KUR-World

Project Description

Chapter 4.0

Environmental Impact Statement

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Abbreviations used in this chapter are as follows:

Abbreviation	Meaning
EVNT	Endangered Vulnerable and Near Threatened Species listed under the Environmental Protection and Biodiversity Conservation Act 1999.

4.0 PROJECT DESCRIPTION

4.1 Project Objectives

The KUR-World project's aim is to develop an integrated eco-resort that offers locals, tourists and students environmental and cultural-based opportunities and experiences based around its four key themes of 'Eco-Tourism', 'Education and Business', 'Health and Wellbeing' and 'Adventure and Recreation'.

The KUR-World development objectives are as follows:

- Showcasing the cultural, environmental and historical connectivity of the site to the Atherton Tablelands and Wet Tropics World Heritage Area; through appropriate protection, interpretation and presentation to visitors.
- Revitalisation of the economic wellbeing and sustainable lifestyles of the Kuranda and Tablelands community wherever possible, by preferentially employing local residents (especially from younger and disadvantaged demographics) and sourcing inputs and materials from local businesses.
- Incorporating sustainable development principles in the design and construction phases utilising Enviro-Development Elements (http://www.envirodevelopment.com.au/) and pursuing accreditation from Ecotourism Australia (www.ecotourismaustralia.org.au) during operations.
- Conservation and strengthening of the site's intrinsic environmental values for protected species (especially the Kuranda Tree Frog and Southern Cassowary) through the provision of buffers and corridors, as well as active conservation management.
- Protection, restoration and ongoing management of up to 74% of the site in its natural state; to support high-quality, nature-based tourism experiences; partnering with traditional owners and acknowledging the importance of environmental conservation to the local community.
- Managing traffic pressures by providing shuttle services for workers and visitors and preferentially utilising transportation routes and methods which have adequate capacity.

4.2 Detailed Project Description

The proposed project site consists of 10 freehold lots providing a land area of 648.3 hectares (including internal roads) and currently comprises of pasture, regrowth, open woodland and rainforest.

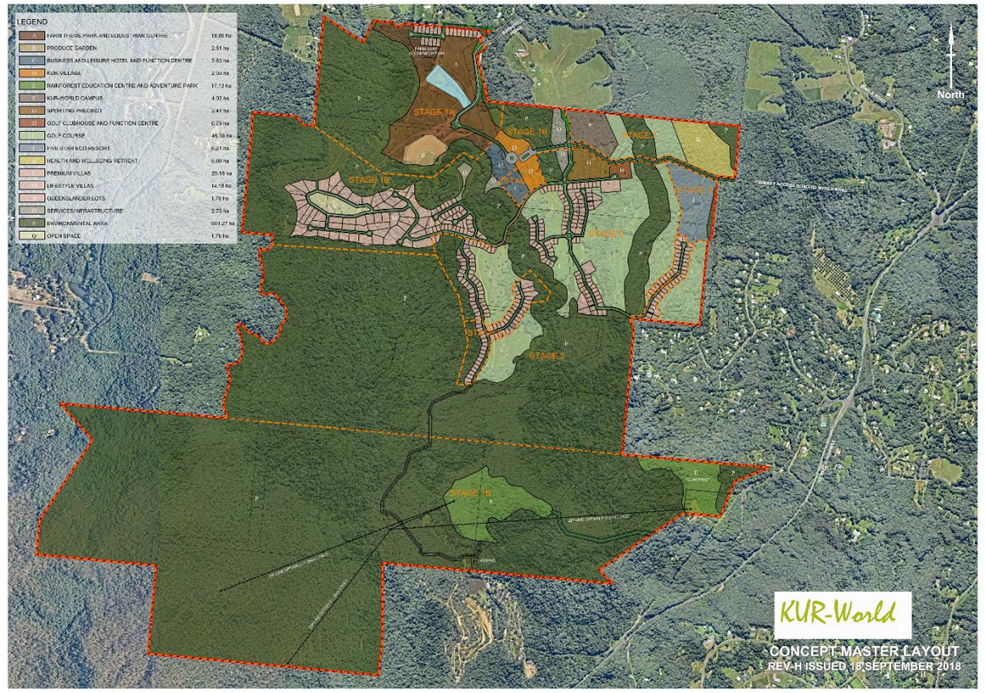
The KUR-World Integrated Eco-Resort will encompass the following themes:

1. Eco-Tourism
2. Education and Business
3. Health and Wellbeing
4. Adventure and Recreation

As part of the EIS process, technical investigations including but not limited to matters relating to flora and fauna, visual impact, cultural heritage and infrastructure services has led to the implementation of design refinements that have occurred to avoid potential project impacts wherever possible, and to mitigate potential project impacts where avoidance was unable to be achieved. Design refinements have also been undertaken in response to community feedback, best-practice design methodologies and commercial considerations in response to constraint driven Project changes.

Table 4-1 summarises the primary differences between aspects of development detailed in the IAS masterplan and the 29 September 2018 masterplan ('2018 masterplan') (Figure 4-5), which together with the July 2018 draft Plan of Development, describes the project for which approval is being sought as part of the SDPWOA EIS process.

Table 4-1: Project Design Refinements in Response to Environmental Impact Investigations

IAS Masterplan	2018 masterplan	
		The total developable area of KUR-World has reduced from 220 hectares in the IAS to about 157.33 hectares in the EIS, primarily in response to design changes implemented to avoid or mitigate potential impacts. Relocation of the KUR-World Campus and Sporting Facilities from the north-west of the site to the north-north east is one of the most significant refinements to the Project. This was undertaken to consolidate the more intensive urban elements of the Project to a location farther removed from verified habitat of *Litoria myola* (Kuranda Tree Frog) as well as improved access to reticulated service network infrastructure and primary road infrastructure. This Project refinement also serves to improve the walkability and functionality of the development by co-locating the campus with the service and retail functions of KUR-Village. The proposed golf course is another significant change, which has been refined from 18 holes and 65 hectares in the IAS down to a 12 hole golf course and 47.14 hectares (including Golf Club House and Function Centre Precinct) in the EIS, primarily in recognition of the environmental constraints of the site.

Aspect of Development	Defining Features	Aspect of Development	Defining Features	Comments
KUR-World Campus	7.5 hectares	**KUR-World Campus**	4.02 hectares	The KUR-World Campus Precinct has reduced in area by 3.48 hectares; predominantly due to the limited availability of land area adjacent the core urban centre of KUR-World i.e. a consequential refinement of the re-location of the KUR-World Campus.
	300 1-2 bedroom apartments		300 beds (comprising 300 student beds and 30 supervisor beds)	The accommodation capacity of the KUR-World Campus has decreased from up to 500 students in the IAS, to the accommodation of up to 300 students and 30 supervisors in the EIS. This refinement has been undertaken in response to market expectation for resident student population requirements and the traffic impacts of KUR-World Campus.

IAS Masterplan		2018 masterplan		
	2-3 storeys		Up to 5 storeys	The more constrained site area of the KUR-World Campus necessitated a more vertical built-form, which is considered in Chapter 6.2 – Visual Impacts.
	20 apartments per block		14 buildings	The number of anticipated KUR-World Campus buildings has reduced, primarily in response to the limited area of the KUR-World Campus Precinct in its new location and an increase in maximum building height. However, the draft Plan of Development (refer Appendix 2B) does not restrict the number of buildings.
Sporting Facilities	3.6 hectares	**Sporting Precinct**	2.41 hectares	The Sporting Facilities Precinct has reduced in area by 1.19 hectares; predominantly due to the limited availability of land area adjacent the core urban centre of KUR-World i.e. a consequential refinement of the re-location of the KUR-World Campus.
	Sports fields, outdoor court, covered training hall		Indoor and outdoor sport and recreation	The function of the Sporting Facilities Precinct remains unchanged.
Health and Wellbeing Medical Retreat	5.26 hectares	**Health and Wellbeing Retreat**	5.66 hectares	The area of the Health and Wellbeing Retreat Precinct has, through more detailed analysis of the environmental constraints, been identified as 5.66 hectares, which is an additional 0.4 hectares to that identified in the IAS.
	70 suites		60 suites	The area of the Health and Wellbeing Retreat Precinct has increased (through a more comprehensive understanding of environmental constraints) the accommodation capacity of the Health and Wellbeing Retreat has also reduced by 10 suites.
	Health herbal laboratory – bioresearch facility, clinic, facial/cosmetic treatments, body and health checks, herb garden		Clinical treatment facility, wellness treatment facility, meditation/yoga locations, reflection lagoon, Chinese herbal medicine treatments	The function of the Health and Wellbeing Retreat Precinct has remained largely unchanged, with the exception that the facility will involve, predominantly, holistic wellness practices. This refinement was driven by market expectation, that is to focus on “wellness” and limit the more traditional medical practices proposed under the IAS

IAS Masterplan		2018 masterplan		
Equestrian Centre and Farm Theme Park	2 hectares	**Farm Theme Park and Equestrian Centre**	18.96 hectares	The KUR-World Farm Theme Park and Equestrian Centre was proposed under the IAS as, predominantly, a residential estate for the horse enthusiast with an equestrian centre as the keystone attraction. Under the EIS the Farm Theme Park, in response to market expectation, has evolved as the primary experiential element of KUR-World and is proposed as a rural theme park attraction in its own right. The Precinct area is 18.96 hectares under the EIS, whereas in the IAS, the equestrian centre was located within an area of 2 hectares. The 16.96 hectare increase in area is predominantly offset by a 14 hectare reduction in area for Premium Villas.
	Covered equestrian area Stables, training and riding yards		Barnwell homestead, cattle yard, promenade, multi-media interactive spaces, historical displays, children's play area and petting zoo	In response to market expectation, the KUR-World Farm Theme Park and Equestrian Centre includes a range of additional facilities to that proposed in the IAS, including displays, activities and accommodation consistent with a rural theme park experience.
			Vehicle parking	
			Stables, arena and small scale food outlets.	
			Chapel and function centre	
			Classroom and farm stay accommodation, consisting of 110 beds	
			15 glamping tents	
	-	**Organic Produce Garden**	2.51 hectares	The Organic Produce Garden is a further Project refinement that is an extension of the KUR-World Farm Theme Park and Equestrian Centre experience and is intended to function as an organic showcase for Atherton Tablelands fresh produce.
			Café and restaurant	
			Interpretive displays and tours	
	-	**Queenslander Lots**	1.7 hectares	The Queenslander Lots Precinct is, essentially, the residual element of the Lifestyle Villas as originally proposed in the IAS as part of the Equestrian Centre and Farm Theme Park. The Queenslander Lots also provide transition from rural residential development to the north of the KUR-World site through to the more central urbanised elements of KUR-World.
			21 lots	-
			800m^2	
			Timber and tin "Queenslander" houses	
Lifestyle Villas	13 hectares	**Lifestyle Villas**	14.18 hectares	

IAS Masterplan		2018 masterplan		
	50 residential lots		56 residential lots	The location of Lifestyle Villa development is different in the EIS to that of the IAS, located to the south-west of that originally proposed and in a lower density form. The minimum lot size in the Lifestyle Villa Precinct in the EIS has increased from 600m^2 to 2,000m^2 i.e. lower density residential development is proposed. Both the locational and density refinements in respect to the Lifestyle Villas Precinct were made in consideration of the environmental constraints of the site.
	600m^2-2,000m^2		2,000m^2-4,000m^2	
		Open Space	Public parkland associated with lifestyle villas	
Premium Villas	34 hectares	**Premium Villas**	20.18 hectares	The Premium Villas Precinct is reduced in area by 13.82 hectares from that proposed in the IAS, including the removal of Premium Villas located to the immediate south of the Equestrian Centre and Theme Park.
	323 Premium Villa lots		288 Premium Villa lots 2 multiple dwelling lots	
	Approximately 600m^2 lots		Approximately 600m^2 lots (where not multiple dwellings)	
Golf Course	65 hectares	**Golf Course**	46.39 hectares	The Golf Course Precinct together with the Golf Course Club House and Function Centre Precinct has undergone the most significant refinement as part of the EIS process, with the golf course being reduced from an 18 hole course as proposed under the IAS, to a 12 hole course as proposed under the EIS. The total area of the Golf Course Precinct combined with the Golf Club House and Function Centre Precinct is reduced in area by 17.86 hectares.
	18 holes		12 holes	
	Club house with restaurant, spa and tennis court	**Golf Club House and Function Centre**	0.75 hectares	
			Clubhouse, function centre, restaurant, bar and tennis courts	
Central Village	0.8 hectares	**KUR-Village**	2.5 hectares	KUR-Village, the main activity centre of KUR-World has increased in area from 0.8 hectares in the IAS to 2.5 hectares in the EIS, in response to market expectation regarding the functionality of KUR-Village, including community feedback. The function of KUR-Village has changed in-so-much as it is located more central to the development and forms the eastern gateway to the KUR-World Farm Theme Park and Equestrian Centre.
	Plaza, restaurant, wine bar, day spa, amphitheatre, convention centre, Tropical food and produce gardens, weekly markets, viewing tower		Plaza, shops, restaurants, offices, amphitheatre, village style goods sales, viewing tower, vehicle parking	
Leisure and Business Resort	3 or 4 star	**Business and Leisure Hotel and Function Centre**	4 star	The area of the Business and Leisure Hotel and Function Centre has increased from 1 hectare in the IAS to 3.83 hectares in the EIS. This refinement has occurred in response to market expectation, led by a need for a function centre for conferences held at the hotel.
	1 hectare		3.83 hectares	
	270 rooms		270 apartment rooms	
	Restaurant, bar, swimming pool, resort amenities, child friendly adventure facilities		Function centre, swimming pool, bar and restaurant	
5 Star Eco Resort	13.1 hectares	**Five Star Eco-Resort**	6.21 hectares	The Five Star Eco-Resort Precinct has reduced in area by 6.89 hectares in the EIS
	200 villas		200 rooms/villas	

