3 TOPOGRAPHY AND GEOMORPHOLOGY

Chapter 3 provides an overview of the existing topography and geomorphology characteristic of the Gas Field Component of the Queensland Curtis LNG (QCLNG) Project and outlines expected impacts as a result of the development of the Gas Field.

3.1 PROJECT ENVIRONMENTAL OBJECTIVE AND VALUES

The Project environmental objective for topography and geomorphology is to maintain a stable landform that does not result in uncontrolled erosion.

The sections that follow outline the existing environmental values related to topography and geomorphology.

The Gas Field is located in the Surat Basin in the Western Downs on the western slopes of the Great Dividing Range. The terrain in the region is predominantly flat with gentle slopes and undulating plains and rises (refer to *Table 3.3.1* and *Figure 3.3.1).*

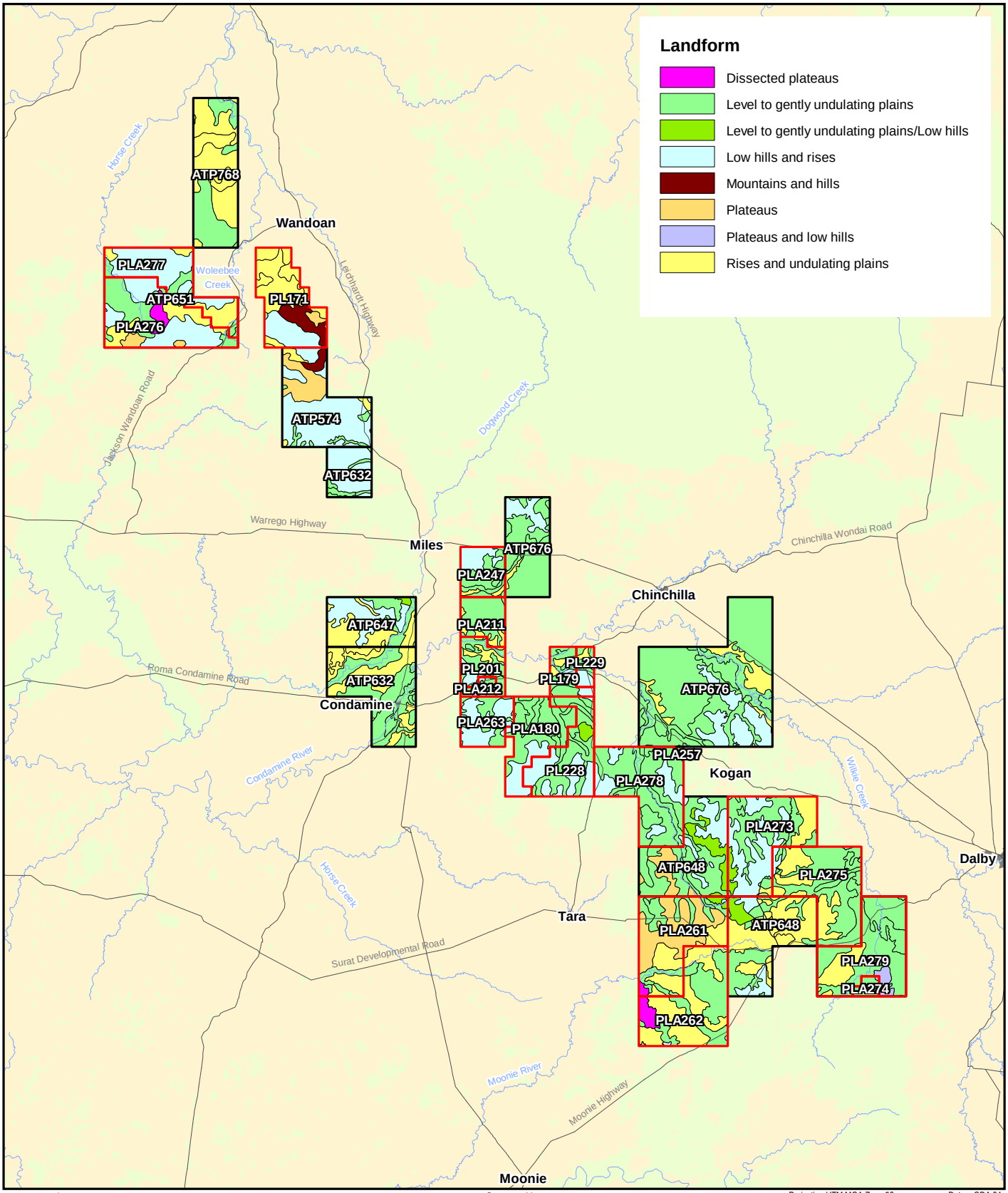
The maximum elevation within the Gas Field study area (466 m Australian Height Datum (AHD)) is on the slopes of the Great Dividing Range within petroleum lease application (PLA) 276, and the lowest section (250 m AHD) is associated Mud Creek catchment located in the central section of Authority to Prospect (ATP) 768.

