty Sand, Silty Sandstone</li> <li><span style="background-color: #90EE90; width: 15px; height: 10px; display: inline-block;"></span> Clayey Alluvium, Silty Clay, Sandy Clay, Clayey Sand (Incl Clay Quartz)</li> </ul>	<p><b>Early-Tertiary</b></p> <ul style="list-style-type: none"> <li><span style="background-color: #FFDAB9; width: 15px; height: 10px; display: inline-block;"></span> Ferricrete / Dessicated Clay (Tertiary Unconformity Marker Bed)</li> <li><span style="background-color: #FFDAB9; width: 15px; height: 10px; display: inline-block;"></span> Palaeochannel Clay (Perkolli Shale) Upper &amp; Lower Section</li> <li><span style="background-color: #808080; width: 15px; height: 10px; display: inline-block;"></span> Dark Grey Clay (Carbonaceous Marker Bed)</li> <li><span style="background-color: #FFDAB9; width: 15px; height: 10px; display: inline-block;"></span> Mid-Palaeochannel Sand (Lower Section)</li> <li><span style="background-color: #FFDAB9; width: 15px; height: 10px; display: inline-block;"></span> Basal-Palaeochannel Sand (Wollubar Sandstone)</li> </ul> <p><b>Archaeon</b></p> <ul style="list-style-type: none"> <li><span style="background-color: #FFDAB9; width: 15px; height: 10px; display: inline-block;"></span> Weathered Granite</li> <li><span style="background-color: #FF8C00; width: 15px; height: 10px; display: inline-block;"></span> Granite (Fresh)</li> </ul>
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<b>YEELIRRIE PROJECT</b>	
Document: 42907583 GW 053C.mxd (URS, 2011)	
Coordinate System	Scale
Drawn by: cad44038	Date: 9/12/2014
Figure No	

Figure 2.10 Schematic transverse stratigraphical cross section through the Yeelirrie deposit and fresh-water head contours

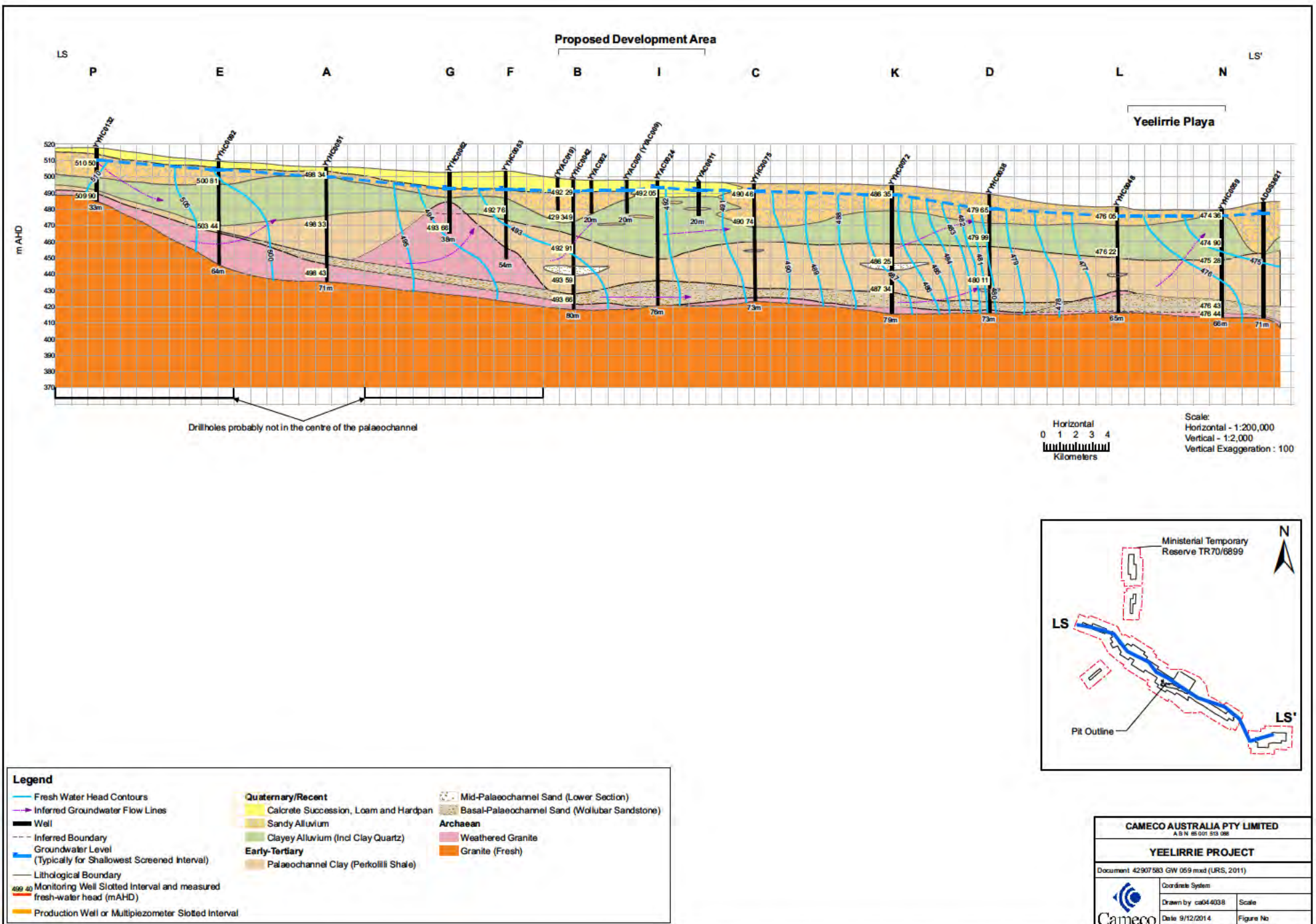


Figure 2.11 Schematic longitudinal stratigraphical cross section through the Yeelirrie deposit and fresh-water head contours



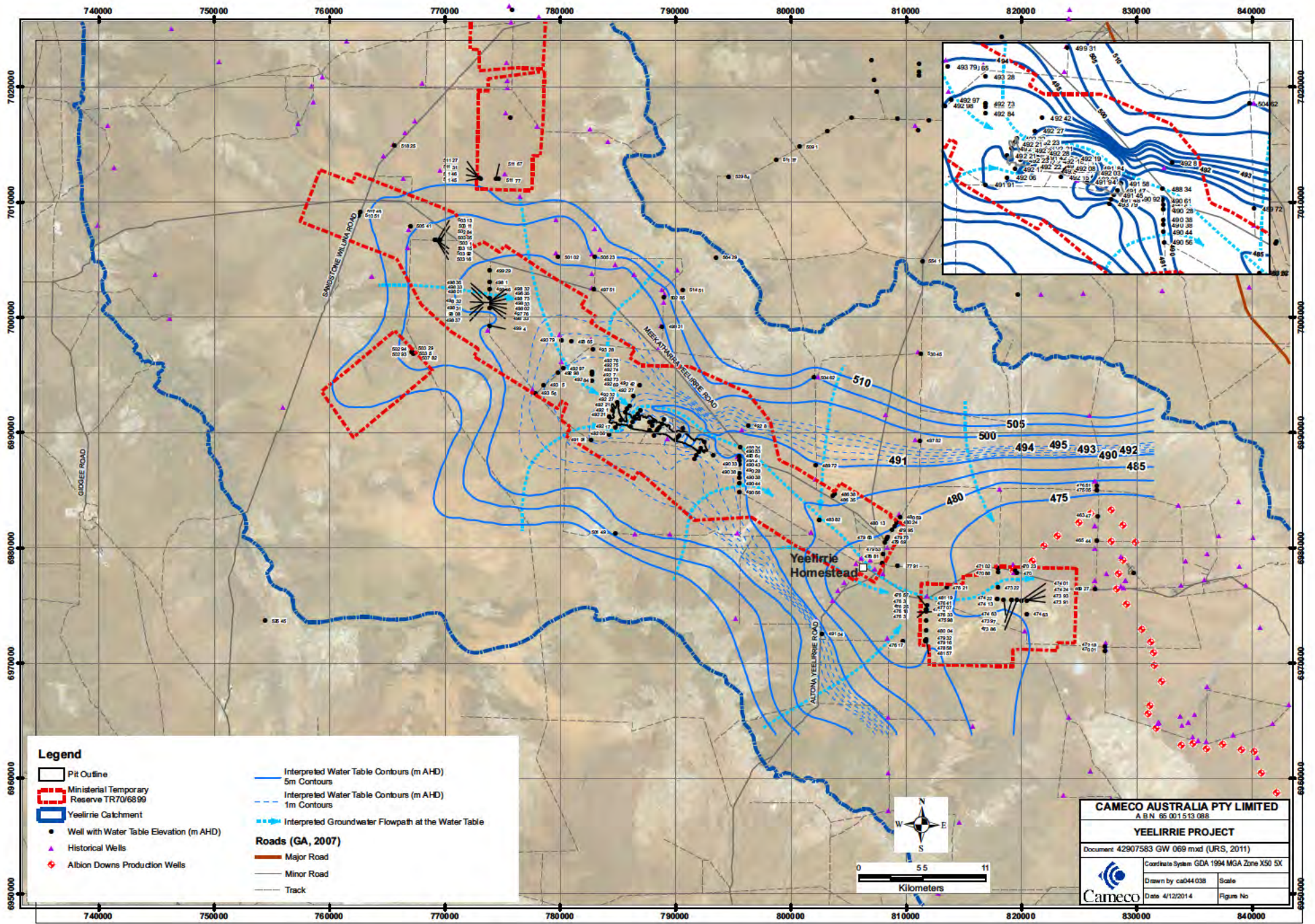


Figure 2.13 Interpreted pre-development water table in the vicinity of the Yeelirrie deposit

