6. LANDSCAPE AND VISUAL AMENITY

6.1 EXISTING ENVIRONMENT

6.1.1 Basis of Assessment

The existing landscape features, character, values, views and view corridors relevant to the site and the Yorkeys Knob area are described in district and regional contexts, and in the context of the nearby off-shore waters. This is based on desktop review of air photos, topographic data and information from previous studies undertaken in the Cairns region, then validated or amended by field inspections of the area. The documents reviewed are referred to where relevant. The description of values is provided under the following headings:

- brief history of floodplain development
- Cairns region scenic amenity (regional landscape values in Yorkeys Knob, landscape character and values of the site, landscape values recognised in planning scheme)
- integrity and wilderness (remoteness) values
- scenic and aesthetic values of the GBRWHA.

The assessment deals specifically with the issue of visibility of the site (i.e. from where it can be seen) and the associated sensitivity.

6.1.2 Brief History of Floodplain Development

The coastal plain including much of the area currently occupied by Cairns City and immediately to the north of Cairns is flood-prone lowland, strongly influenced by the delta and floodplain of the Barron River, with many other smaller waterways draining from the nearby mountains to the coastline. Prior to European settlement, it is likely to have been a mosaic of lowland rainforest, wetlands and coastal dune vegetation, with much of the area periodically inundated. The non-lowland exceptions are the coastal hills and headlands which punctuate the plain, including Yorkeys Knob (the hill). The mouth of the Barron River and other creeks are likely to have been estuarine areas of mangroves, similar to other parts of Trinity Inlet to the south.

These fertile low lying plains were suitable for agriculture and grazing, and early settlement was associated with clearing and drainage of extensive areas close to the growing towns and ports such as Cairns. Sugar cane became the dominant agricultural land use early in the 20th century, serviced by a number of sugar mills and a network of private train tracks.

As Cairns developed and expanded, several small coastal settlements to the north of the city grew in popularity as residential suburbs, probably driven by the desire for a beach lifestyle within easy driving distance to the city (Trinity Bay adjacent to the Cairns CBD has no sandy beaches). However the presence of the Barron River and its flood-prone delta with many small creeks, and the construction of Cairns Airport prevented a road immediately adjacent to the coast, with the result that each of these Northern Beaches suburbs is accessed separately from the Captain Cook Highway to the west. Yorkeys Knob, as with other Northern Beaches suburbs, is a discrete node of urban development part-surrounded by rural land uses and bands of tropical vegetation. In this respect, Yorkeys Knob retains some of the character of the former small coastal settlements.
Apart from this northwards spread of residential development along the coastline, most of the Barron River delta is dominated by rural production and in particular canefields, which still characterise the coastal plains in Far North Queensland. This combination of cane lands, set against a backdrop of rainforest and mountain ranges, coastline, rivers and creeks, forms attractive patterns of rural and natural landscapes, and significantly contribute to the character and scenic landscape qualities of the region generally.

This landscape is rapidly changing as the delta becomes more intensively used for non-agricultural purposes.

6.1.3 Regional and Local Landscape Values

a) Cairns Region Scenic Amenity

The Cairns Region Scenic Amenity Study (Cardno Chenoweth 2012) mapped and assessed the landscape attributes of the CRC area (excluding Yarrabah), and identified places and features of regional significance for either scenic amenity (a combination of visual exposure and scenic preference) or their character contribution to the identity of the region. ‘Scenic Preference’ was established by local focus group evaluation of photographs, followed by analysis of land cover proportions visible in those photos.
The following Landscape Character Types (LCTs) were identified in the Cairns Region Scenic Amenity Study:

- forested mountains including the uplands of the Macalister Range which forms the backdrop to the Northern Beaches, also in views from off-shore
- grassy hillsides
- lowland areas - coastal and river plains and valley floors which are not used for sugar cane
- canefields - lowlands used for the production of sugar cane
- coast including beaches, bays, mangroves and inshore ocean. Some of the beaches have an iconic combination of white sand, fringing vegetation, and long views over the Coral Sea
- inland watercourses including the Barron, Russell, Mulgrave, Mowbray and Daintree Rivers, plus the associated gorges and waterfalls and the many tributary creeks
- urban areas including Cairns and its outer suburbs (including the Northern Beach suburbs) as well as Mossman, Gordonvale, Port Douglas and smaller towns.