IAS Masterplan		2018 masterplan		
	2 storey		Up to 5 storeys	as compared to the IAS. As a consequence of the reduction in area, the built form of the Five Star Eco-Resort comprises more dense development, with the introduction of apartment style accommodation as well as independent villas.
	Day spa, restaurant, pools, chapel/function centre		Central lobby, function area, restaurants and a spa	
Rainforest Education Centre	1.8 hectares	**Rainforest Education Centre and Adventure Park**	17.13 hectares Note – Excludes area allocation for zip line.	The combined area of the Rainforest Education Centre and Adventure Park Precinct has reduced by 3.67 hectares through refinements as a consequence of the EIS process, with development primarily restricted to areas of non-remnant vegetation. This reduced area excludes consideration of the area required to accommodate the zip line that would have a maximum clearing area of approximately 1.5 hectares in the Environmental Area Precinct. The accommodation potential of the southern area of the project has also increased, in response to market expectation, and an additional 50 persons are proposed to be accommodated in the Rainforest and Education Centre and Adventure Park Precinct at any one time. Research laboratories associated with the Rainforest Education Centre in the IAS masterplan have been removed in response to market expectation.
	300 beds		350 persons (315 students and 35 supervisors)	-
	14 boarding cabins		Dormitory style cabins	
	Communal kitchens, function spaces, combined dining and multi-use lecture spaces		Communal buildings, education centre and function centre	
	Research laboratories		10 glamping tents	
Adventure Park	19 hectares		Walking, mountain biking, horse riding, quad bike tours and ziplining	
	High ropes, suspended bridges, zip lines, flying foxes, rope lappers			
Nature Based Activities	Horse riding, bush walking and hiking (area undefined)			

IAS Masterplan		2018 masterplan		
-	-	**Services and Infrastructure**	2.75 hectares	In addition to the allocation of 2.75 hectares of the site for reticulated services infrastructure a number of refinements were undertaken in response to the technical findings of the EIS, including: • Realignment of the proposed internal roadways to better navigate the natural terrain • Removal of swimming pools from the proposed KUR-World Campus and Student Accommodation to improve total water cycle management • Reduction in the footprint of the Five-star Eco-Resort, including the reduction in hard surface pavement and swimming pools
-	-	**Environmental Area**	501.27 hectares	The proportion of the site included in the Environmental Area Precinct has increased in the EIS version of the masterplan. The undeveloped part of the KUR-World site in the IAS masterplan is understood to have been in the order of 406 hectares in area.

Note – the areas in Table 4-1 do not exclude the areas of road reserve located on the KUR-World site and therefore the total area of all precincts exceeds the KUR-World site area of 648.3 hectares.
Note – in between the IAS and the EIS 20.8548 hectares of road reserve were closed on the KUR-World site, which included corrections to historically incorrect survey that, in addition to the absorption of the area of closed roads, changed the area of the lots adjoining the closed road reserves.

The Overall Site Master Layout Version H and development vision for KUR-World incorporated the input of local and regional stakeholders, as well as results from specialist studies conducted for this EIS. The site is divided into northern and southern areas (Figure 4-5). The northern area comprises of Lots 17, 18 and 22 on N157227 (incorporating Lots 1 and 2 on RP703984); and Lot 19 on N157452 (Northern Lots). These lots are located on undulating rises dissected by gullies and have been periodically cleared of vegetation, at least since the 1940s (based on historical aerial photo history) and probably before; with a period of abandonment from the late 1980s/early 1990s to 2015 (Figure 4-6), which represents a period of vegetative growth.

Some previously cleared areas are now characterised by regrowth vegetation. There is some remnant vegetation in these northern lots but most vegetation is mapped as non-remnant (Figure 4-7). Two recognised watercourses traverse this area, both in the western half - Owen Creek (along the western boundary) and its tributary, Haren Creek. These are predominantly rocky creeks interspersed with sandy sections. Additionally, a tributary of Warril Creek arises in the eastern section of the site and Cain Creek (also described as Cairns Creek) arises on the northern boundary of the site.

The following facilities are proposed for the northern area:

- Farm Theme Park and Equestrian Centre
- Queenslander Lots
- Produce Garden
- Lifestyle Villas
- KUR-Village
- Business and Leisure Hotel and Function Centre
- KUR-World Campus
- Sporting Precinct
- Golf Clubhouse and Function Centre
- Golf Course
- Premium Villas
- Five Star Eco-Resort
- Health and Well-Being Retreat
- Glamping
- Environmental Areas
- Services/Infrastructure

The southern area comprises Lot 20 on N157423, Lot 43 on N157359, Lot 95 on N157452, lot 129 on NR456, Lot 131 on N157491 and Lot 290 N157480 (Southern Lots). These lots are characterised by gently to steeply inclined topography and remnant vegetation comprised of either rainforest or eucalypt forest. Historical aerial images suggest these lots have mostly remained uncleared (at least since the 1930s). Some clearing has occurred on Lots 43, 95, 129 and 131, and these areas were kept clear until at least 1971. The southern lots, located higher in the Owen and Haren Creek catchments, are dissected by several smaller drainage lines.

Although the southern section of the site remains comparatively undisturbed, it has been affected by cyclones, fires, feral animals and human activity. KUR-World seeks to enhance the environmental values of this area; with development limited to low impact adventure and nature-based activities. The

Rainforest Education Centre will be developed in an area free from 'of concern' remnant vegetation and essential habitat. The Adventure Park (zip line) will traverse areas of remnant vegetation avoiding 'of concern' remnant vegetation.

Three (3) Zip Line options are contemplated by the EIS. Only one (1) Zip Line option is proposed to be taken forward as part of the KUR-World development. The Zip Line options include:

- Zip Line Option 1 (refer Figure 4-1)
- Zip Line Option 2 (refer Figure 4-2)
- Zip Line Option 3 (refer Figure 4-3 and Figure 4-4).

The Zip Line Option most likely to be undertaken is Zip Line Option 1. Zip Line Option 1 involves the least vegetation clearing to establish the adventure facility, requiring only the clearing of vegetation to establish the western-most tower, with the Zip Line itself being predominantly clear of remnant vegetation, requiring only vegetation trimming nearest the western tower (refer Figure 4-1). Vegetation clearing is discussed more fully in Chapter 8 – Flora and Fauna, wherein Zip Line Option 1 is assessed (only).