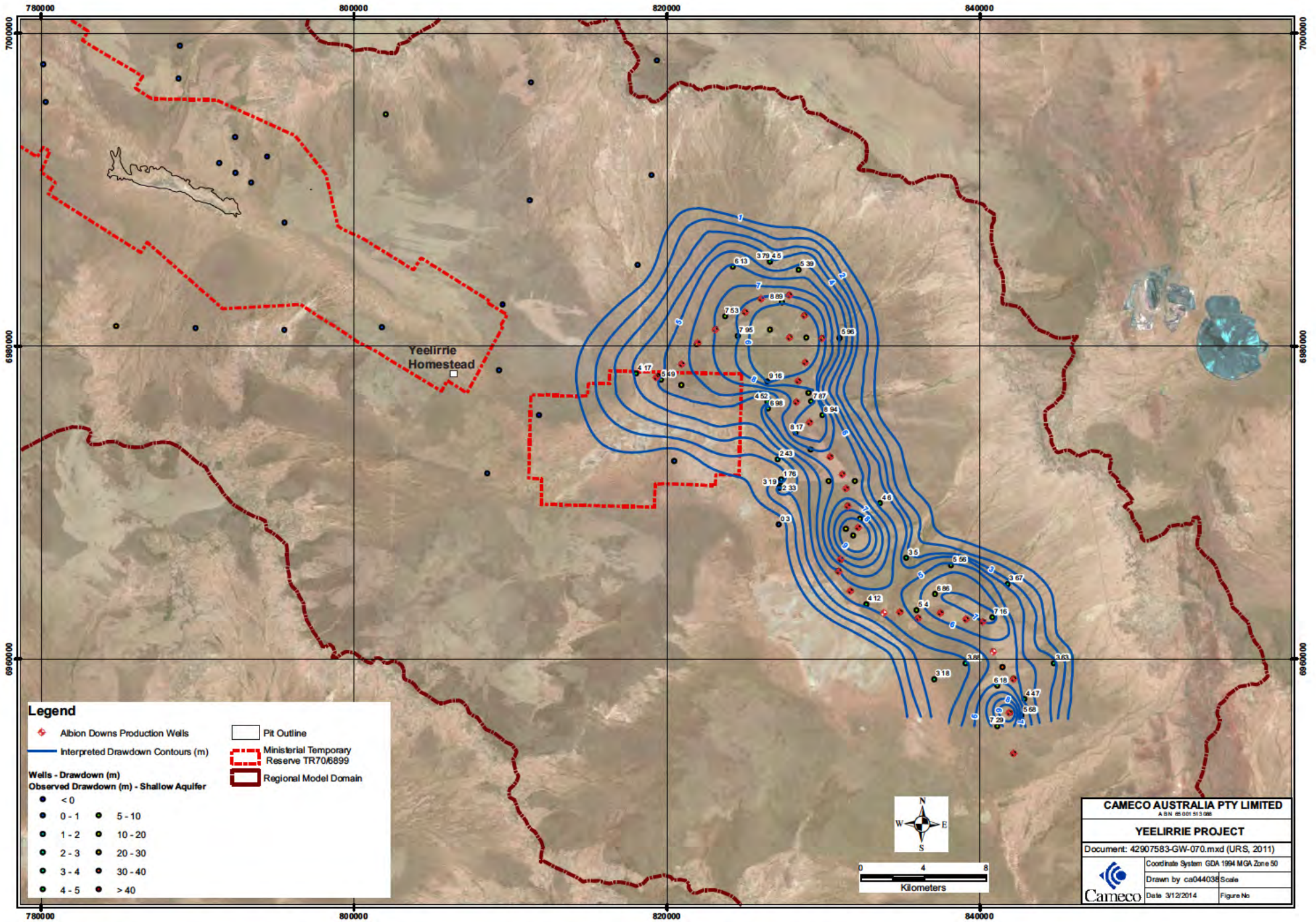


Figure 2.14 Interpreted water table drawdown (end 2007) in the Albion Downs wellfield