This Study also identified the regional significance of views of:

... natural, undisturbed landscape elements, especially as seen from designated lookouts, where they are part of forested skyline ridges or where they form interfaces and settings for towns, scenic roads and public places. These are particularly sensitive to land clearing and development. Views of rural landscapes which also include canefields, rivers or coastline with forested hills in the background are also a distinctive and attractive combination. Places and features which show or help define these elements and their edges, such as gateways, lookouts and view corridors are significant for scenic amenity and character and require consideration in planning and development control. (Cardno Chenoweth 2012)

Yorkeys Knob hill and headland is a regionally-important landscape feature, as mapped in the 2012 study. It is also mapped as a ‘hillslopes’ landform, and both the headland and the coastal village part of the Yorkeys Knob settlement are mapped within the coastal zone. The Cattana Wetlands and the Richters Creek mouth were not identified as regionally significant landscape features, although at a finer scale of mapping they are locally significant.

There are no landscape features important at either regional or local scale associated with the site or the southern part of Yorkeys Knob settlement.

In terms of scenic amenity (a combination of visual exposure and scenic preference), the site was assessed and mapped in the 2012 study as low (Scenic Amenity Rating 4), notwithstanding that the Barron River delta was modelled as having generally high visual exposure. However this is misleading as the 2012 visual exposure modelling was based on topography alone (the Digital Terrain Model (DTM) does not include trees and vegetation), and conservatively modelled the flat delta area close to the Captain Cook Highway as highly visible. Field survey confirms that most long views from the highway across the delta are screened by vegetation, except for a gap north-east from the Smithfield roundabout and corresponding roughly to Yorkeys Knob Road.

The 2012 study identified regionally significant scenic routes (including the Captain Cook Highway north of Palm Cove and the Kennedy Highway to Kuranda) and also important ‘gateways’ (such as the Barron River bridge), but the section of Captain Cook Highway near the site is not identified as a scenic route.
b) Regional Landscape Values in Yorkeys Knob

The Cairns Scenic Amenity Study 2012 is also applicable to Yorkeys Knob. The scenic amenity mapping rated the site as low, and mapped the Yorkeys Knob area as including several LCTs:

- Coast: the coastline and beaches, including the headland and Richters Creek mouth
- Inland Creeks & Watercourses: including the Barron River and Thomatis / Richters Creek
- Canefields: including the site
- Lowlands: including the coastal plains (outside the coastal zone) and the Barron River delta as well as the nearby Cattana Wetlands.

Of these, canefields are a Highly Valued LCT. The canefields of the site contribute (where visible from external viewpoints) to regional character.

The 2012 study also identified other regionally important features of relevance to Yorkeys Knob, including:

- Landform Features: Regional landscape features identified in the Yorkeys Knob locality:
  - Headland – Yorkeys Knob (the hill) is an important landform feature.
  - Other scenic features nearby such as the nearby Cattana Wetlands.
  - The nearby mountains are also visually dominant landscape features. Views to, from and across the Yorkeys Knob area include the nearby Macalister Range behind Smithfield, with forested slopes and skyline that form the background landscape frame and influence local character.
- View Corridors: Parts of Yorkeys Knob and the Barron River delta were mapped within the viewshed from the Kuranda Range Lookout, although there were no regionally important view corridors located within Yorkeys Knob. There are not any regionally significant scenic routes / sections identified in the area, including from Captain Cook Highway, although the alignment of the highway and Yorkeys Knob Road may be important in a local context.
- Scenic Amenity: The landform feature of Yorkeys Knob (hill and headland) was categorised and mapped as High Scenic Amenity rating (SA 8 – 10), representing a combination of visual exposure and scenic preference rating.
- Landscape Values: Places of High Landscape Value mapped in the Scenic Amenity Study (based on a combination of Scenic Preference, Visual Exposure, LCTs and features) included Yorkeys Knob as the highest value (Category A) recommended for protection.
- Scenic Routes and Gateways: Skyrail and off-shore tourist ferry routes were identified as scenic routes in the 2012 scenic amenity study, but not the Smithfield section of the Captain Cook Highway. However the highway crossing of the Barron River was identified as a ‘gateway’ marking the northern entrance into Cairns.

c) Landscape Character and Values of the Site

The site comprises flat canefields with rural character, fringed by Yorkeys and Richters Creeks with riparian and mangrove vegetation, quite separate from the township of Yorkeys Knob. The canefields of the site and other rural properties, the nearby Ponderosa Prawn Farm and the Yorkeys Knob area are part of the Barron River delta, a fertile flat floodplain which extends from Yorkeys Knob in the northeast, Holloways Beach in the southeast and the foothills of the Macalister Range and Kamerunga in the west. Yorkeys Creek and Richters Creek have a combined creek mouth between Holloways Beach and Yorkeys Knob Beach.