The key landform components within the Gas Field are described in *Table* 3.3.1 and illustrated in *Figure 3.3.1*. The topography of the Gas Field and surrounding areas is illustrated in *Figure 3.3.2*.

Table 3.3.1 Gas Field Landform Components

Landform Component[1]	Area	
	ha	%
Mountains and hills	3,835	0.8
Dissected plateaus	3,550	0.8
Plateaus	19,400	4.1
Plateaus and low hills	1,370	0.3
Low hills and rises	104,065	22.2
Rises and undulating plains	101,430	21.6
Level to gently undulating plains	228,100	48.7
Level to gently undulating plains with low hills	6,930	1.5
Total	**468,680**	**100.0**

1 Standard terminology of the *Australian Soil and Land Survey Field Handbook* (McDonald et al 1990).



Legend:

- Gas Fields - Petroleum Lease/Petroleum Lease Application
- Gas Fields - Authority to Prospect

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Projection UTM MGA Zone 56 Datum GDA 94

0 10 20 30 40

Kilometres

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Project	Queensland Curtis LNG Project	Title	Landform
Client	QGC - A BG Group business		
Drawn	Mipela	Volume 3	Figure 3.3.1
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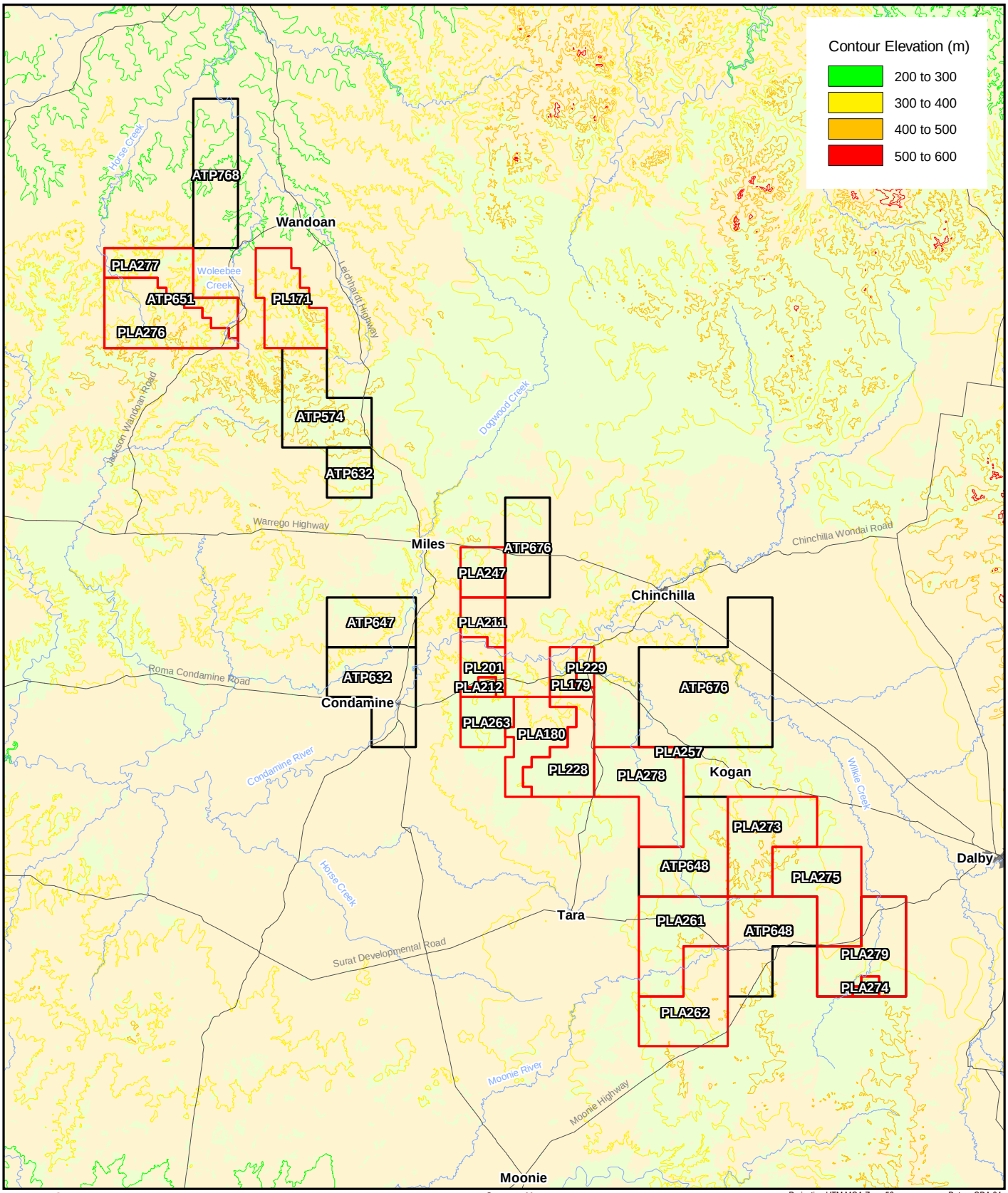