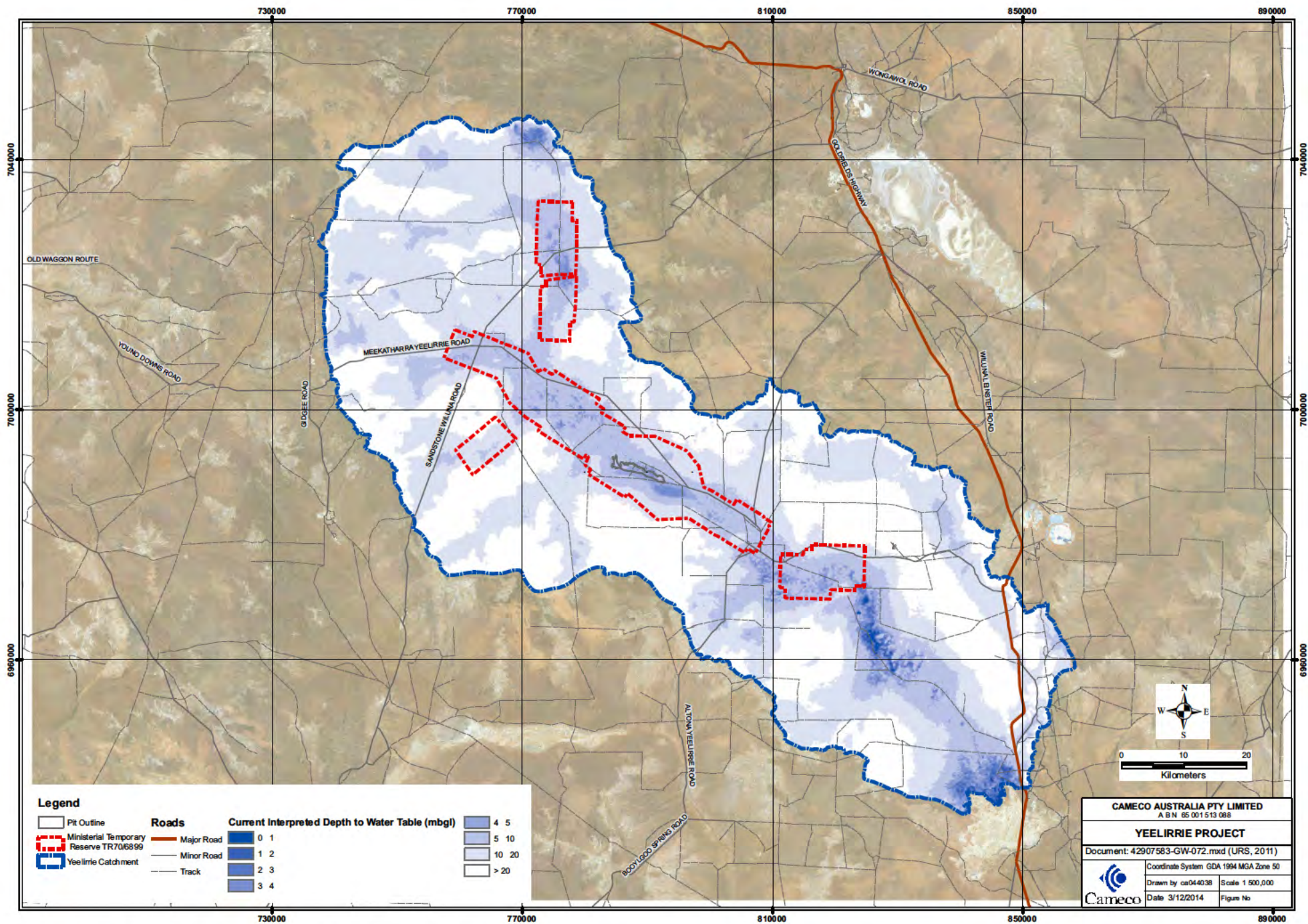


Figure 2.15 Depth to the water table in the Yeelirrie catchment

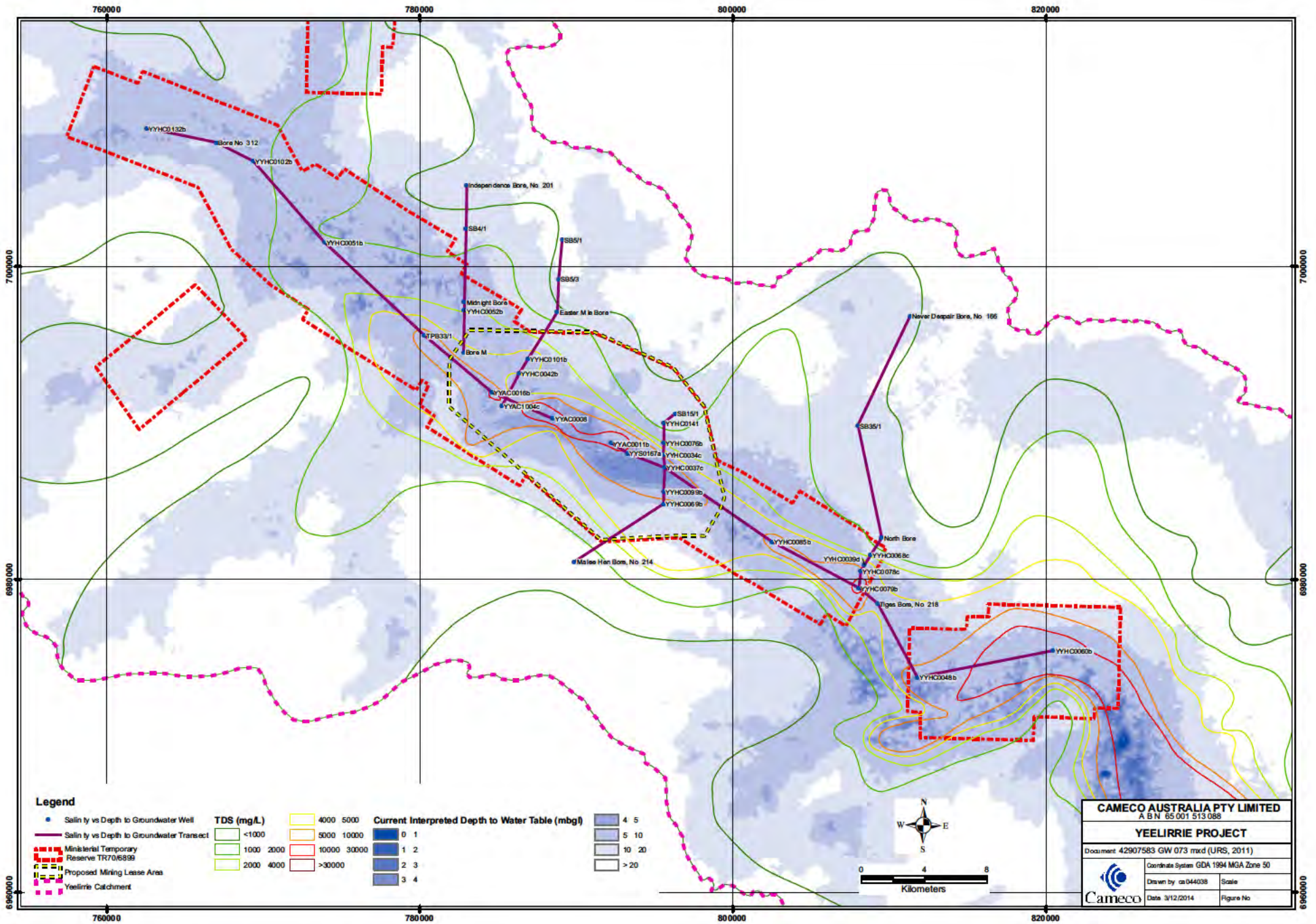


Figure 2.16 Depth to the water table in the Yeelirrie deposit area



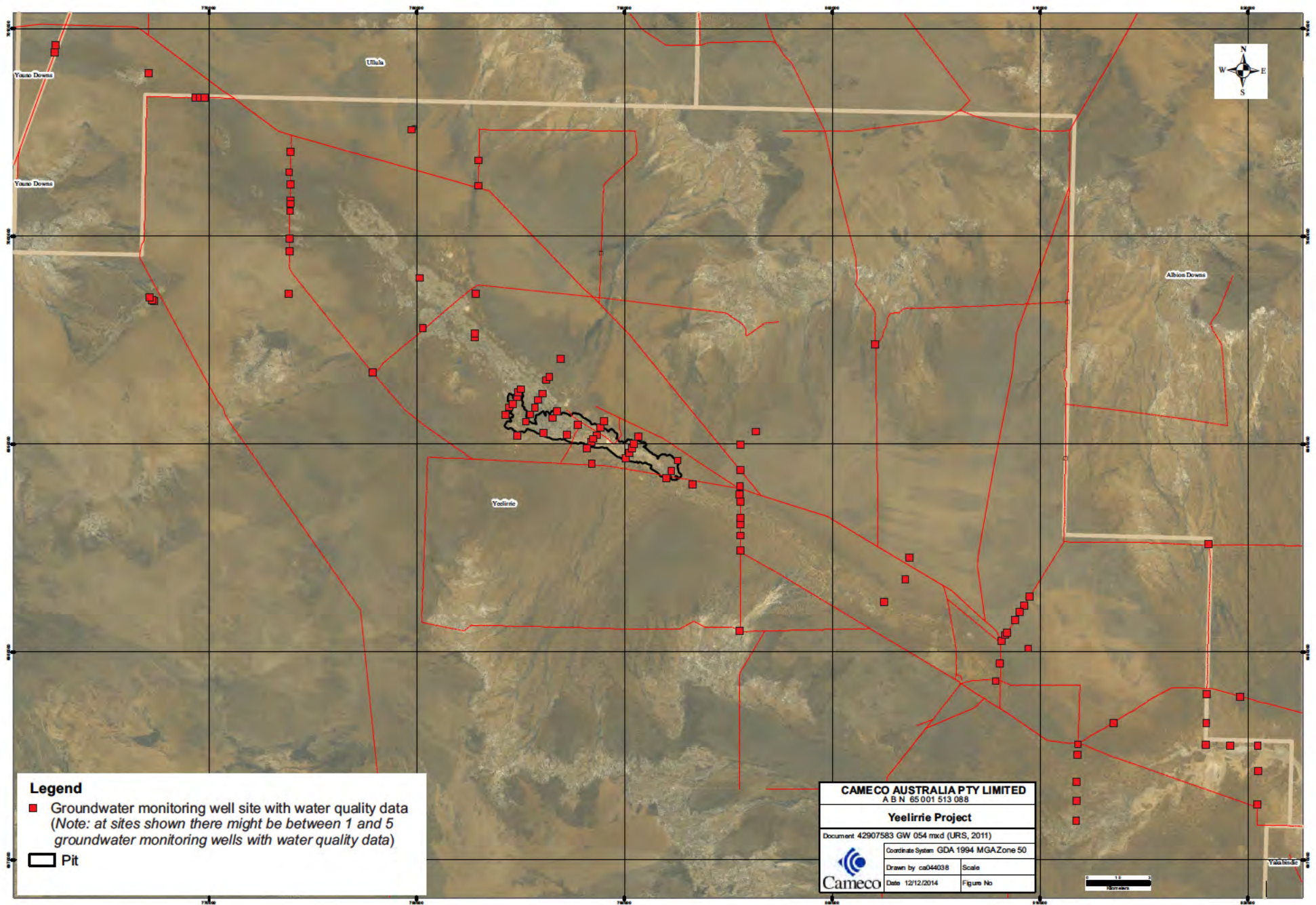


Figure 2.17 Locations of groundwater monitoring wells with water quality data

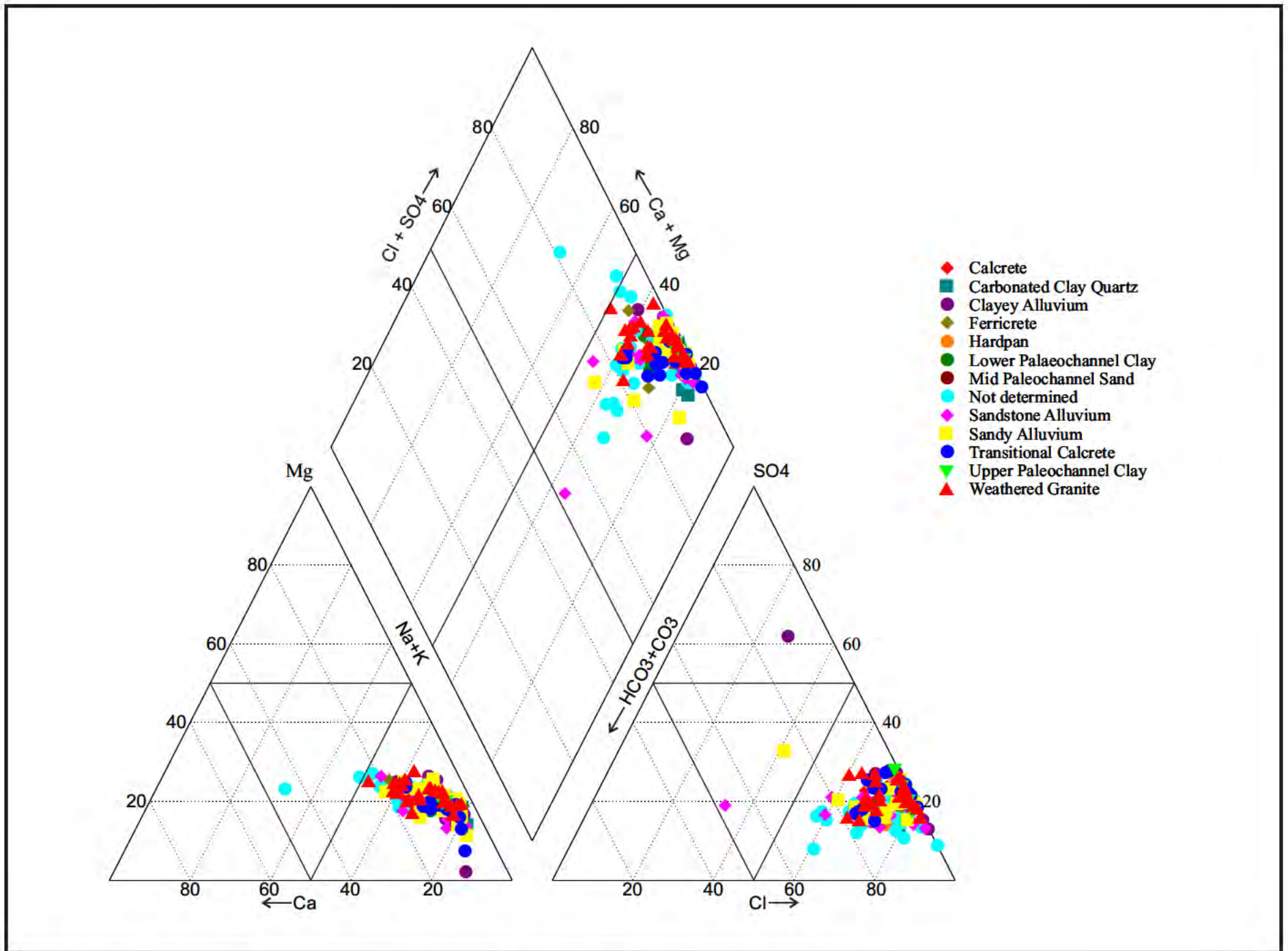


Figure 2.18 Piper-plot of groundwater quality data for Yeelirrie area

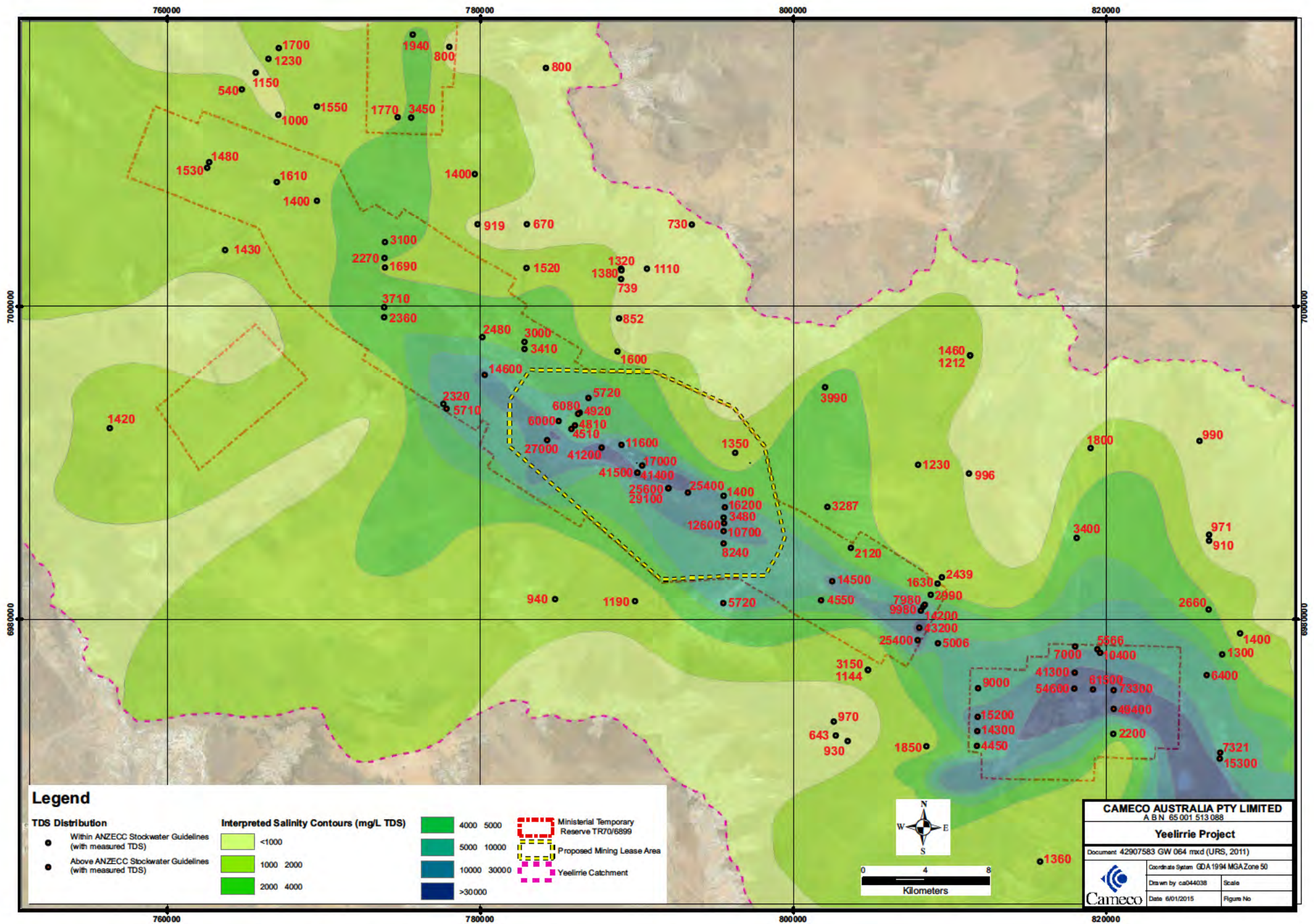


Figure 2.19 Distribution of Total Dissolved Solids (TDS) at the water table

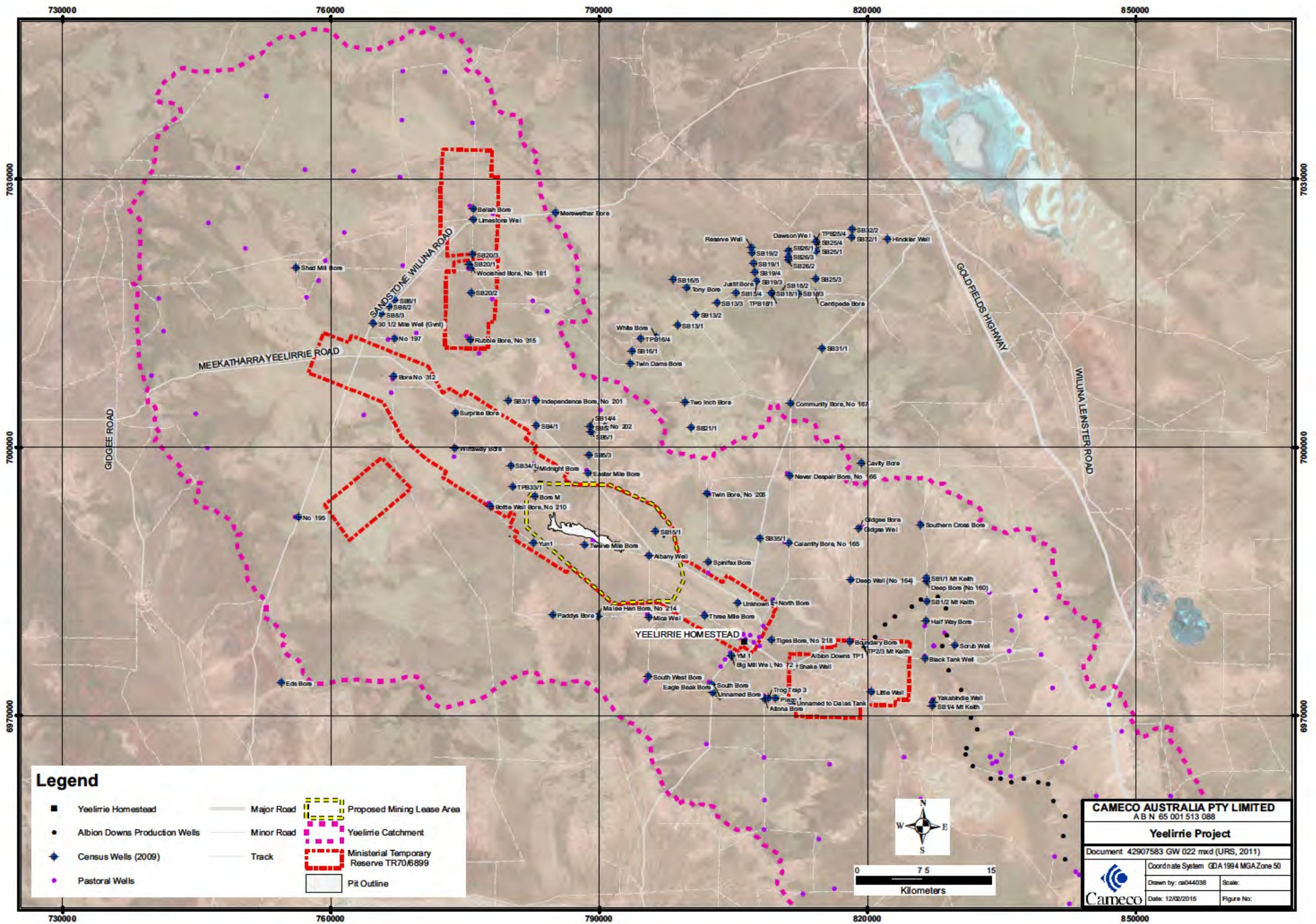


Figure 2.20 Well census 2009

YEAR	DEWATERING SCHEDULE	MINING SCHEDULE	MILLING SCHEDULE	TAILINGS DEPOSITION SCHEDULE	COVER	
1	DB#1 Strip DB#1 to above the water table, construct trenches, start dewatering					