The Barron River delta area is generally low and flat and offers long open views from public roads including the Captain Cook Highway and Yorkeys Knob Road, either towards the isolated coastal hills.
of Yorkeys Knob and Trinity Hills, or westwards towards the Macalister Range (Photo 6-2). However these views across flat canefields are seasonal and depend on the height of the sugar cane crop.

Photo 6-2 The subject site on both sides of Yorkeys Knob Road with the range behind.
Source: Appendix E (Plate 5).

In terms of ‘nightscape’, the site and the creek corridors have no lighting apart from rural farmhouses and sometimes sheds, and therefore are currently ‘black’ at night. In contrast, the Captain Cook Highway is well-lit, and to a lesser extent so is Yorkeys Knob Road, such that these are corridors of relative brightness. The Yorkeys Knob streets and houses are also lit, but most of this lighting is below the heights of existing tree canopies, and is therefore unlikely to be visible from off-shore or from the Captain Cook Highway, except for houses in elevated locations, and the service station adjacent to the site.

d) Landscape Values Recognised in Planning Scheme

CairnsPlan identifies 18 Desired Environmental Outcomes (DEOs), one of which addresses the scenic landscape values of the city:

- The scenic landscape of the city is valued and enjoyed by residents and visitors, and the essential elements of this landscape, the forested hills and foothills, beaches and headlands, streams and rivers, wetlands, open spaces and rural land are conserved and enhanced.

This DEO also notes that the ‘Cairns area is internationally renowned for its high scenic value’. Particular elements identified by CairnsPlan include:

- Forested hillslopes rising above the coastal plains and river valleys are the signature landscape feature of the region.

- The hillslopes retain high scenic value arising from the dramatic topography and rich green vegetation.

- The coastline of the area presents key aesthetic features including visually prominent landforms (rocky headlands, cliffs), undeveloped panoramas viewed from the coast (beaches, islands, inlets, bays, coastal ranges, hills), and a variety of visually striking vegetation communities (littoral rainforest, mangroves, coastal heath). The coastal landscape in the city is also important for distinguishing and separating urban areas and agricultural areas from the natural environment, thereby contributing to the amenity of coastal settlements.
The rural landscape is an important part of the scenic landscape of the city. Significant qualities of the rural landscape include cane farming and its contribution to the continually changing landscape; views of traditional farm houses and outbuildings; riverine forests; and stands of large forest trees in agricultural or pastoral lands and along roadsides.

The above elements are represented on the site (and in Yorkeys Knob generally), which is included within the Barron-Smithfield District Planning Area and as the Rural 1 Planning Area. The planning scheme emphasises the importance of retaining hillslopes in their existing state, and of retaining a separation between the coastal settlements, agricultural and urban areas. The importance of forested hillslopes to the landscape and scenic amenity of Cairns generally is reinforced by the Hillslopes Overlay (showing Hillslope Land within Categories 1 and 2 – urban and rural and north and south).

6.1.4 Integrity and Wilderness (Remoteness) Values

Integrity of Landscapes and Places

An integral landscape is considered to be an area where the visible patterns, uses and scenic amenity have remained constant for a long time with little visible change, and are in accordance with community expectations. In this context, the following parts of the Barron River delta and the Northern Beaches suburbs are considered to have a high degree of integrity:

- forest-clad mountains, remnant vegetation (wetlands and watercourses), other natural areas
- canefields and similar rural land uses
- coastline, beaches and headlands, and the marine waters of the Coral Sea
- the older and generally linear strip of coastal settlements
- inter-urban and intra-urban breaks.

However, as shown on the following image (Photo 6-3), areas of lower scenic integrity, where the older patterns and interfaces are changing relatively quickly, are:

- linear infrastructure across the landscapes, including Captain Cook Highway upgrades, roundabouts and connecting roads, and the runways and infrastructure associated with Cairns Airport
- urban expansion of the coastal settlements, with newer subdivision patterns and larger more suburban houses
- tourist facilities such as Skyrail and the Tjapukai (Djabugay) Cultural Park, cable ski park, go-kart track, war museum etc.
- quarries, sand and gravel extraction and non-traditional rural uses (such as the Ponderosa Prawn Farm)
- Smithfield and its spreading ‘centre’, including bulky goods outlets and warehouses along the Captain Cook Highway.
Wilderness and Similar Natural Places

The concept of ‘wilderness’ generally applies to extensive road-less places accessible to self-reliant bushwalkers (also and preferably referred to as ‘remoteness’), where natural values can be appreciated with minimal intrusion from other human activity.