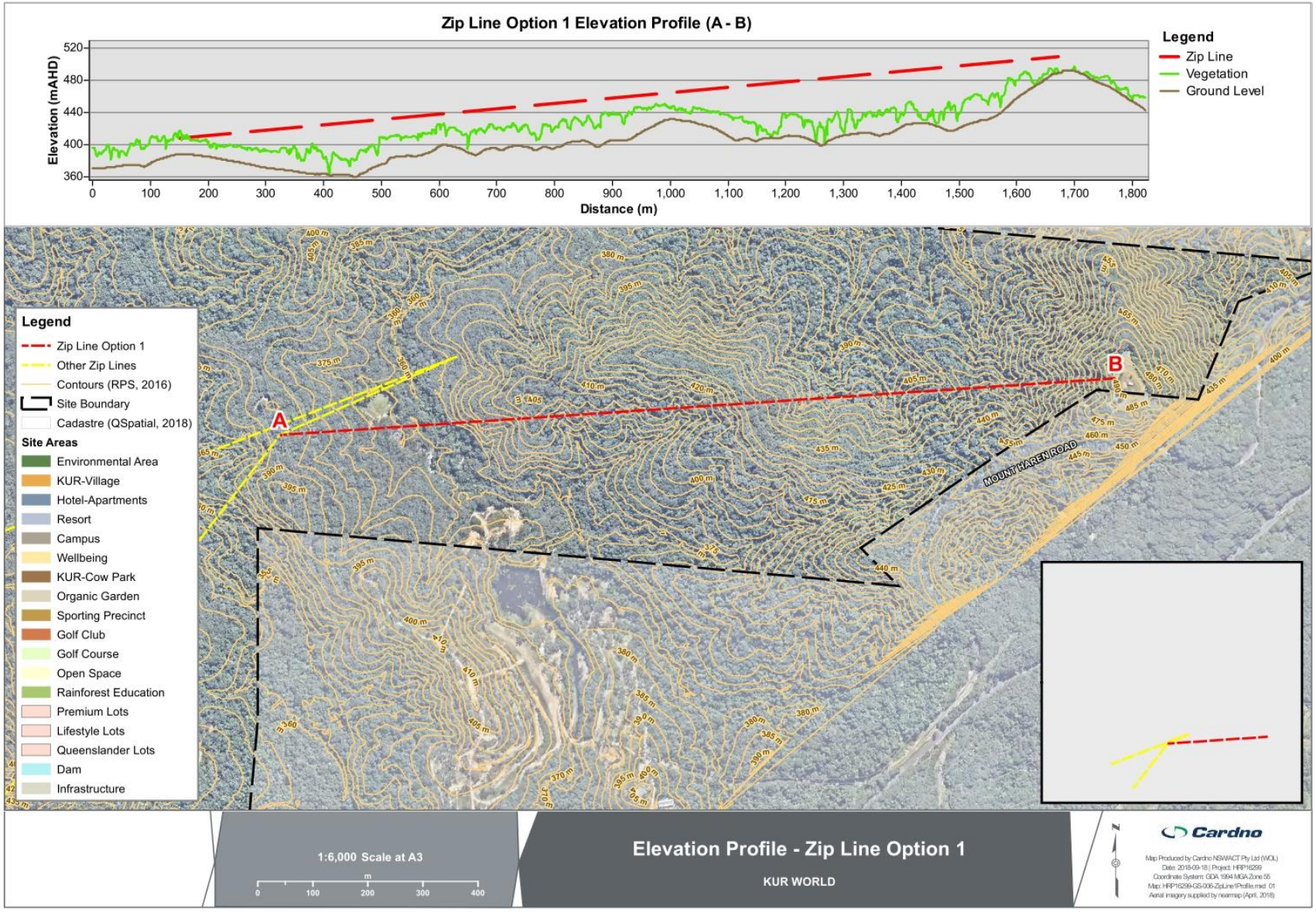


Figure 4-1: Zip line Option 1

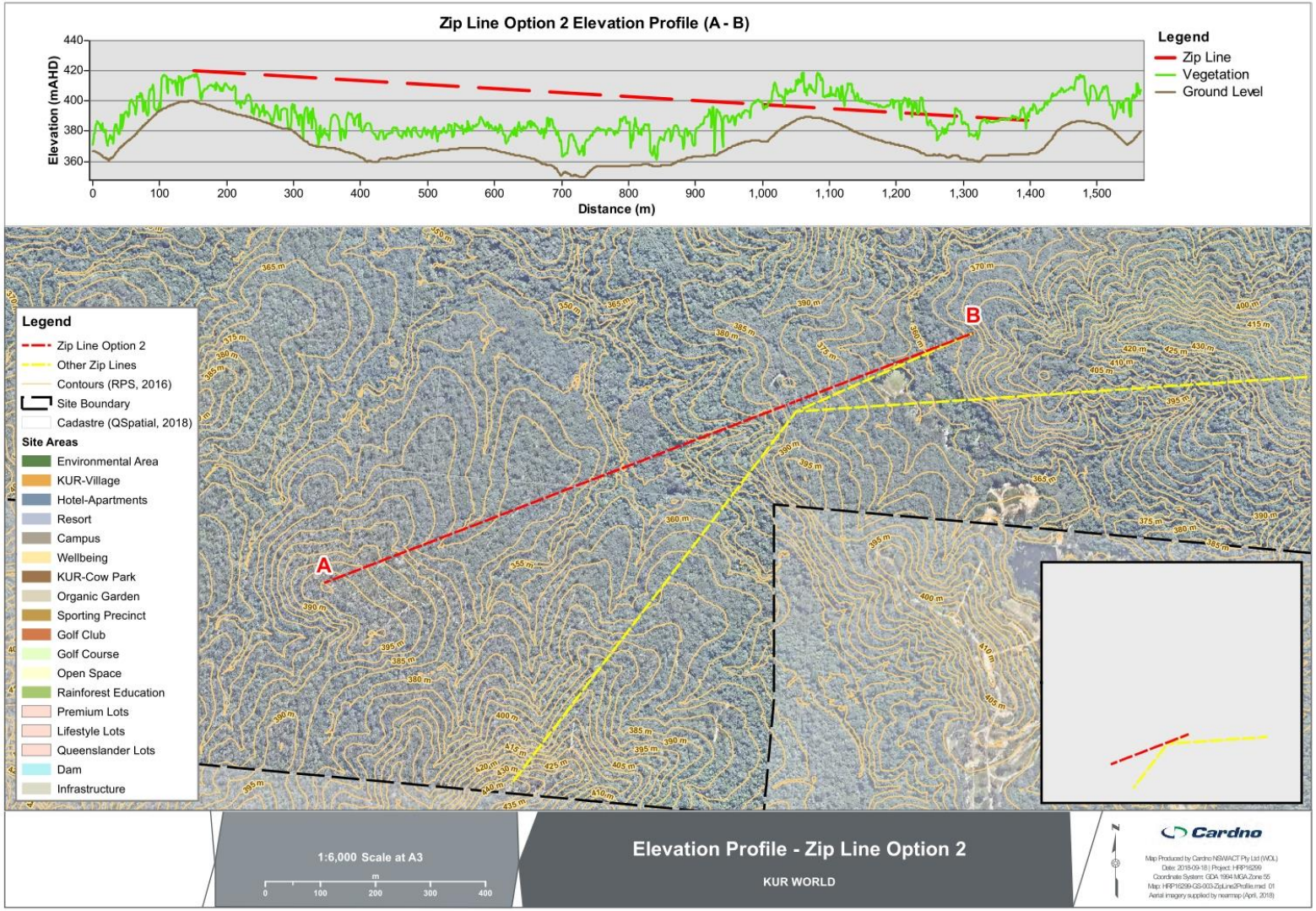


Figure 4-2: Zip line Option 2

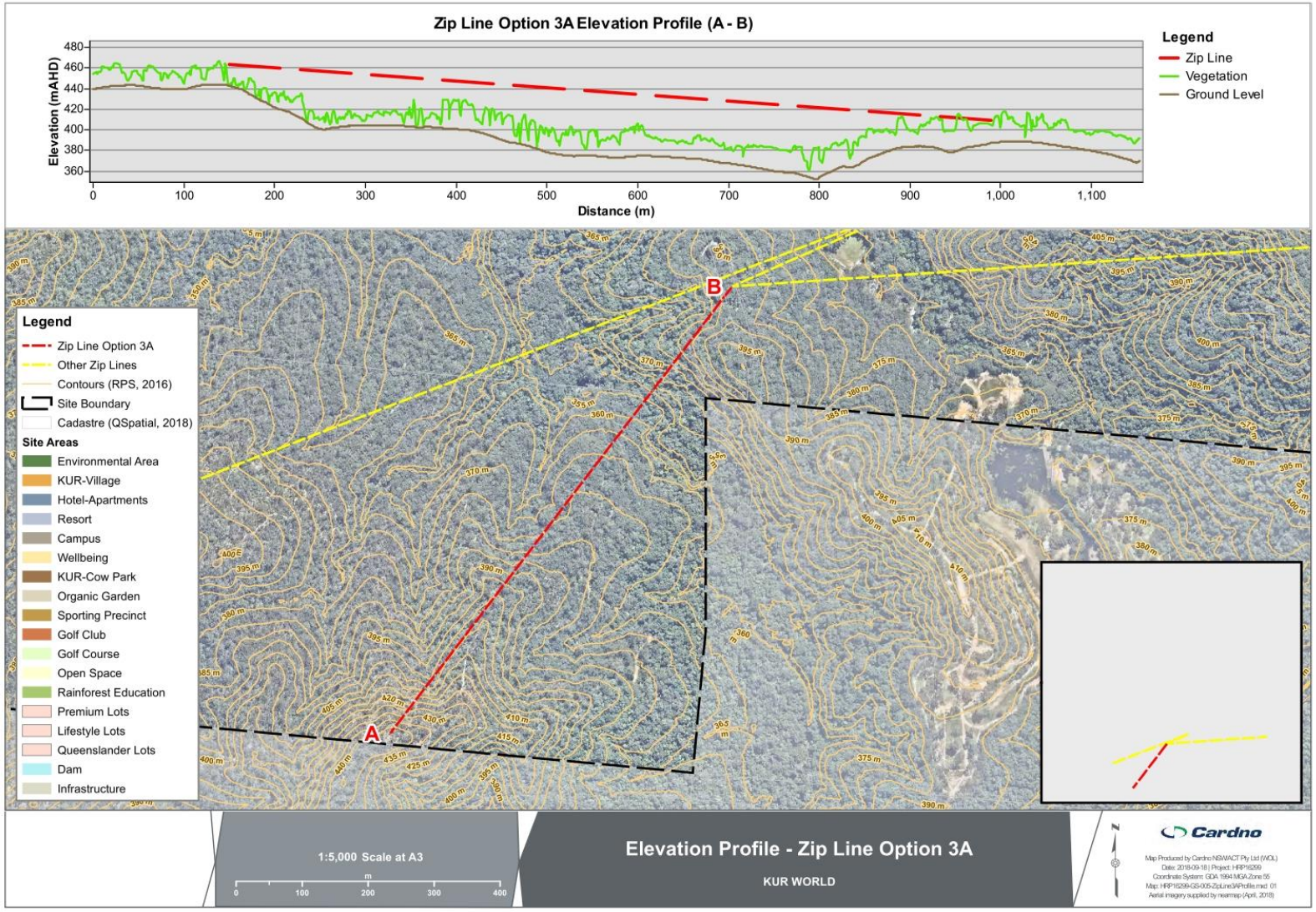


Figure 4-3: Zip line Option 3A

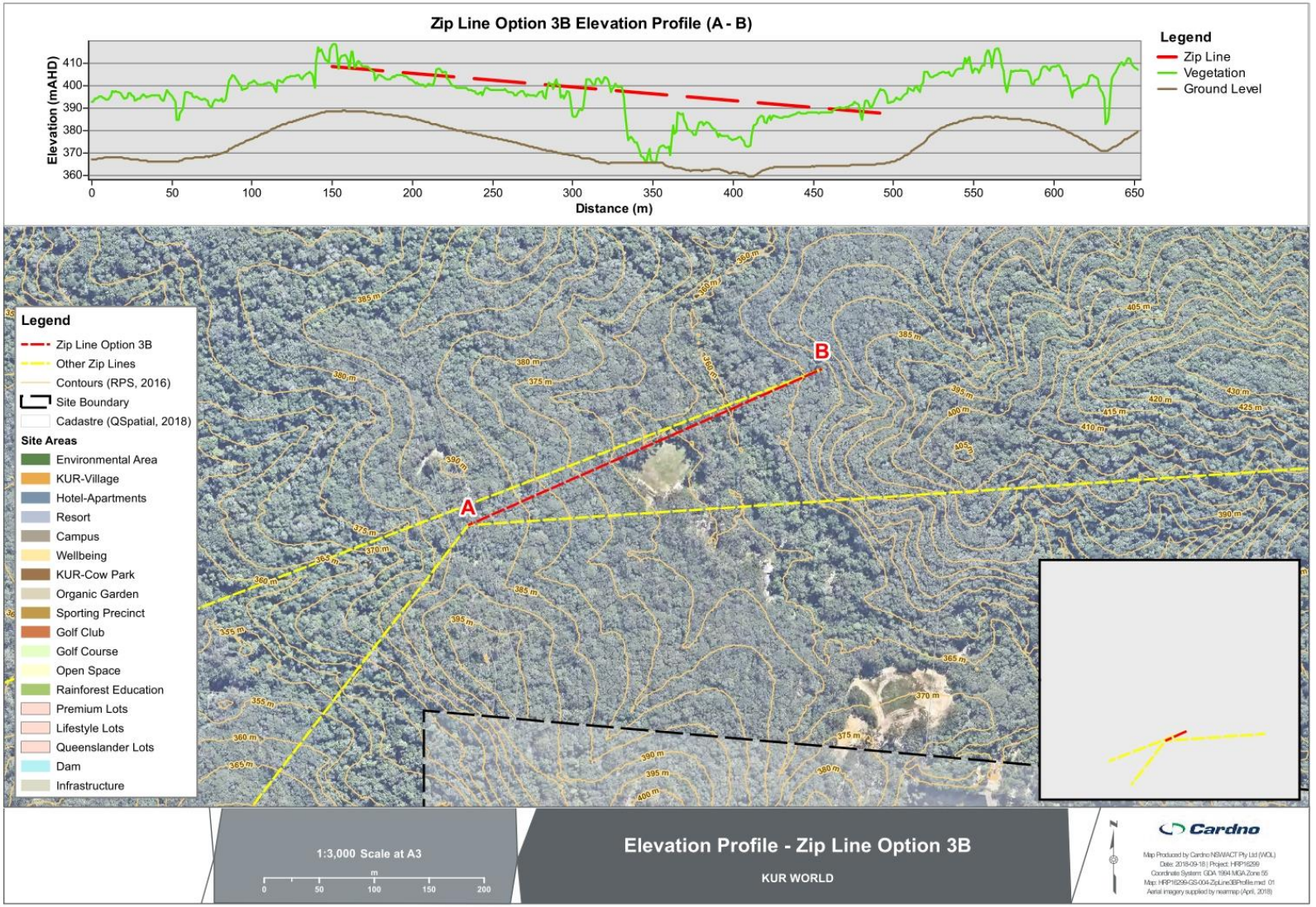


Figure 4-4: Zip line Option 3B

When KUR-World is fully operational, approximately 171 ha (26%) of the 648.3 hectare site (including internal roads) will be developed. The development footprint will retain its rural setting, enclosed by tall forest and woodland, and surrounded by pre-existing rural residential development. As stated above, most of the more intense development will be restricted to the northern area. A staged development plan is proposed over 9 years. This will enable the scheduling and delivery of infrastructure and associated services, in accordance with development commitments and conditions established with operators and government agencies. However, there is some scope for these works to be ultimately sub-staged; based on demand, construction arrangements and/or the need to deliver infrastructure and services. Additionally, unexpected events could potentially affect and change the current timing of activities.

The Overall Site Master Layout Version H is illustrated in Figure 4-5, and Table 4-2 below, shows the specific features, areas allocated and staging. Further details are provided in Appendix 2A – Reference Design Diagrams and Appendix 2B – Plan of Development.

Table 4-2: Specific features of KUR-World staging

Stage	Features
STAGE 1A (2018 – 2019)	
Farm Theme Park and Equestrian Centre – Phase 1 (18.96 ha)	• Bush Walking • Children's Play Area • Petting Zoo of farm animals • Horse Riding • Quad Bike Riding • Glamping (15 Tents) • Café • Central Facilities • Parking
Queenslander Lots (1.70 ha)	• 21 Lots of Queenslander style houses • Internal road
Produce garden (2.51 ha)	• Edible tropical annuals and perennials
Services and Infrastructure	• Barnwell Road Access • Main Power Upgrades • Service Connections
STAGE 1B (2019 – 2020)	
Farm Theme Park and Equestrian Centre – Phase 2 (18.96 ha)	• Amphitheatre • Chapel/Function Centre • Cattle Yard and Promenade • Multi-media Interactive Spaces • Classrooms • Cattle Hall of Fame • Cooking Arena • Iron Stables • Children's Mascot Round Yard • Native Flower Garden • Bee Hive Farm • Fire Pit and Firefly Garden • Barnwell Homestead Upgrades

Stage	Features
	• Enhance Produce Garden • Dragon Zoo • Frog Museum • Tea Hut • Juice Café • Farm Stay Accommodation (110 Beds – 100 students, 10 supervisors)
Equestrian Centre (18.96ha[1])	• Stables • Arena
KUR-Village – Phase 1 (1.89 ha)	• Retail Space • Restaurants • Commercial Offices • Plaza and Amphitheatre • Northern Australia Promenade • Viewing Tower • Parking
Four Star Business and Leisure Hotel and Function Centre (Phase 1) (3.83 ha)	• 60 suites • Pool • Parking
Lifestyle Villas (14.18ha)	• 56 Lots and roads • Open Space
Premium Villas (20.18 ha)	• 39 individual villa lots and roads
Rainforest Education Centre and Adventure Park (17.13 ha)	• Central Facilities • Learning Areas and Research • Student Accommodation (350 Beds – 315 students, 35 supervisors) • Glamping (10 Tents) • Zipline • Adventure Activities • Helipad
Services and Infrastructure	• Main Access Road • Sewerage Treatment Plant • Water Storage • Main Power Connection • Service Connections
STAGE 2 (2021 – 2023)	
KUR-Village – Phase 2 (0.61 ha)	• Village Market • Restaurants • Parking
Four Star Business and Leisure Hotel and Function Centre -Phase 2 (3.83 ha)	• 210 suites • Pool • Parking

[1] Total area of Farm Theme Park and Equestrian Centre

Stage	Features
Golf Club House and Function Centre (0.75 ha)	• Golf Clubhouse • Function Centre • Parking
Golf Course (46.39 ha)	• 12 holes
Sporting Precinct (2.41 ha)	• Football • Tennis • Basketball • Gym • Parking
Premium Villas (14.13 ha)	• 154 individual villa lots and roads • 2 multi-unit lots (60 units)
Infrastructure and Services	• Water Storage • Service Connections • Irrigation
STAGE 3 (2024 – 2026)	
Health and Wellbeing Retreat (5.66 ha)	• Central Facilities and Treatment Rooms • 60 suites
Five Star Eco-Resort (13 ha)	• 200 Rooms/Villas • Pools • Parking
KUR-World University Campus (6.43 ha)	• Learning and Research Areas • Central Facilities/Administration • Student Accommodation (330 Beds – 300 students, 30 supervisors) • Parking
Premium Villas (6.05 ha)	• 93 Lots and roads
Infrastructure and Services	• Service Connections

The Overall Site Master Layout Version H and vision has been developed following extensive site assessments, field studies and feedback from numerous parties; as detailed in the Stakeholder Engagement Plan (Chapter 11).