2	Construction camp and plant	DB#2 Strip DB#2 to above the water table, construct trenches, start dewatering	Mine Block 1 MB#1 dewatered and mined			
3		DB#3 Covers MB#3 and part of MB#4, Strip DB#3 to above the water table, construct trenches, start dewatering	Mine Block 2 MB#2 dewatered and mined			
4		DB#4 Covers part of MB#4, MB#5 and MB#6, and part of MB#7	Mine Block 3 MB#3 dewatered and mined	Start of milling	Pond #1 Five (5) cells used on a rotating schedule	
5	Strip DB#4 to above the water table, construct trenches, start dewatering	Mine Block 4 MB#4 dewatered and mined				
6		Mine Block 5 MB#5 dewatered and mined				
7	DB#5 Covers part of MB#7, MB#8 and part of MB#9	Mine Block 6 MB#6 dewatered and mined				
8	Strip DB#5 to above the water table, construct trenches, start dewatering	Mine Block 7 MB#7 dewatered and mined				
9	DB#6 Covers part of MB#9, MB#10 and part of MB#11	Mine Block 8 MB#8 dewatered and mined				
10	Strip DB#6 to above the water table, construct trenches, start dewatering	Mine Block 9 MB#9 dewatered and mined				
11	DB#7 Covers part of MB#11, and MB#12 and MB#13	Mine Block 10 MB#10 dewatered and mined				Pond #2 Five (5) cells used on a rotating schedule
12	Strip DB#7 to above the water table, construct trenches, start dewatering	Mine Block 11 MB#11 dewatered and mined				
13		Mine Block 12 MB#12 dewatered and mined				
14	DB#8 Covers part of MB#14 and MB#15	Mine Block 13 MB#13 dewatered and mined				
15	Strip DB#8 to above the water table, construct trenches, start dewatering	Mine Block 14&15 MB#14&15 dewatered and mined				
16	End of mining	Mine Block 14&15 MB#14&15 dewatered and mined				
17			End of milling			Packaging of cover, starting with the cells of Pond #1
18	End of milling					
19					Decommissioning: Placing of wastes in mining blocks 8-15	
20						
21						
22	Cover completed					