On this theme:

- There are no extensive remote areas in the Barron River delta, or in those parts of mountain ranges west of Smithfield which may be within view of the site.
- There are many natural places in these mountains, and along the coastline (including the mouth of Richters Creek), but these are not large enough or sufficiently isolated to express ‘remoteness’ values.
- Parts of the rainforest-clad mountains which are inaccessible by vehicle, but within sight of Skyrail, would not be considered remote, and the proximity of Cairns Airport (with planes passing overhead at relatively low elevation during take-off and landing) also reduces the impression of remoteness.

Nevertheless, parts of the beach south of Yorkeys Knob, the Richters Creek mouth, the northern part of Holloways Beach, and the natural coastal wetland areas, retain their naturalness (Photo 6-4), in that no buildings or structures are visible, despite being in relative close proximity to Cairns.
6.1.5 Scenic and Aesthetic Values of GBRWHA

Matters of national environmental significance (Matters of NES) are discussed in Chapter 22 (Matters of NES). One relevant Matter of NES is the GBRWHA which has a landward boundary at the low water mark near the site. The township, beach and headland of Yorkeys Knob essentially abut GBRWHA waters, and it is likely that tall buildings on the site will be seen by GBRWHA visitors from parts of the WHA. As aesthetic attributes are a relevant World Heritage listing criterion (an example of Outstanding Universal Value (OUV)), an assessment is made of this issue.

The UNESCO Guidelines define the concept of OUV as 'cultural and / or natural significance, which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity.' The Great Barrier Reef has OUV and has been World Heritage-listed because it meets all four of the natural environment criteria, including aesthetics (Criterion (vii)) 'containing superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance'; and it also meets criteria of integrity, protection and management. Refer Chapter 22 (Matters of NES) for more details of OUV and in particular Criterion (vii).

The GBRWHA includes the extraordinary system of coral reefs, islands and passages of the Great Barrier Reef plus other environmental and scenic values, which in combination provide some of the most spectacular scenery on earth. The scale and beauty of the Great Barrier Reef, to a greater extent than arguably any other coral reef system on earth, express outstanding universal aesthetic value.
a) GBRWHA Aesthetic Attributes Represented Near Yorkeys Knob

The detailed assessment of the aesthetic values of the Yorkeys Knob area (refer Chapter 22 – Matters of NES) concludes that:

- The site borders mangroves on Thomatis / Richters Creek, which are part of a more extensive system. These are included in two Fish Habitat Reserves and parts of the Estuarine Protection Zone of the GBR Coast Marine Park (state) associated with the Richters and Yorkeys Creek estuary and similar land fringing Half Moon Creek to the north-west. However, in terms of extent and universal aesthetic value, they are typical of tropical estuarine mangrove areas and not considered representative of the attribute.

- The open waters off Yorkeys Knob Beach are usually turbid due to wind-driven wave action stirring up fine sediments in the shallow waters. This limits the visibility of species with visual appeal. The marine flora and fauna in the creeks, and in waters off-shore from Yorkeys Knob, do not exhibit characteristics associated with coral reefs. So, while marine megafauna and concentrations of large fish are most likely present off-shore from Yorkeys Knob and elsewhere along the Northern Beaches (and when sighted will provide an occasional visible reminder that these waters are part of the GBRWHA), this is not a regular occurrence.

- At a local level, the Richters Creek estuary near the site is in a largely natural state and is characterised by sandy beaches and intact coastal vegetation (particular mangroves and Casuarina spp.). Few signs of human existence are present for beach users although departing and arriving aircraft using the nearby Cairns International Airport are a regular interruption.