The staging of the proposed development has been designed to ensure that each stage, as it is developed, will be functional; including all necessary services to facilitate the efficient operation of all land uses. Early stages are not dependent on works or infrastructure contained in later stages and, in the event that later stages do not proceed for any reason, the development would be capable of functioning as intended.

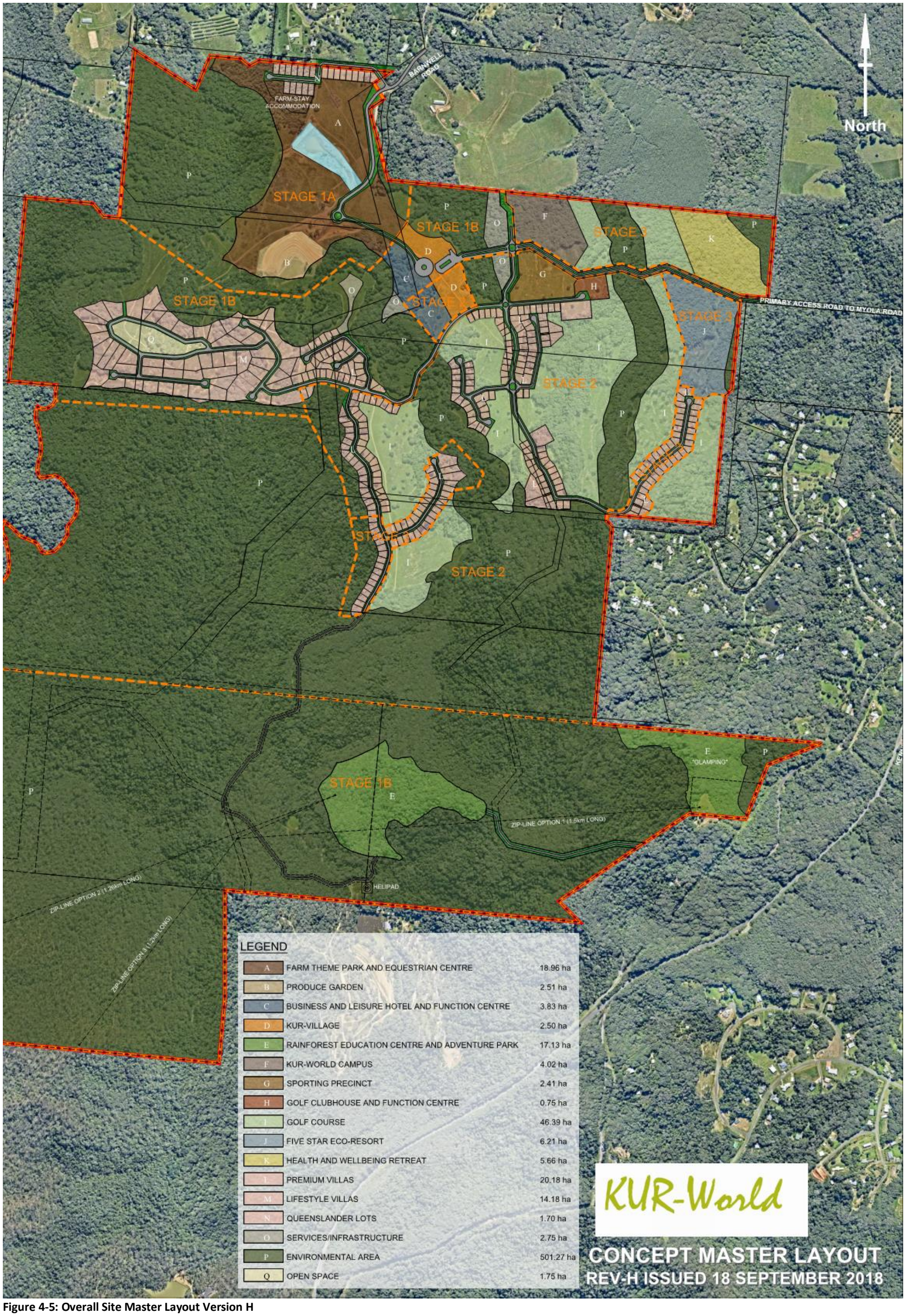


Figure 4-5: Overall Site Master Layout Version H

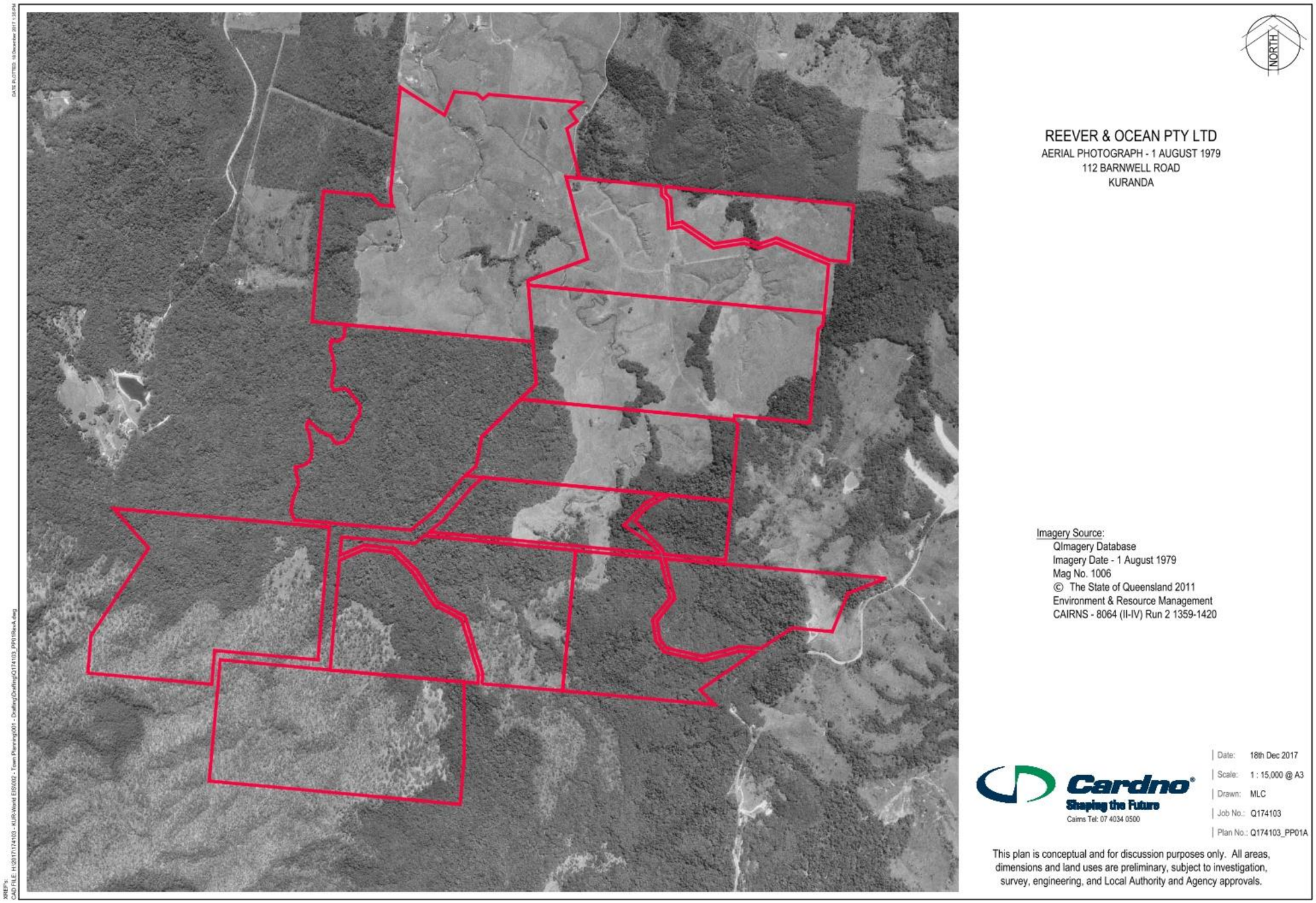
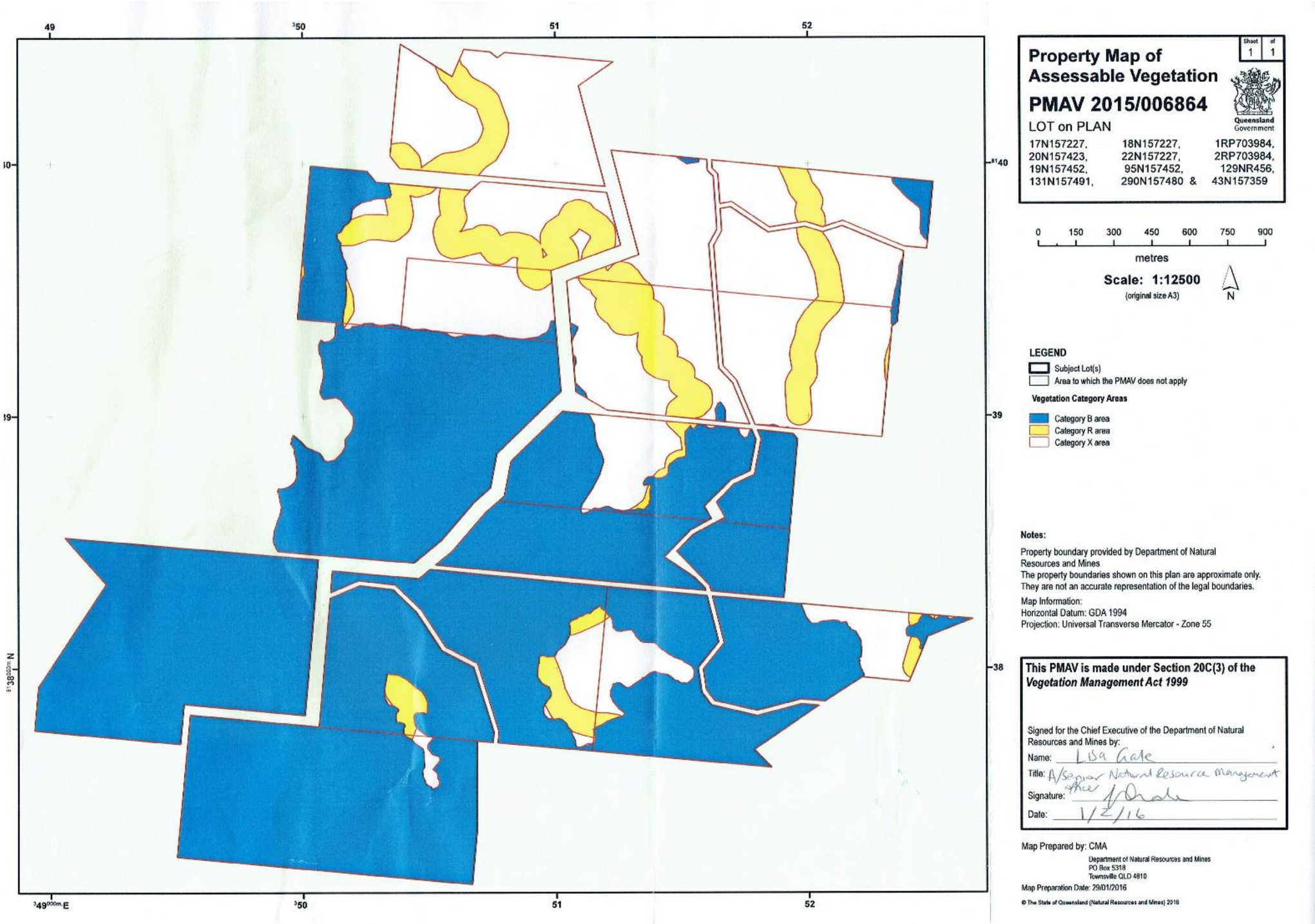


Figure 4-6: Historical site features, showing cleared areas (August 1979)



Property Map of Assessable Vegetation

Sheet 1 of 1

PMAV 2015/006864

LOT on PLAN

17N157227, 18N157227, 1RP703984,
20N157423, 22N157227, 2RP703984,
19N157452, 95N157452, 129NR456,
131N157491, 290N157480 & 43N157359

Queensland Government

0 150 300 450 600 750 900
metres

Scale: 1:12500
(original size A3)

N

LEGEND

- Subject Lot(s)
- Area to which the PMAV does not apply

Vegetation Category Areas

- Category B area
- Category R area
- Category X area

Notes:

Property boundary provided by Department of Natural Resources and Mines
The property boundaries shown on this plan are approximate only. They are not an accurate representation of the legal boundaries.