Legend:

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- Gas Fields - Authority to Prospect

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QUEENSLAND CURTIS LNG A BG Group business	Project: Queensland Curtis LNG Project		Title: **Topography**
	Client: QGC - A BG Group business		
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	Date: 10.6.09	Revision: A	

The Condamine River is a regional river which meanders through the central sections of the Gas Field. The Moonie River and Balonne Rivers, two other regional rivers, are located just south of the Project area.

No areas of high conservation value from a topographical perspective have been identified within the Gas Field area. There are, however, relatively small, isolated areas of dissected plateaus, hills and mountains. These areas could be considered to represent "sensitive landscapes" because of their steep topography with associated potentially significant erosion risk. This is discussed further in *Volume 3, Chapter 4.*

3.1.1 Potential Impacts and Mitigation

Construction and operation of Gas Field Component infrastructure may impact on steep slopes and deeply dissected terrain by:

- requiring additional disturbance to allow access for specialist heavy machinery
- requiring alternative design for excavations, levelling sites for hardstand areas
- requiring special measures to build access tracks with appropriate grade.

The development of the Gas Field will require minimal landform modification. Almost 76 per cent of the study area has almost no topographical constraint and an additional 22 per cent has only a minor constraint to any development activities.

Slope grade and length also have a strong influence on potential erosion but this aspect of topography is considered under the issue of erosion hazard (see *Volume 3 Chapter 4).*

Approximately 1.6 per cent of the Field area is considered to have a significant topography restriction (i.e. areas with a relief ≥ 90 m and or slopes >10 per cent) in terms of Gas Field Component development. These areas are located on the dissected plateaus north of Miles within PLA 276 and south-east of Tara along the western edge of PLA 261 and PLA 262 and in the hills and mountains west of the Leichhardt Highway between North Dulacca and Guluguba in the north-eastern corner of ATP 574 and south eastern section of PL 171 (refer to *Figure 3.3.1*). Where possible, these areas will be avoided for development of the Gas Field.

3.1.2 Conclusion

The impact on topography and geomorphology from development of the Gas Field for the QCLNG Project is expected to be negligible. A summary of the impacts outlined in this chapter is provided in *Table 3.3.2* below.

Table 3.3.2 Summary of Impacts for Topography and Geomorphology

Impact assessment criteria	Assessment outcome
Impact assessment	Negative
Impact type	Direct
Impact duration	Short term
Impact extent	Local
Impact likelihood	Unlikely

Overall assessment of impact significance: negligible.