- To the extent that the mainland is part of this World Heritage visitor experience, it is seen from the ferry routes to these island tourist attractions, looking back towards Cairns and the background mountains. In this context, the Cairns Region coastline (including the Northern Beaches and the site) is part of the mainland which visitors use as a base, and ‘leave behind’ in order to visit a distant Great Barrier Reef island (or pontoon, dive site etc.) where they will experience the GBRWHA.

b) Experiential (Response to Place) Values

An important aesthetic consideration is ‘experiential (response to place)’ values. The Cairns Region is one of the few places in the world where two World Heritage Areas share a common boundary, but this does not occur in the Yorkeys Knob Area. The rainforest slopes of the Wet Tropics WHA are 3 km west of the site and meet the shoreline of the GBRWHA to the north of Palm Cove. However residents and visitors to the Cairns region are likely to be aware of their proximity to the Great Barrier Reef and its importance to the local economy and environmental values. Residents of the northern beach suburbs are also likely to be aware that the coastline is the GBRWHA boundary, and close to the boundary of the GBRMP. The off-shore waters, and the distant islands and reefs, are likely to be perceived as ‘special’ in terms of conservation, tourism and international reputation because they are within the GBRWHA.

However it is arguable whether or not this elicits a ‘response to place’ which is different from beach settlements anywhere on the Queensland coastline. Beaches and places with ocean views, especially those associated with a relatively undeveloped coastline (with mainly natural landform and vegetation) are likely to evoke strong responses, irrespective of whether or not they are within marine parks or World Heritage Areas.

As seen from the mainland, the waters off-shore from Yorkeys Knob demonstrate no visible evidence of the Great Barrier Reef, and are equally likely to be perceived as opportunities for fishing, boating and ocean views to the Coral Sea. This is particularly likely at Yorkeys Knob where the Half Moon Bay marina provides recreational boating access to the off-shore waters.
To the extent that the mainland is part of this World Heritage visitor experience, it is seen from the ferry routes to these island tourist attractions, looking back towards Cairns and the background mountains. In this context, the Cairns region coastline (including the Northern Beaches and the site) is part of the mainland which visitors use as a base, and ‘leave behind’ in order to visit a distant Great Barrier Reef island (or pontoon, dive site etc.) where they will experience the GBRWHA.

The following image (Photo 6-5) was taken from a ferry en-route to a GBRWHA tour, looking back toward Cairns. The Aquis Resort site is on the far right.

Photo 6-5 View from a ferry on its way to Green Island.

Source: Appendix E (Figure 14). The Aquis Resort site (‘study area’) is shown on the far right. The coloured images superimposed are idealised envelopes of possible buildings of the height proposed for the site.

6.2 IMPACTS

6.2.1 Impact Avoidance / Minimisation

The site has recognised local landscape values as part of the Barron River delta mosaic. This area has a rural character containing a patchwork of cane fields within a framework of remnant waterways. However, as described previously, there are increasing areas of lower scenic integrity where the older patterns and interfaces are changing relatively quickly in favour of many forms of residential, commercial, and industrial development.

The mitigation response to flooding has set minimum ground and floor levels for various parts of the site. The maximum level to which buildings can be constructed is determined by airport / aircraft criteria, principally the Obstacle Limitation Surface (OLS). These two factors constrain the development to a specified lower and upper level respectively. When plan area considerations are included, the final development is to fit within a Built Form Envelope (BFE).

The architectural vision for the Aquis Resort has been described in Chapter 4 (Project Description) along with plans developed in accordance with this vision. The vision can be summarised as follows (using words and concepts from the quoted vision):

- The form of the architecture must be distinctive and uniquely recognisable, with a strong identity that will attract visitors from around the world.
- The design will take its cues from its context, and the architectural form will resonate with its surroundings and reinforce the identity of rainforest and reef (recognising that the site is located between the GBRWHA and WTWHA).
The infinite variety of forms, colours and materials found in nature will inform the design of the development at every level. This will also allow a variety of experiences in the resort, creating points of difference between the various hotel products, which will encourage repeat visitors to the resort.

The Aquis Resort will embody the concept of ‘tropical urbanism’ and in particular:

- be in harmony with nature and be inspired by the natural elements and features of the site
- respond sympathetically to the natural environment in terms of orientation and shape to:
  - maximise solar benefits and breezes, capture the most valuable views of the reef and rainforest
  - facilitate the flow of water through the flood plain.

The adopted design therefore must comply with the BFE (i.e. the space within which all buildings must fit) and lead to the maintenance of landscape values to the greatest extent possible. Inherent in this response is a desire to limit the visibility of the built form from as many as possible local vantage points, in the knowledge that this will not always be achievable due to the size of the development.

The development of a flood-free footprint on the site along with the room yield considerations, dictate that tall buildings are required.

Viewshed modelling and view corridors

Visibility of the site (and buildings constructed on it) involves assessment of where it can be seen from, while the associated sensitivity deals with how viewers may perceive what can be seen.