Map Information:
Horizontal Datum: GDA 1994
Projection: Universal Transverse Mercator - Zone 55

This PMAV is made under Section 20C(3) of the *Vegetation Management Act 1999*

Signed for the Chief Executive of the Department of Natural Resources and Mines by:
Name: Lisa Gate
Title: A/Senior Natural Resource Management Officer
Signature:
Date: 1/2/16

Map Prepared by: CMA
Department of Natural Resources and Mines
PO Box 5318
Townsville QLD 4810

Map Preparation Date: 29/01/2016

Figure 4-7: Property Map of Assessable Vegetation (PMAV)

4.3 Project capital expenditure

Over the nine-year development period the anticipated project capital expenditure is an estimated $855.3 million in resort infrastructure, facilities and accommodation; comprising:

1. Direct capital expenditure through the KUR-World entity - $536.4 million.
2. Capital expenditure through the KUR-World entity and/or others - $318.9 million (capital expenditure to occur as part of the sale of the property as a land and development package or sale of land only, with investors / purchasers to undertake built development).

Expenditure generated by the second group of capital investment will comprise of:

4-Star Resort Units	$105 8 million
Premium Villas	171.6 million
Lifestyle Villas	$33.6 million
Queenslanders	$7.9 million
Total	**$318.9 million**

It is expected that a minimum of 70% of this second group of capital expense will be built and sold to individual investors. However, some investors may choose to purchase land only and directly meet the costs of construction; it is estimated that this will involve no more than 30% of expenditure under the second group of capital expenditure (ie. expenditure of up to $64 million). Total expected capital expenditure made through the KUR-World entity itself is therefore estimated to be a minimum of $790 million.

4.4 Project rationale

KUR-World will be a unique destination on the Atherton Tablelands and the first of its kind in the Far North Queensland region to incorporate multiple elements specifically designed to meet emerging trends in the tourism sector. The wide range of project elements, some of which are not currently available in the region, are predicted to create up to 1,450 Full-Time and Part-Time jobs and additional flow on effects to local businesses. The multiple activities available at KUR-World, along with the different accommodation styles, will attract a broad demographic profile of visitors ranging from students to high-end and middle-income earning families, single visitors and groups, as well as retired and elderly guests. This influx of visitors from a broad target market will assist the region to be more resilient in the rapidly changing tourism sector.

A wide range of domestic and international visitors, including students, is anticipated and will be matched by a variety of suitable accommodation options. Additionally, local residents and day trippers will be able to participate in activities such as the farm theme park, golf course, horse riding, spa, conference/wedding facilities and nature-based opportunities. Tourism is an important component for Queensland's regional economy, both for revenue generated and the high number of people employed. KUR-World is predicted to generate $168 million annually directly from the site plus an additional $170 million for the wider region.

The proposed KUR-World project represents a real opportunity for economic development across the Atherton Tablelands, with direct positive economic impacts in the immediate areas of Myola and Kuranda; where high unemployment and travel to employment outside the local area are key current socioeconomic characteristics. KUR-World is predicted to generate 480,000 day visitors per year by 2023-24. It is expected that most visitors to KUR-World will visit Kuranda at least once during their stay. This would result in an increase of visitors to Kuranda of approximately 50% over the next decade; beyond those otherwise expected by growth in the international and domestic markets.

At present, the Kuranda experience is generally regarded as a 'day trip', with a very short peak period, as most visitors arrive and leave between 11am and 3pm; due to the travel time from Cairns and the hours of operation of the Kuranda train and Skyrail. Since most of KUR-World's guests and visitors will not be restricted by these travel departure times, they will be able to visit the town centre outside peak hours which, in turn, may have the effect of allowing extended trading hours in Kuranda and introducing new opportunities (e.g. dinner trade for restaurants and cafes, night markets).

Increasing the number of visitors and residents in the Kuranda area would generate additional opportunities and services in banking, medical facilities and childcare which are currently at capacity. These would result in improvements for the local residents who travel outside the Kuranda area to work and access many daily requirements. (for details see Chapter 11 Social and Economic Impact Assessment).

The establishment of KUR-World would create the first substantial accommodation facilities away from the coastal area in the Cairns Region and represents a unique opportunity for the Kuranda area and Atherton Tablelands to be revitalised, with local business and residents able to offset the current very strong ageing and high youth unemployment trends of the Atherton Tablelands.

4.5 Regional and local context of the project's development footprint

The Far North Queensland region as a whole covers an area of 339,606km^{2,} stretching from the city of Cairns, north to the Torres Strait and west to the Gulf Country. In June 2012, Far North Queensland's population was 271,273 people, with Cairns comprising 59% (160,285) of this[2,3].

Australia welcomed 8.4 million international visitors as at year ending March 2017. These visitors injected $39.8 billion into the Australian economy. During this period, China was Australia's second largest market for visitor arrivals (1,227,900 visitors) and the largest market for total expenditure ($9.7 b)[4]. The Tourism 2020 Strategy estimates that China has the potential to be worth up to $13 billion in total expenditure by 2020.[5]

KUR-World will be a unique Eco-Resort, providing different activities and targeting the growing nature-based tourism market. Queensland has seen record international and domestic visitation and

[2] http://www.queenslandplan.qld.gov.au/resources/assets/regional-fact-sheets-fnq.pdf (accessed on April 2017)
[3] http://www.cairns.qld.gov.au/region/facts (accessed on April 2017)
[4] http://www.tourism.australia.com/content/dam/assets/photograph/digital/1/6/x/m/h/2003129.pdf (accessed on August 2017).
[5] http://www.tourism.australia.com/en/markets-and-research/market-regions/greater-china.html (accessed on August 2017).

expenditure in the period to June 2016 underlines the potential for more growth ahead[6]. Tourism is the third largest export industry in Queensland (behind coal and food)[7], supporting almost 10% of all Queensland jobs with more than 52,000 tourism businesses (61% of these in regional areas)[8]. Increasing numbers of international (+11.3%) and domestic visitors (+5.7%) to Queensland, creating a unique opportunity for KUR-World to participate in the sustainable growth of the region and to offer an innovate setting with diverse activities for a wide range of visitors.

Additionally, the Proponent's Chinese cultural heritage and business connections to the growing Chinese market offer a unique opportunity for KUR-World to attract these visitors and promote both the Atherton Tablelands and the wider region.

4.6 Relationship to other major projects and/or developments

This section describes the relationship between KUR-World and other significant tourism developments or tourism related developments in Regional Queensland.

In Cairns, the Cairns Shipping Development Project will see the expansion of existing shipping and port infrastructure. The operational capacity of the port will be expanded through dredging works to widen and deepen the existing outer shipping channel, inner harbour channel and crystal swing basin, and create a new swing basin. The project will also involve upgrades to the existing cruise shipping wharves and will enable the future expansion of the HMAS Cairns naval base.

Elsewhere in Queensland, Iwasaki Sangyo Co. (Aust) Pty Ltd is drafting an EIS for its proposed Capricorn Integrated Resort, located north of Yeppoon. This project seeks to develop the southern portion of The Mercure Capricorn Resort Yeppoon's landholdings, featuring an integrated resort community to expand the tourism potential of the Capricorn Coast. The proposal includes the development of a 300-room five-star resort, a golf course, caravan and recreational vehicle park, Wagyu cattle farm including farm stays, cattle and sheep farming and educational activities, a residential community of 8000 dwellings a village centre, a conservation precinct and an airstrip - for tourism, charter flights and a potential fly-in, fly-out hub for mining. The project will also promote natural wetlands and reinforce the Central Coast as a focal point for tourism and recreation.

The Lindeman Great Barrier Reef Resort Project proposed by White Horse Australia Lindeman Pty Ltd, has recently received approval for its EIS. This proposal seeks to redevelop and expand the existing resort at Lindeman Island, in the Whitsundays. This project will include approximately 335 suites and villas across five resort precincts, a central village comprising retail outlets, restaurants, bars and facilities to support the complex and an upgrade of the existing private airstrip. This project also involves the reconfiguration of land tenure around the resort, including revocation of an area of National Park, environmental enhancements with coral planting, a Great Barrier Reef educational centre, nature reserve and vegetation replanting programs. The central theme of this project is the marine environment and the GBR.

[6] 2016 State of the Industry. Department of Tourism, Major Events, Small Business and the Commonwealth Games. State of Queensland, 2016.
[7] Queensland Statistician's Office Tourism Research Australia. State Tourism Satellite Accounts: 2014–15
[8] Tourism Research Australia. State Tourism Satellite Accounts: 2014–15 Tourism Research Australia & Tourism businesses in Australia: June 2011 to June 2015. Australian Bureau of Statistics.

The unique location of KUR-World on the Atherton Tablelands and its proximity to Cairns international airport offers a materially different experience and opportunities for visitors, local residents and investors than other major projects. Additionally, the range of experiences KUR-World development offers is not available anywhere else in the region in a single destination. The Cairns Shipping Development Project will increase the operational capacity of the Cairns Port and harbour, allowing larger cruise ships to dock in Cairns. The project is anticipated to enhance the opportunity to achieve increased tourism in the region through both a greater number of cruise ships and larger cruise ships visiting Cairns thus increasing the tourist population. The Cairns Shipping Development Project will therefore increase the number of tourists who are able to visit KUR-World.

4.7 Workforce numbers

KUR-World will generate a need for local workers during construction and operation.

4.7.1 Construction phase

During construction, most workers will be sourced from the wider Atherton Tablelands (including Mareeba, Atherton and Kuranda) and the surrounding region. The region is anticipated to have the capacity to absorb the expected construction workforce without causing any undue stress to the region's economy (refer to Ch11 – Social and Economic Assessment).

During the 9 year construction period, it is estimated that the project will provide approximately 348 Full-Time and Part-Time construction jobs in the peak construction year of 2020-2021 and 713 jobs including Type 1 "flow-on" in the peak construction year.

4.7.2 Operational phase

During the operational phase of the proposed KUR-World project, most workers will also be sourced from Kuranda, the Atherton Tablelands and surrounding region. It is predicted that some newcomers will move to the region to gain employment in the education, health and hospitality sectors. As the development will cater for a range of international visitors and students, employment dedicated to these services will be necessary.

When fully operational in 2027-28, KUR-World is expected to generate about 1,450 direct operational jobs (Full-Time and Part-Time) and a further 1,313 (approximate) through related expenditure in the region by resort visitors; making a total of 2,763. Unlike other sectors which experience a 'let down' after construction, employment levels associated with the proposed development, inclusive of flow-on jobs, should experience a steady increase from the start of construction (2018-2019) until fully operational (2027-2028) (see Chapter 11 – Social and Economic Assessment).

4.8 Personnel accommodation

4.8.1 Construction

It is expected that most of the construction workforce will be sourced from local companies on the Atherton Tablelands and within the Far North Queensland region. Shuttle buses will be established to transport local workers from their current place of residence to/from the site each day, whether this be in Kuranda, Mareeba, Atherton or other locations within the region. If the market cannot meet the required labour demands, labour will be sourced from Cairns and other areas of Queensland/Australia as required. Construction companies will be encouraged to provide accommodation for their workers in either Kuranda or Mareeba for the duration of their contract.

4.8.2 Operation

During the operational phase, it is expected that most workers will also be employed from the surrounding region. However, some people are expected to move to the region seeking job opportunities. It is expected that most of the operational workers would live in Kuranda or other communities of the Tablelands, commuting via shuttle to KUR-World. KUR-World will result in a special growth period for the Kuranda area with a growth in overall population in the region of 15% predicted when the resort is fully operational.

4.9 Construction process and program

The proposed construction processes and program is detailed in the following subsections and are considered to be consistent with industry standard practices. The works and processes are based on the proposed development described in the reference design drawings included at Appendix 2A.

The infrastructure requirements for the proposed development are described in Chapter 7 of the EIS.

Chapter 13 – Transport describes the construction transport and parking requirements.

4.9.1 Proposed construction stages

Table 4-3 below outlines the proposed construction staging for each year until completion when all stages will be operational.