Figure 3.1 Indicative project timeline

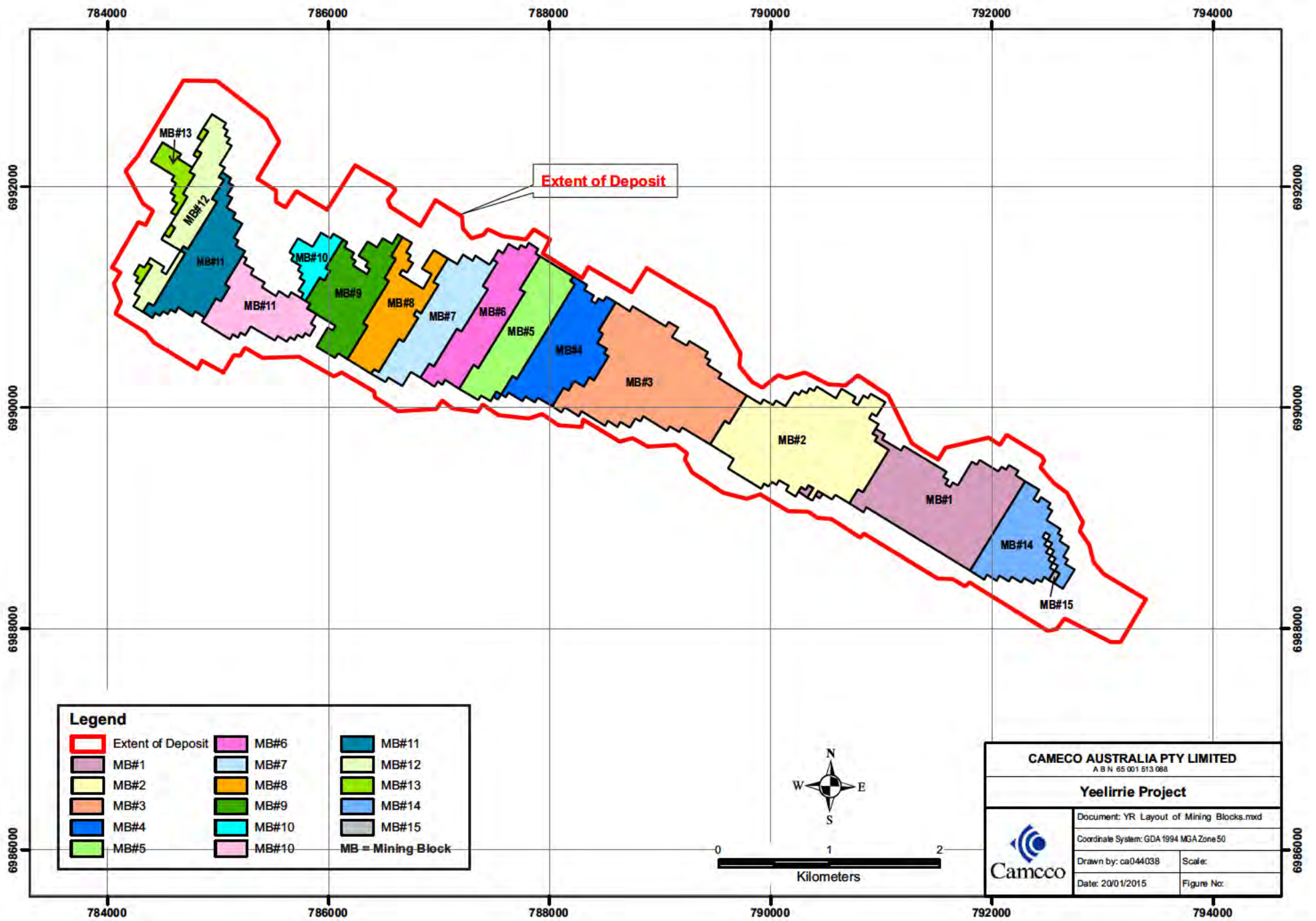


Figure 3.2 Layout of mining blocks

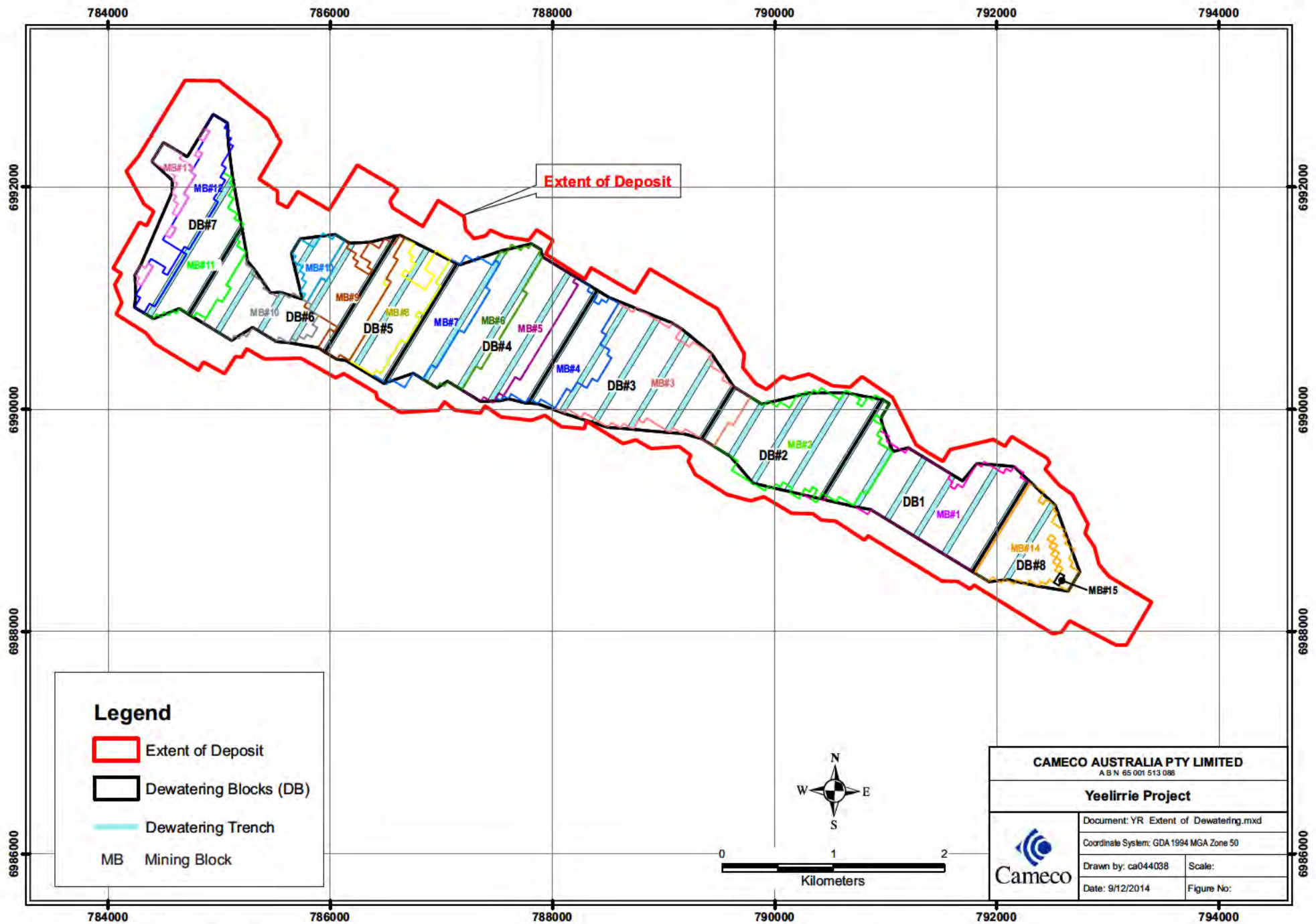


Fig. 3.3 Layout of dewatering blocks

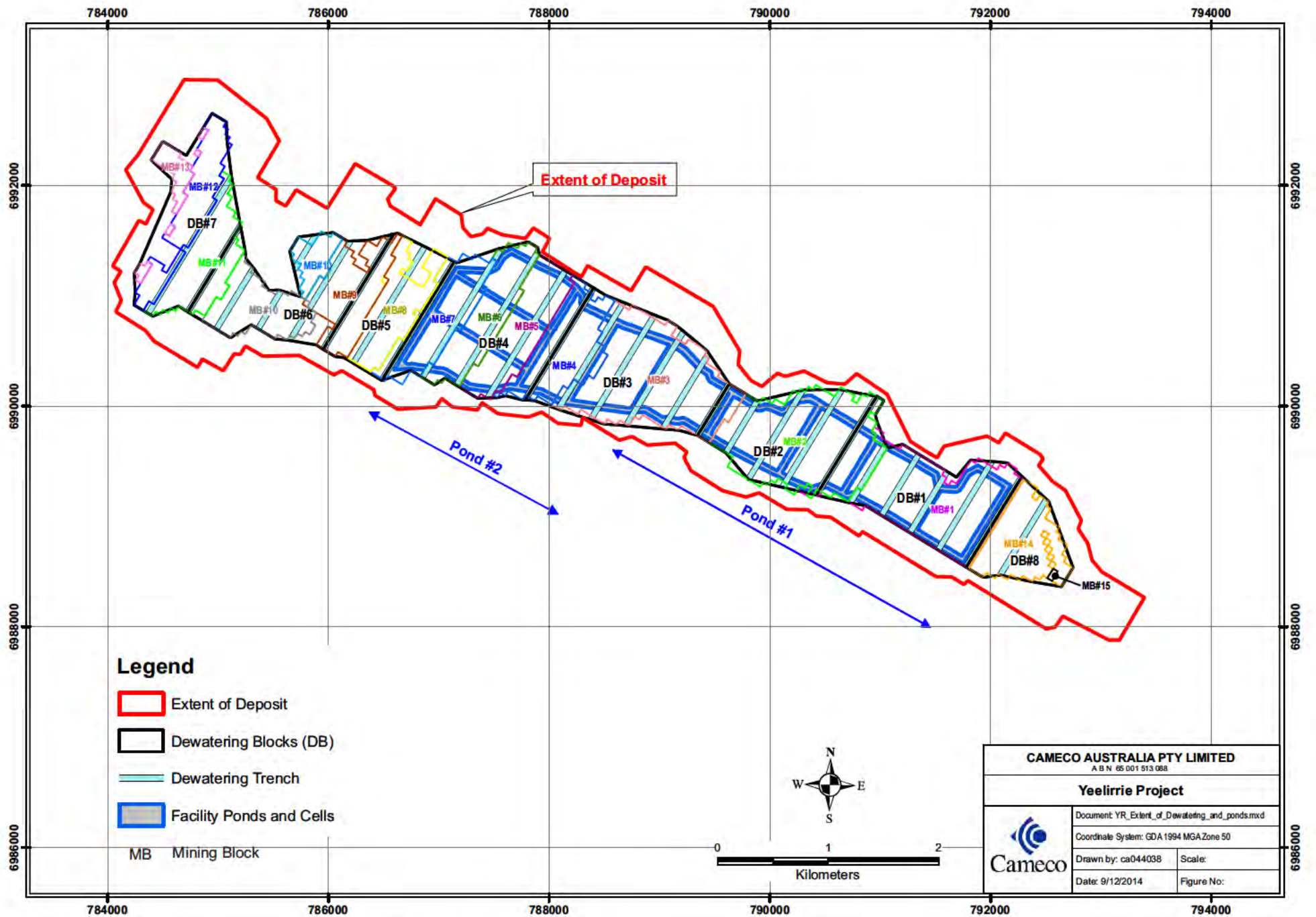


Fig 3.4 Layout of tailings storage facility ponds and cells