Table 4-3: Proposed Construction Staging

Year	Proposed Construction Stage	Proposed Operational Stage
2018/19	Stage 1A commences construction	No stages operational
2019/20	Stage 1B commences construction	Stage 1A commences operation
2020/21	Stage 1B continues construction	Stage 1A continues operation
2021/22	Stage 2 commences construction	Stage 1B commences operation
2022/23	Stage 2 continues construction	Stage 1B continues operation
2023/24	Stage 2 continues construction	Stage 1B continues operation
2024/25	Stage 3 commences construction	Stage 2 commences operation
2025/26	Stage 3 continues construction	Stage 2 continues operation
2026/27	Stage 3 continues construction	Stage 2 continues operation
2027/28	Construction complete	Stage 3 commences

4.9.2 Pre-construction activities

Detailed design and documentation of each stage and portion of the works would be completed generally in accordance with the reference design prepared as part of this Draft EIS. The proposed infrastructure will be designed in accordance with the relevant Australian Standards, Guidelines and Authority Manuals.

The FNQROC Development Manual is the guideline adopted by Mareeba Shire Council for undertaking the planning, design and construction of developments in the Mareeba Shire Local Government Area. The FNQROC Development Manual consists of a series of design guidelines, construction specifications, standard drawings and local government specific requirements. The design guidelines specify the required road reserve widths, utility and service corridors and offsets from property boundaries. Generally, utilities and services will be located within existing or proposed road reserves as nominated

on the FNQROC Standard Drawing S1004. Where services are required to be located within private property the requirements of the FNQROC Development Manual will be followed including offsets from property boundaries and the creation of easements where required. Where the nominated offsets are not achievable externally or within the proposed development a suitable alignment will be determined with Mareeba Shire Council.

A geotechnical investigation would be completed prior to detailed design to further assess ground conditions and determine design requirements, including but not limited to California Bearing Ratio (CBR) values for the design of pavements, bearing capacity for design of building footings, required parameters for design of retaining walls, presence of ground water and recommendations with regards to temporary and permanent earthworks batters.

Prior to construction of each stage of the project all planning approvals will have been obtained, engineering construction drawings prepared and a managing contractor engaged.

Chapter 21 of this Draft EIS outlines proposed management plans that will be in place to manage the potential impacts of the project during construction and operation. This includes aspects such as traffic and transport, work health and safety, water quality, fauna and flora, feral animal and weed/pest control and bushfire management. These plans will include objectives, performance measures and monitoring arrangements and will bind contractors involved in the construction and operation of the project.

Below are examples of the management plans the proponent will have prepared as part of the construction contract:

- Project Management Plan (PMP): The PMP will describe the roles and responsibilities of project personnel, the schedule of project site meetings, details of sub-contractors and suppliers as well as include a For Construction (FC) program outlining the critical path of construction activities to reach the Practical Completion (PC) date.
- Workplace Health and Safety Management Plan (WHSMP): The WHSMP will describe the contractor's health and safety management system, risk management and mitigation processes and site safety particulars including site induction requirements, the site compound layout, access, emergency contact details and emergency evacuation procedures. The WHSMP would also be expected to include details on the management and reporting of safety incidents and near misses
- Traffic Management Plan (TMP): The TMP will describe all traffic and pedestrian controls required external and internal of the site for each stage of works and for specific activities. The TMP would be expected to detail requirements for site communications (for example, two-way radios), traffic management signage and traffic control personnel including site specific Traffic Guidance Schemes (TGS's) (that is, drawings showing proposed traffic control layouts for specific stages and work activities).
- Quality Management Plan (QMP): The contractor's QMP will describe specific quality assurance requirements to ensure that the scope of works is completed in accordance with the project specification. The QMP would be expected to list the Inspection Test Plans (ITPs) that will be used to monitor and record compliance and the procedure for and reporting of non-conformances.
- Environmental Management Plan (EMP): The project EMP will outline procedures required for the management of likely environmental issues, including but not limited to noise, dust, vibrations, hazardous substances, construction waste, stormwater run-off, ecological values and Erosion and Sediment Control (ESC). The plan would also include ESC plans for each stage or specific work activity showing how erosion and sedimentation on the construction site is minimised and managed.

Management plans are to be developed for each stage of KUR-World and be specific to the project, in that they address the existing site conditions, topography, project constraints and the proposed design.

4.9.3 Early works – site preparation and earthworks

Site preparation and earthworks will be undertaken for each stage of the project prior to the commencement of general construction works. The required activities will be identified in detail during the construction planning phase. Early works will be the subject of development applications to Mareeba Shire Council and are anticipated to include the following activities:

- Set-up of site compound including designated delivery and material stockpile locations. The location of these areas will be determined during construction planning, and they will be located to avoid additional vegetation clearing and away from ecologically sensitive areas of the site, including creeks and overland flow paths.
- Set up of electricity for the construction period, per stage. Energy sources during construction will include the existing Kuranda network supplying the site, combined with diesel generators.
- The need for an onsite concrete batching plant will be determined during detailed construction planning and if required will be located to avoid additional vegetation clearing and away from ecologically sensitive areas of the site including creeks and overland flow paths.
- Set up of water for the construction period will be as follows:
  - During construction of Stage 1A, non-potable water demands will be supplied via temporary intakes from the existing farm dam and groundwater bores, until the onsite groundwater treatment plant is commissioned. Potable water will be supplied via tankers from the Mareeba Shire Council (MSC) network and stored in rainwater tanks for onsite use (estimated maximum 15 kilolitres per day).
  - During construction of Stage 1B, Non-potable water demands will be supplied by the groundwater treatment plant and non-potable water network, treating and distributing water from the farm dam and groundwater bores. Potable water and any additional demand which cannot be met by the site supply (estimated maximum 0.3 mega litres or approximately 15 tanker vehicles per day) will be supplied via tankers from the MSC network.
  - During construction of Stages 2 and 3, all construction and operational water demands will be supplied by a combination of the groundwater treatment plant, wastewater treatment plant, and potable water network in accordance with the ultimate development water supply strategy.

For further details regarding construction water demand forecasts and strategy refer to Chapter 7, 'Infrastructure'.

The set-up for wastewater disposal and treatment for the construction period will be as follows:

- For Stage 1A, portable toilets and amenities are to be used and the wastewater is to be disposed of off-site, via trucks, to the Kuranda WWTP.
- For Stage 1B onwards, portable toilets and amenities are to be used and the wastewater is to be disposed of directly into the on-site WWTP which will have sufficient capacity.
- For further details regarding construction wastewater loading forecasts and strategy refer to Chapter 7 'Infrastructure'.
- For energy supply during construction, it is proposed that during periods of high demand, diesel generators will be utilised in a dual-mode arrangement operating synchronous with the mains power substation feed such that the total load is met. During periods of low load, the Kuranda network supplying the site power is considered to be sufficient.

- Installation of tree protection fencing and exclusion zones prior to the commencement of vegetation clearing. Additional environmental management measures related to clearing and minimisation of impacts to flora and fauna are detailed in Chapter 8, 'Flora and Fauna'.
- Installation of ESC measures prior to earthworks activities to protect downstream waterways and catchments. ESC measures will be specified in detail in the ESC plan for each stage of construction and would typically include sediment fences, truck wash down facilities, temporary drainage swales with check dams to divert overland flow around earthworks and sediment basins to collect run off from earthworks areas. Sediment basins will require stormwater quality testing prior to discharge, and this will be detailed in the ESC plan. It has been determined that the existing surface soil has a low erosion risk but that the exposed subsurface soil has a slow infiltration rate and thus a high risk of erosion from faster run off. For further details, refer to Chapter 3, 'Site Description'.
- Stripping of top-soil (typically 150mm – 200mm) within all proposed development areas for each stage of works, including but not limited to roadway extents, service trench alignments and service infrastructure, retaining wall footing extents and building extents. Where feasible, top soil will be stockpiled for reuse at the site.
- Cutting, filling and grading works to achieve formation levels for pavements, retaining wall footings, sporting grounds and building pads. All buildings are designed as pad-on-ground with permanent batters of maximum 1 (vertical) in 4 (horizontal). The exception to the pad-on-ground design is individual villas on residential and accommodation lots where the existing grade would result in excessive earthworks to achieve pad on ground footings. Therefore, these villas will incorporate pole-type construction with lightweight column and beam framing and suspended floor.
- Each stage of the project endeavours to balance cut and fill volumes to minimise the need for disposal of material from site and/or importing of fill material. Some importing of fill may be required where a particular material quality is required such as below building pads.

Refer to Drawing – Appendix 2 A: Reference Design Diagrams - Site Clearing Extents, Road and Building Infrastructure – 253251-00-C-RD-101 for conceptual earthworks plan.

4.9.4 Construction Methods

The proposed development will require construction methods similar to common commercial development of low-rise building construction, earthworks, roadworks and public utility plant infrastructure.

The following key construction activities are required for the development:

- Road works (internal): primarily granular road base courses with asphalt wearing courses, concrete kerbs to all road ways, line marking on some primary roadways and at some intersections, road side barriers where adjacent to retaining walls in cut. Concrete pavements will be used in loading and delivery services areas and coach set down and pick up areas (that is, where there are high movements and turning manoeuvres of heavy vehicles).
- Road works (external): intersection upgrade works at the intersection of Myola Road and Barnwell Road, new roundabout installation at the intersection of Myola Road and the new access road to KUR-World and the construction of the new access road. as per the internal road works above.
- Retaining walls: primarily reinforced concrete or block work internally associated with proposed buildings. Gabion basket type retaining walls associated with road works where required.
- Bridges: primarily pre-cast concrete deck units installed on piers and girders via crane lifts

- Utility Services: construction of new utility plants (water and waste water treatment plants) and key infrastructure nodes, trenching works, installation of individual services by qualified personnel, connections to external mains, connections to internal service infrastructure, connections to individual lots and facilities, testing and commissioning. Further details on these services is provided in Chapter 7 'Infrastructure'.
- Building construction: the proposed buildings have been categorised into five types:
  - building type 1 (mostly residential) – timber frames and trussed roofs
  - building type 2 (residential and small public spaces) – block work external walls with internal timber partitions and timber trussed roofs
  - building type 3 (commercial, one storey) – block work external walls with steel trussed roofs
  - building type 4 (commercial, two and three story) – steel frame and roofs
  - building type 5 (accommodation and education, two and three storey) – reinforced concrete construction.
- The report in Appendix 10, *Construction Phase – Regional Supply Capacity* (Thirkell Consulting Engineers and Building Design) provides details of material sources and the capacity/availability of suppliers expected for the construction phases.
- The following items are anticipated to require input from specialist contractors/installers: golf course playing greens, sporting fields/courts, equestrian arena, water treatment plant, sewerage treatment plant, zip line and high ropes course infrastructure.
- Landscaping and signage: is typically the final stage of construction and can sometimes be undertaken concurrently with building fit-out works.

A large variety of equipment and plant is expected to be required for the construction of each of the KUR-World project stages including those commonly used within similar commercial construction processes for low-rise building construction, earthworks, roadworks and public utility plant infrastructure. Key items that are anticipated to be required include but are not limited to the following (to be confirmed during construction planning):

- earthworks and road works plant: for example, diggers/excavators, rollers, graders, loaders, bitumen sprayer.
- other plant and machinery: cranes, trucks for moving materials around the site
- smaller equipment: water carts, generators for power supply, concrete mixers for small in-situ works, formwork materials and equipment, scaffolding, hand tools, dump bins
- site compound and facilities: site office sheds, temporary fencing, portable bathrooms

Plant and equipment will be managed onsite to minimise nuisance (that is, noise and vibration or dust generation) to neighbouring residents and minimise impacts on the environment. This will include implementation of no-go zones on the site to protect sensitive areas, anti-idling policy to minimise emissions and noise, designated refuelling areas and procedures, use of designated access routes within and external to the site.

Construction materials stored on the site will have relevant Material Data Sheets (MDSs) containing product information, storage requirements and incident response procedures. Hazardous materials such as fuels, oils or chemicals will be stored in sealed containers within a bunded area to mitigate impacts to the environment should there be a spill.

4.9.5 Construction logistics

It is anticipated that construction works will take place on Mondays to Fridays from 6:30am to 3pm. These hours are consistent with Mareeba Shire Council requirements for construction noise. Any work outside of these hours would be limited and addressed in a construction management plan in respect to specific needs as required and would be subject to with the approval of Mareeba Shire Council, as part of any future development approvals. Site access for Stage 1A will be via the existing site access on Barnwell Avenue. The new access road from Myola Road will be constructed as part of Stage 1B however the road pavement design is unlikely to accommodate heavy construction vehicles. Therefore, it is anticipated that heavy construction vehicles and machinery will continue to access the site via Barnwell Road for the duration of each of the construction stages. The road pavement design of the internal roads is also unlikely to accommodate construction vehicle loadings and the contractor may be required to form temporary construction roads within the site for use by heavy vehicles and machinery.

Temporary construction access roads, limited parking for the work force, delivery areas, site offices and storage areas for plant and materials will be developed in existing cleared areas and away from ecologically sensitive areas.

Water supply for construction purposes will be achieved in accordance with the proposed water supply and waste water master plan. Refer Chapter 7, 'Infrastructure'.