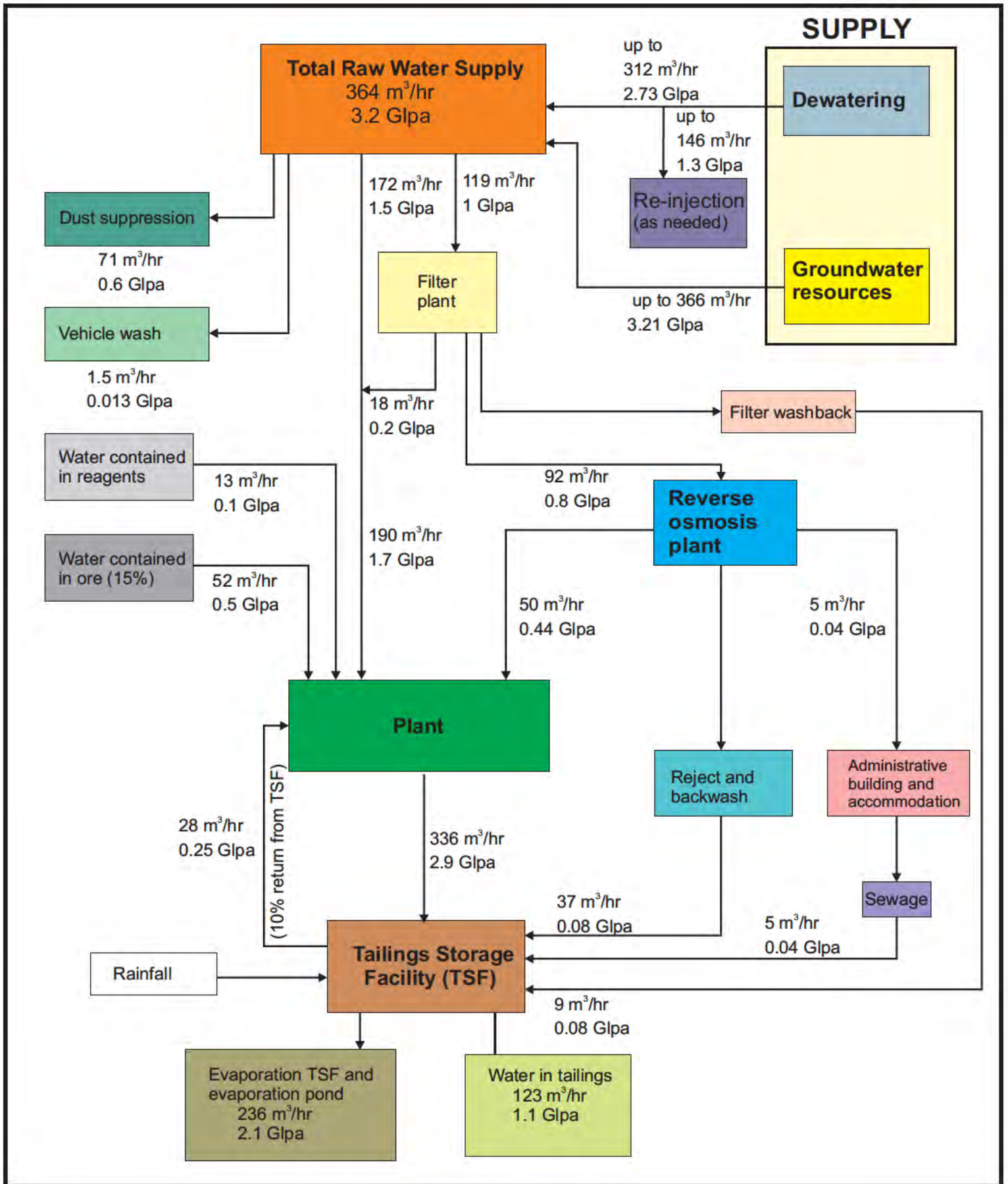


Figure 3.5 Indicative site-wide water balance during milling period

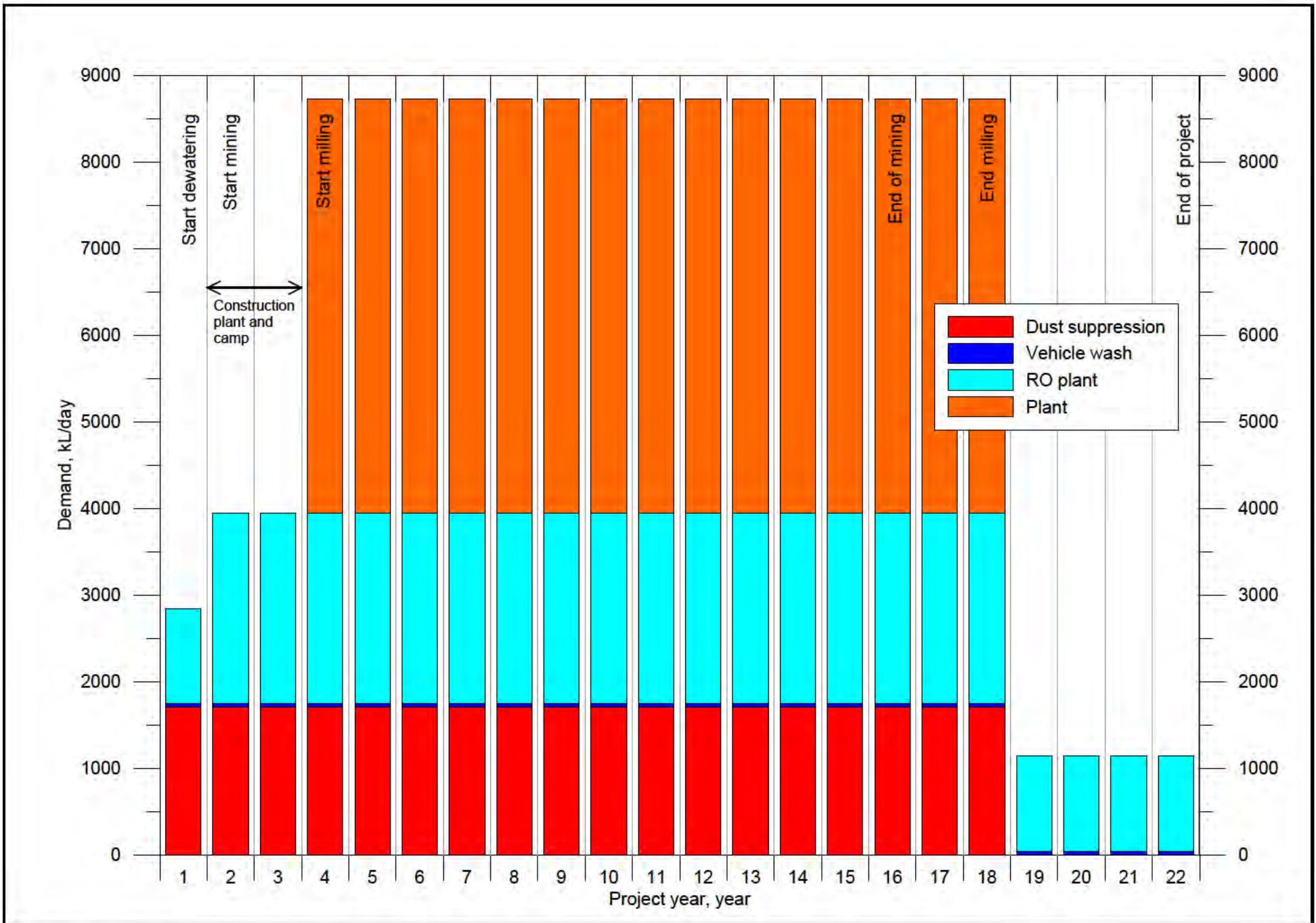


Figure 3.6 Indicative water demand over time

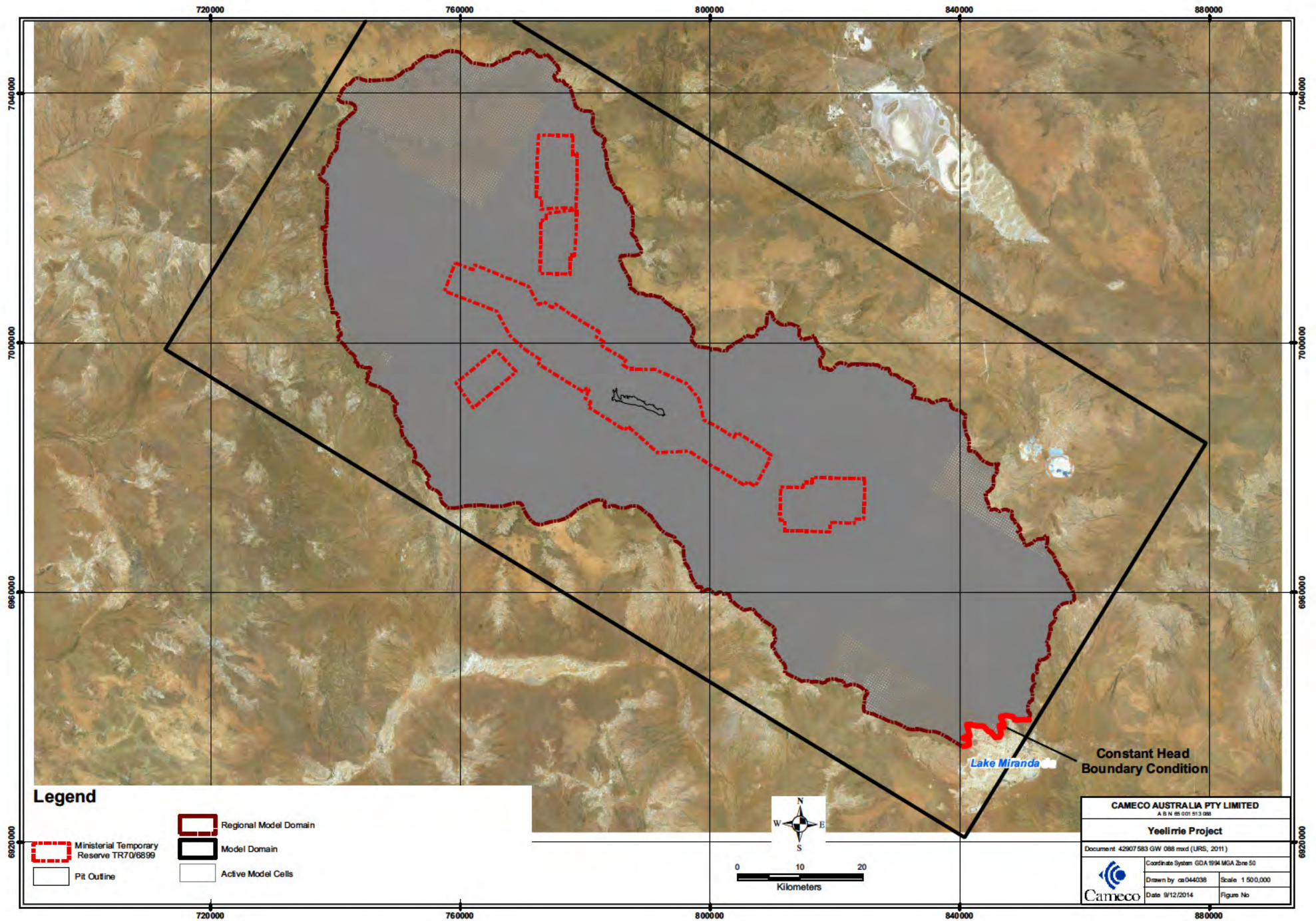


Figure 4.1 Yeelirrie Catchment model domain

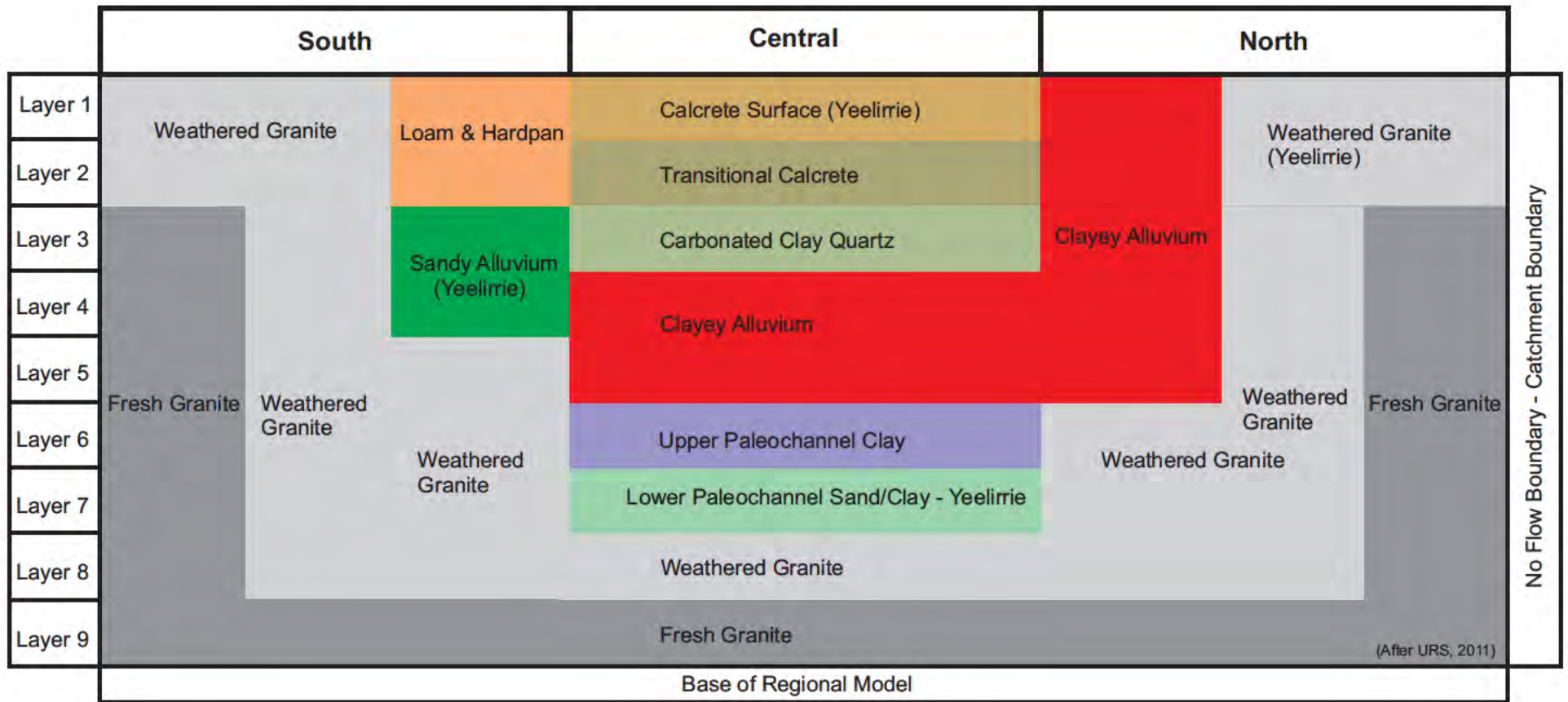


Figure 4.2 Model layout and property zones

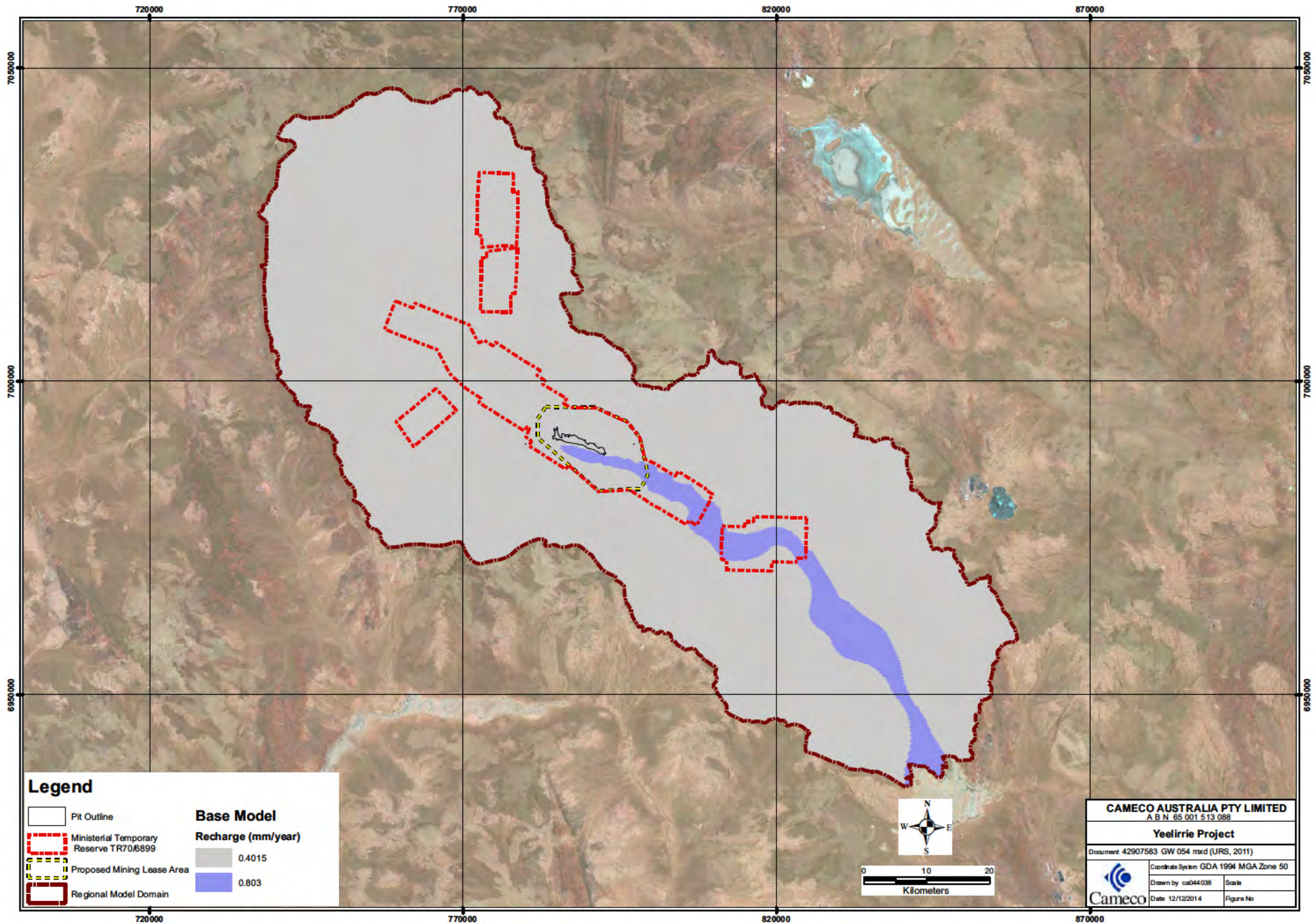


Figure 4.3 Spatial distribution of recharge

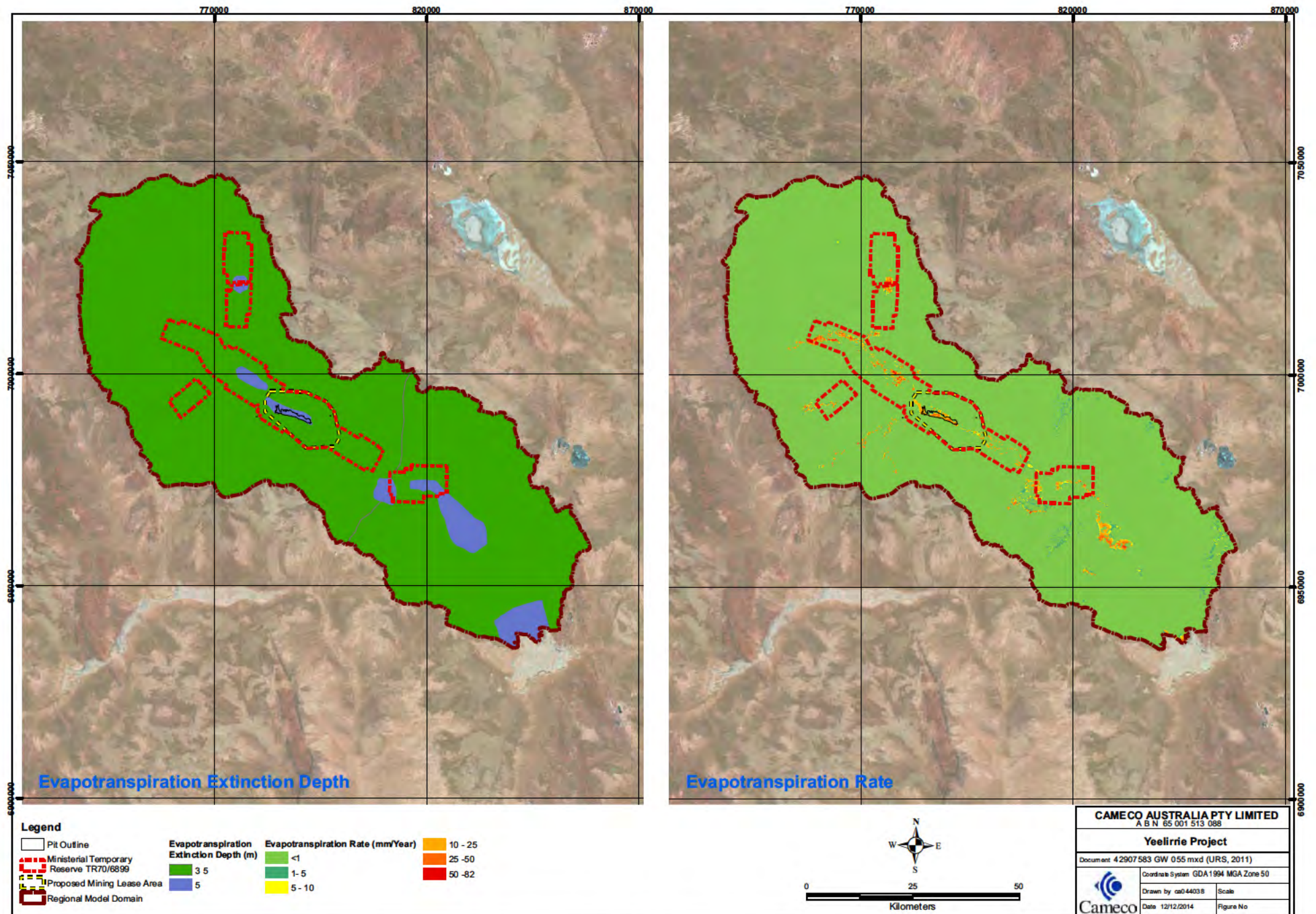


Figure 4.4 Spatial distribution of evapotranspiration extinction depth and evapotranspiration rates