Effluent and waste water will be disposed of in accordance with the proposed water supply and waste water master plan. Refer Chapter 7, 'Infrastructure'.

Waste will be managed and disposed of in accordance with an approved waste management plan. Refer to Chapter 15, 'Waste Management' for details of proposed waste management measures for construction and operation.

4.9.6 Commissioning

The commissioning process for each stage of the project stages includes engineering certification of the construction and preparing the development for operation.

The contractor will submit all Quality Assurance (QA) documentation to the engineer for review and certification. The below lists some of the key QA documentation that will be required for certification but this list is not exhaustive and will be confirmed in the construction specification issued with the construction documentation:

- as-constructed drawings
- topographic survey of finished pavement levels (certified by a registered surveyor)
- survey of finished pipe levels and grades (certified by a registered surveyor)
- closed Circuit Television (CCTV) of finished pipe works
- concrete test results for pavements, retaining walls, bridge works and building structures works
- other QA documentation and test results as outlined in the construction specification.

The engineer will also complete a practical completion inspection at the completion of each stage of works and compile a defects list for the contractor to rectify prior to handover of the site to the owner/operator. The contractor is typically liable for defects in works for 12 months following the practical completion certificate being issued.

In addition to submitting the above and achieving engineering certification, the contractor shall also prepare and submit all operation manuals and maintenance manuals and guidelines to the owner/operator.

4.10 Sourcing materials and labour

Construction materials quantity estimates and supply source survey has been undertaken by Thirkell Consulting Engineers and Building Design and is included in Appendix 10. The study identifies the likely quantity of materials required and the potential source for supply of stated materials.

It is anticipated that for the construction of KUR-World, the bulk of construction materials will be sourced from the Atherton Tablelands region where possible, namely Mareeba, Atherton and surrounds. This is to minimise the use of the Kuranda Range road by construction-related traffic. The supply source survey (Appendix 10 - completed by Thirkell Consulting Engineers and Building Design) indicates that sufficient supply capacity exists within local Atherton Tablelands region suppliers. Where materials are not available locally, materials may be sourced from Cairns or alternatively, as the quantities will be significant, select materials supply may be sourced directly from Townsville or South East Queensland. Tenders for the supply of these materials will be advertised locally in all cases.

It is anticipated that the majority of the labour workforce will be sourced locally from the Atherton Tablelands Region, however certain skilled labour for specialist construction activities are likely to be sourced from other regions around Australia. Where labour is sourced from outside the region, personnel would reside in local accommodation within Kuranda, Atherton Tablelands and the Cairns Regions whilst working on the project.

An estimate of the earthworks volumes for each stage of the project is shown in Table 4-4 below. Where a stage results in excess, the excess material will be stockpiled on site for use in the next stage of works. Where a stage results in a shortfall of material, a suitable area of the future works will be identified to excavate material from. This area would be managed and stabilised to ensure erosion control. During the detailed design phases of the project, design elements will be further refined to optimise earthworks volumes and aim for a balance in cut and fill material. Where this is not possible and where a stage results in a need for importation of material, additional material will be imported to the site. It is anticipated that fill material will be imported from local quarries in the Atherton Tablelands Region (refer to Appendix 10 - Thirkell report and Chapter 11 for more information). In particular, it is noted that two quarries existing west of the project site along the Kennedy Highway at Tichum Creek. These quarries currently supply materials to the Atherton Tablelands and Cairns Regions.

Table 4-4: Estimate of Earthworks Volumes

Project Stage	Total Cut (cubic meters)	Total Fill (cubic meters)	Balance (cubic meters)
Stage 1A	-17,510	13,620	-3,890
Stage 1B	-181,005	217,035	36,030
Stage 2	-84,595	35,755	-48,840
Stage 3	-58,210	61,955	3,745
Project Total	-341,320	328,365	-12,955

A preliminary estimate of civil construction materials for the project is provided in Table 4-5 below.

Table 4-5: Preliminary Estimate of Civil Construction Materials

Construction Material	Stage 1	Stage 2	Stage 3	Project Total
Road Gravel Pavement (cubic meters)	15,300	4,130	800	20,230
Asphaltic Concrete Road Pavement Seal (cubic meters)	1,840	500	100	2,440
Stormwater Pipe (meters)	9,450	3,250	1,500	14,200
Water Reticulation Pipe (meters)	11,400	5,700	1,900	19,000
Sewer Reticulation Pipe (meters)	12,000	6,000	2,000	20,000
Utilities Conduits (meters)	18,000	9,000	3,000	30,000

An estimate of building materials has been prepared by Thirkell Consulting Engineers and Building Design (Thirkell, 2017 – Appendix 10), an extract from the report is included in Figure 4-8 below.

Grand Total - addition of all Stages

Grand Total (minimum concrete combined)	32,094	m3
Grand Total (maximum concrete combined)	45,711	m3
Grand Total (reinf combined)	11,645	t
Grand Total (minimum timber combined)	2,577	t
Grand Total (maximum timber combined)	3,355	t
Grand Total (minimum steelwork combined)	524	t
Grand Total (maximum steelwork combined)	761	t
Stage 1 (glazing combined)	28,589	m2
Stage 1 (roof metal sheeting combined)	93,408	m2

Figure 4-8: Extract of Construction Material Quantities Required by Years (Thirkell 2017)

4.11 Sustainability

As an integrated eco-resort development KUR-World seeks to protect and enhance environmental values and contribute to regional sustainable development. The project will therefore be developed and constructed with best practice in mind and in accordance with the Urban Development Institute of Australia's Enviro-Development certification system (EnviroDevelopment & Urban Development Institute of Australia [UDIA] 2013); its six key elements being; Ecosystems, Waste, Energy, Materials, Water and Community. KUR-World will seek EnviroDevelopment certification of the development during the detailed design and construction phases of the staged development.

KUR-World will limit and reduce demands on resources and infrastructure throughout its operations. Reduced power usage will be achieved from energy efficient fittings and onsite power generation via solar and other sustainable technology; reduction in waste generation through careful on-site management; reduction in water use through management and efficient fixtures and fittings; leading to reduced sewage generation.

4.11.1 EnviroDevelopment Certification

It is intended that the KUR-World project be certified under the EnviroDevelopment national rating tool developed by the Urban Development Institute of Australia (Queensland). This would provide

independent verification of a project's sustainability performance and can be used to articulate the reduced costs of living and operational expenses.

The EnviroDevelopment program is underpinned by the EnviroDevelopment National Technical Standards which sets out the criteria for assessment and supporting documentation requirements. The certification process is designed to assess project initiatives across six areas – ecosystems, waste, energy, materials, water and community.

The Technical Standards set out the criteria used to assess projects when determining whether a project has achieved the necessary requirements to be recognised as an EnviroDevelopment.

The process of certification is detailed in Figure 4-9 below.

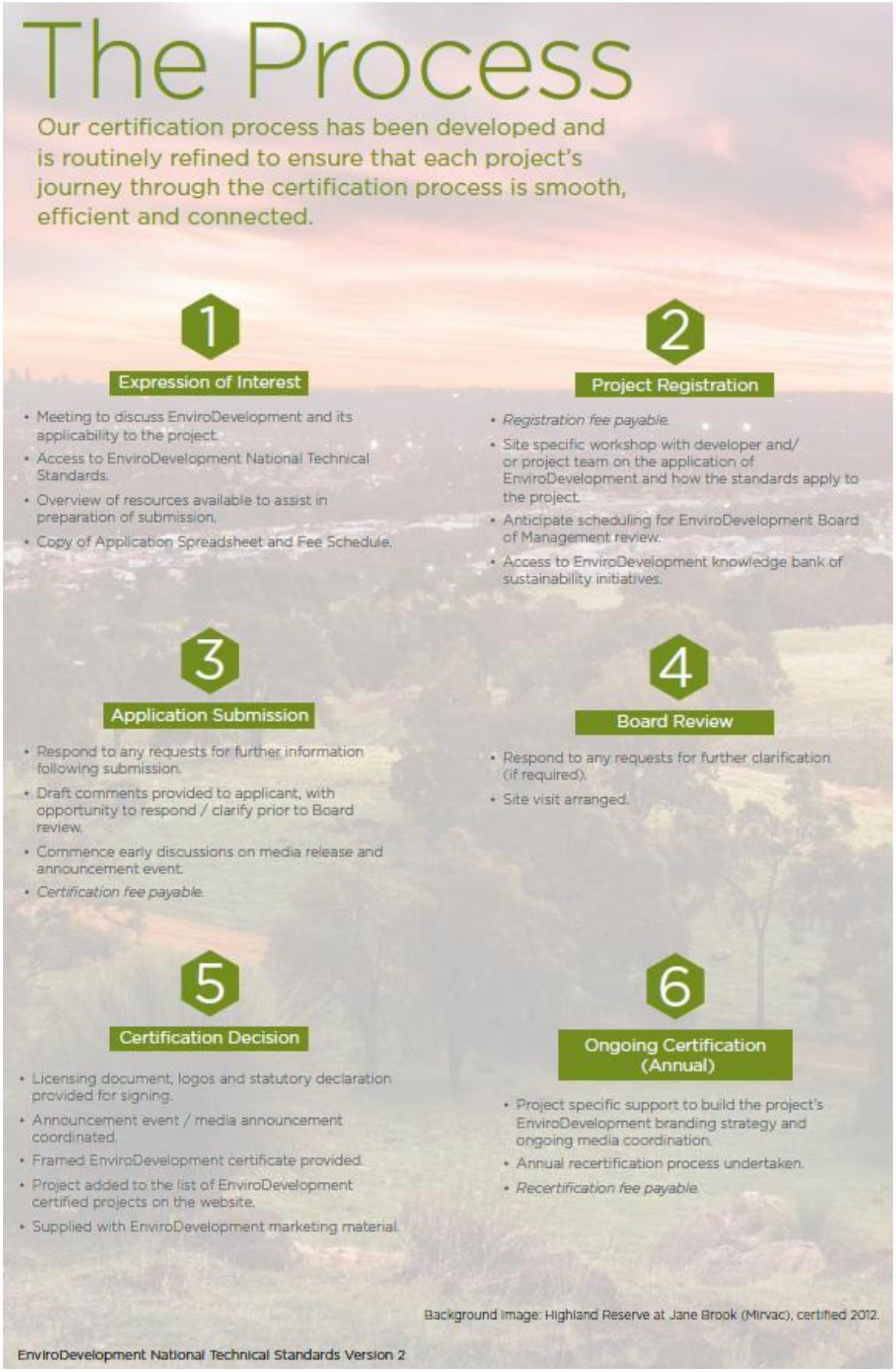

The Process
Our certification process has been developed and is routinely refined to ensure that each project's journey through the certification process is smooth, efficient and connected.
1
Expression of Interest
• Meeting to discuss EnviroDevelopment and its applicability to the project.
• Access to EnviroDevelopment National Technical Standards.
• Overview of resources available to assist in preparation of submission.
• Copy of Application Spreadsheet and Fee Schedule.
2
Project Registration
• Registration fee payable.
• Site specific workshop with developer and/or project team on the application of EnviroDevelopment and how the standards apply to the project.
• Anticipate scheduling for EnviroDevelopment Board of Management review.
• Access to EnviroDevelopment knowledge bank of sustainability initiatives.
3
Application Submission
• Respond to any requests for further information following submission.
• Draft comments provided to applicant, with opportunity to respond / clarify prior to Board review.
• Commence early discussions on media release and announcement event.
• Certification fee payable.
4
Board Review
• Respond to any requests for further clarification (if required).
• Site visit arranged.
5
Certification Decision
• Licensing document, logos and statutory declaration provided for signing.
• Announcement event / media announcement coordinated.
• Framed EnviroDevelopment certificate provided.
• Project added to the list of EnviroDevelopment certified projects on the website.
• Supplied with EnviroDevelopment marketing material.
6
Ongoing Certification (Annual)
• Project specific support to build the project's EnviroDevelopment branding strategy and ongoing media coordination.
• Annual recertification process undertaken.
• Recertification fee payable.
Background image: Highland Reserve at Jane Brook (Mirvac), certified 2012.
EnviroDevelopment National Technical Standards Version 2

Figure 4-9: EnviroDevelopment Certification Process (Source: EnviroDevelopment & UDIA 2013)

The elements of EnviroDevelopment are summarised in Figure 4-10 below:

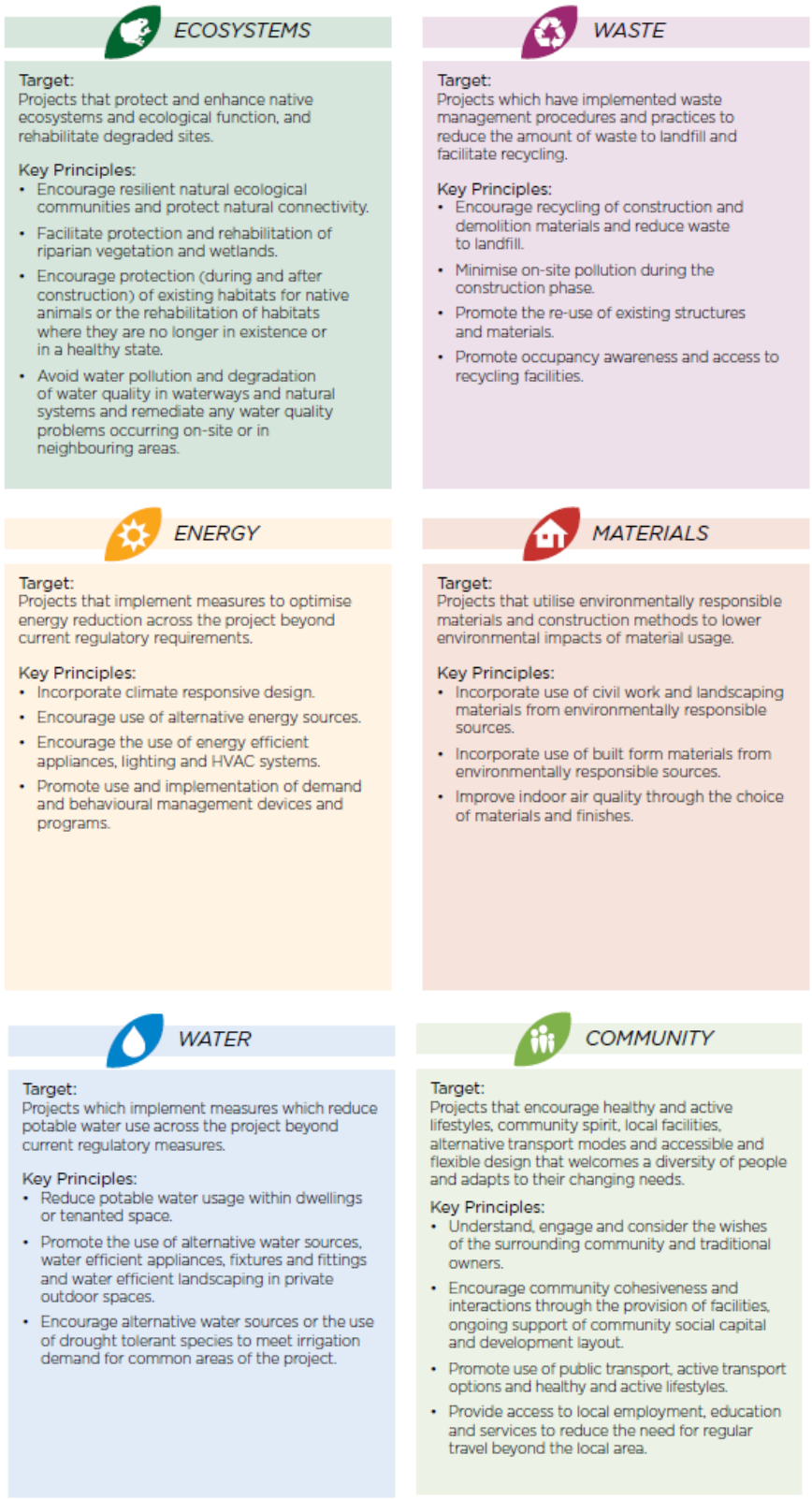


Figure 4-10: Elements of EnviroDevelopment Design (EnviroDevelopment & UDIA 2013)

4.12 Environmentally Relevant Activities

Environmentally Relevant Activities (ERAs) are industrial activities with the potential to release emissions with impacts to the surrounding environment or land uses. Prescribed ERAs are listed in Schedule 2 of the *Environment Protection Regulation 2008* (Queensland Government 2012). Many ERAs require concurrence assessment by the State government.

The following Table 4-6 outlines an assessment of potential ERAs that may occur as part of the construction or operation of KUR-World and the likely location and application.

Table 4-6: Potential ERAs

Potential ERA	Purpose/Use	Phase	Location
ERA 6 Asphalt manufacturing	Road Construction	Construction	Off-site/ existing operation
ERA 8 Chemical storage	Construction	Construction	On-site
	Water/Sewage Treatment	Operation	On-site
ERA 14 Electricity generation	Construction Power Supply via diesel generators	Construction	On-site
ERA 16 Extractive and screening activities	Road Construction	Construction	Off-site/ existing operation
ERA 33 Crushing, milling, grinding or screening	Road Construction	Construction	Off-site/ existing operation
ERA 56 Regulated waste storage	Construction	Construction	On-site (temporary storage)
ERA 57 Regulated waste transport	Construction	Construction	Off-site/ existing operation
	Waste Removal from site	Operation	Off-site/ existing operation
ERA 62 Waste transfer station operation	Construction	Construction	Off-site/ existing operation
	Waste Removal from site	Operation	Off-site/ existing operation
ERA 63 Sewage treatment	Treatment of on-site generated sewage	Construction and Operation	On-site
ERA 64 Water treatment	Treatment of on-site sourced water (groundwater, rainwater and recycled water)	Construction and Operation	On-site

The need for environmental authorities for ERAs will be assessed and confirmed during future design stages, and relevant approvals obtained prior to the commencement of the construction activity.

4.13 Project alternatives

The site is considered to be well-suited to the development of KUR-World. The following site characteristics were identified by the Proponent as being supportive of KUR-World, during its site selection process:

- Previously cleared land: The site is characterised by large areas of cleared land within which development can be located.
- Environmental features: The site contains various natural features such as remnant vegetation, riparian environments and frog habitat that support the development of KUR-World as an eco-resort.
- Rural land: The site is located within the Rural Zone and has historically been used for rural purposes, allowing tourist activities associated with rural activities to be established.
- Large land holding: The site comprises a large land holding, allowing sufficient area to develop a low scale eco-resort in keeping with the character of the local area.
- Proximate to Kuranda township: The site is proximate to the Kuranda township, allowing the utilisation of existing tourist facilities in the local area and access to the established tourism market centred on the township. The site is accessible from Kuranda by road.
- Proximate to Cairns: Kuranda is accessible by road, scenic tourism railway and cable car from Cairns, which provides a range of higher order facilities, including an international airport.
- Ownership: The site, when acquired by the Proponent, was held in a single ownership.

For the purposes of the EIS, five alternative options in relation to the use of the site have been identified.

1. Existing Situation
2. Tourist Attraction (medium scale)
3. Rural Housing
4. Non-urban Residential Subdivision
5. Intensive Rural Use

The following Table 4-7 provides a summary of these alternatives and their social, economic and environmental consequences.

Table 4-7: Project alternatives

Project Alternative	Social	Economic	Environmental
1. Existing Situation: The site is retained in its current state, being used for grazing, cropping and animal keeping uses. A Tourism Attractions use is also already operated on the site in association with KUR-Cow. These uses would all operate	• Limited community benefit (land retained in private ownership), particularly in relation to community access to natural environment • Limited connectivity to local community. • Limited potential for educational opportunities, particularly with	• Continued local economic benefits from current operations. • Underutilisation of well-located land. • Low level of tourist activity on-site.	• Potential for environmental degradation where management controls are not implemented. • Continued crossing of local creeks on unsealed tracks. • Current extent of clearing maintained • Limited opportunity for environmental

Project Alternative	Social	Economic	Environmental
pursuant to existing land use approvals/existing use rights (refer to Chapter 6 for further detail).	respect to cultural and environmental matters. • Land remains in its current state, which is familiar to the community. • Existing visual environment retained.		appreciation of the site and protection of identified values. • Limited opportunity for site rehabilitation for habitat linkages to be strengthened and supported.
2. Tourist Attraction (medium-scale): A medium scale tourist use is established on the site that provides for a range of activities.	• Limited community benefit (land retained in private ownership). • Potential attraction for local residents as well as tourists/visitors. • Potential improvements to local infrastructure (such as roads). • Potential for educational opportunities to be incorporated within tourist attraction. • Potential for the incorporation of activities that promote awareness regarding cultural matters relevant to the site and locality.	• Contribution to natural / farm tourism experiences available within the local area, thereby potentially increasing tourism attraction and spend within the Shire. • Increase offering for tourists in local area. • Likely to directly compete with established tourist offerings by being of a similar scale and nature. • Increased and ongoing local employment opportunities. • Additional employment opportunities at construction stage.	• Increase in range of people using site creates potential for environmental impact. • Increased crossing of local creeks using existing unsealed tracks. • Maintained extent of clearing. • Potential for activities promoting appreciation / conservation of environmental values. • Opportunity for habitat rehabilitation and habitat linkages to be strengthened and supported as part of the tourist attraction operation. • Potential for impacts to EVNT species.
3. Rural Housing: Dwelling Houses are established on each existing lot forming the site. This situation could result in the separation of the existing land holding into a number of smaller holdings, through the sale of existing lots to individual owners.	• Increased residential catchment for Kuranda township. • Diversification of housing supply in local area. • Increased demand on Kuranda township for services. • Limited community benefit (land retained in private ownership). • No potential for educational opportunities; particularly with respect to cultural and environmental matters. • No potential for community/tourist enjoyment of the site	• Reduced economic potential due to fragmentation of substantial land holding. • Increased demand on the Kuranda township for the provision of services. • Addition of new housing stock to the local housing market. • Local employment during construction phase of the project.	• Increased opportunities for the clearing of regulated vegetation, particularly in south of site. • Reduced management controls due to smaller land parcels and diversification of ownership. • Limited potential to achieve preservation of sensitive areas. • Potential for fragmentation of habitat and linkages. • Potential for increased human impact to the natural environment on and near to the site, particularly in the form

Project Alternative	Social	Economic	Environmental
	and its natural features. • Potential increases to social infrastructure within the locality as a result of increased residential development within the shire. • Limited opportunity for environmental appreciation of the site and protection of identified values.		of construction impacts and noise / light / emissions impacts associated within residential development (including fringe effects). • Potential for impacts to EVNT species.
4. Non-Urban Residential subdivision: The site is subdivided to provide an extensive residential subdivision, with new infrastructure.	• Reduced integration amongst local population due to distance between Kuranda and site. • Need to provide social services for increased population. • Potential for environmental areas to be provided as public parkland. • Potential improvements to local infrastructure (such as roads). • Potential increases to social infrastructure within the locality as a result of increased residential development within the shire. • Change effected to use of the land, which could give rise to social concern (particularly considering the nature and scale of development). • Increased demand on the Kuranda township for the provision of services.	• Cost to provide services and infrastructure for expanded population. • Increased demand on Kuranda to supply services. • Construction will provide short-term local economic benefits (employment). • Limited ongoing economic benefits, apart from small amount of local services growth. • Addition of new housing stock to the local housing market.	• Increased population proximate to sensitive areas. • Reduced potential for environmental appreciation due to preservation of sensitive areas within reserves. • Potential for rehabilitation of sensitive areas as part of subdivision. • Potential for fragmentation of habitat and linkages. • Potential for increased human impact to the natural environment on and near to the site, particularly in the form of construction impacts and noise / light / emissions impacts associated within residential development (including fringe effects). • Potential for impacts to EVNT species.

Project Alternative	Social	Economic	Environmental
5. Intensive Rural Use: The existing rural uses are intensified, through greater stocking density for grazing and/or the intensive cropping of vast areas of the site. Further clearing of the site could potentially be undertaken, to re-establish the extent of rural use previously occurring on the site (see Figure 4-6, which provides an aerial photograph showing the historic clearing of the site as part of prior rural use).	• Potential compatibility issues with surrounding land uses (in particular odour). • Limited community benefit (land retained in private ownership). • Strengthening of the local agricultural industry. • Change effected to use of the land, which could give rise to social concern (particularly considering the nature and scale of development). • No potential for educational opportunities, particularly with respect to cultural and environmental matters. • Increase in visual impact of development on the site, as viewed from various locations. • No potential for community and tourist enjoyment of the site and its natural features.	• Increased economic activity on the site. • Growth in local jobs. • Growth in regional industries supporting agriculture. • Potential for economic increases to the export industry (local and international).	• Substantial impact on environment due to increased clearing (including to natural habitat and habitat linkages). • Intensity of land use likely to lead to further environmental impacts if not mitigated (erosion, sedimentation, creek crossings, cattle grazing). • Opportunity for limited site rehabilitation for habitat linkages to be strengthened and supported. • Potential for impacts to EVNT species.

4.14 References

EnviroDevelopment and Urban Development Institute of Australia. (2013). *EnviroDevelopment National Technical Standards Version 2.* Brisbane: EnviroDevelopment Head Office.

Queensland Government. (2012). *Environmental Protection Act 1994: Environmental Protection Regulation 2008.* Available from: https://www.legislation.qld.gov.au/view/pdf/2012-11-09/sl-2008-0370.

Thirkell, G. (2017). *Report to Cummings Economics RE: Environmental Impact Study: Economic Impact & Construction Phase – Regional Supply Capacity for proposed development of KUR-World.* Cairns: Thirkell Consulting Engineers.