The visibility and visual sensitivity of the site have been assessed by desktop modelling of long distance view corridors towards a hypothetical built form (BFEs as described above, on the basis that project architecture was still under development at the time). This modelling identified site constraints to the development of tall buildings, which were then field-checked and photographed.

Geographic Information System (GIS) software and Digital Terrain Model (DTM) techniques have been used to develop the visual model.

Following a drive-around survey of the district, and analysis of photos taken previously from Fitzroy Island, four view corridors were selected for analysis in modelling using a DTM:

- from Fitzroy Island (through a gap of low land behind Cape Grafton)
- from Palm Cove jetty, in a narrow ‘silver’ of view between Trinity Hills and Yorkeys Knob
- from Redlynch Valley, looking north to Trinity Hills between Mt Whitfield and Macalister Range
- from Cairns Esplanade, to the east of Mt Whitfield and across the Cairns Airport.

Additional viewpoints were also inspected and photographed as reference points for assessment of visibility, visual impacts and visualisations (photomontages), based on sampling the direction and distance of affected views. These included:

- the Skyrail cableway
- the East Trinity shoreline
- the Yorkeys Knob beach near the Richters Creek mouth
- two Photopoints on the Captain Cook Highway at Smithfield
- Yorkeys Knob Road looking both north and south from south of the built-up area
- Yorkeys Knob hill (Janett Street).
Viewsheds. The following viewsheds were examined:

- Views from lookouts, foreshore and public recreation / tourism places:
  - While the Yorkeys Knob hill is relatively visible from many viewpoints due to its coastline location and contrast with the flat coastal plain, the Aquis Resort site is visible only from elevated viewpoints. The site is visible from the Henry Ross Lookout on the Kennedy Highway and from the Skyrail cableway.
  - From these viewpoints, the hills of Yorkeys Knob and Trinity Hill, a long stretch of coastline and ocean, and an extensive area of flat floodplain of the Barron River delta are visible. These panoramic views show a mosaic of land uses – Smithfield residential subdivision and the highway in the mid-ground, and Cairns City in the background, rural coastal plain with canefields, extensive coastal mangroves, the airport, patches or bands of remnant vegetation, the forested bulk of Mt Whitfield, and some extractive industry, commercial and tourism uses. The canefields of the site, with narrow strips of riparian vegetation along each side, are part of this pattern.
  - The headland of Yorkeys Knob is also visible from nearby beaches (Machans Beach, Holloways Beach, Yorkeys Beach/Richters Creek mouth and Trinity Beach), and from elevated viewpoints along the coastline such as Taylor Point. The Yorkeys Knob headland is also visible from Palm Cove. However, it is screened by mangroves when viewed from the Cairns Esplanade.
  - In some of these views, the isolated hill of Yorkeys Knob contrasts with the flat mangrove-lined coastline, but is subordinate to the higher landform of the Trinity Hills. As seen from the north, the existing Half Moon Bay Marina is also visible.
  - The Yorkeys Knob headland is also visible from off-shore, including from ferry routes, Green Island and Fitzroy Island, and from aerial views from landing or departing aircraft.

- Highway and road views to site:
  - In the Smithfield-Yorkeys Knob area, the Captain Cook Highway is on the flat coastal plain but well separated from the coastline. The area east of the highway is largely cleared of trees, and depending on the growth of the sugar cane crop offers long open views. When the cane is fallow, the headlands of Yorkeys Point and Trinity Hill are clearly visible on the skyline at a distance of up to 6 km.
  - However, the Aquis Resort site is mainly screened from view. Although modelling indicates that the site is visible from the Captain Cook Highway through a broad gap in the existing wetland vegetation, field inspection shows that existing vegetation screens the site from the highway. Similarly, although view corridor analysis indicates potential views from the Redlynch Valley looking northeast towards Trinity Headland, field inspection reveals that Yorkeys Knob and the site are not visible.

Visual sensitivity to building height

The methodology used to determine visual sensitivity to building height involves:

- selection of viewpoints as listed
- use of GIS software and a DTM of the site and the Cairns region based on 10 m contours and limited vegetation data to determine what can be seen of the site from the above viewpoints
- use of the above information to create a Zone of Visual Influence (ZVI) – that is, areas from which some or all of a suite of 43 arbitrary ‘visibility points’ on the site could be seen
- field checks of modelled results.
This methodology was then used to test the sensitivity of the site to tall buildings. Hypothetical towers were simulated to 20 m AHD, 35 m AHD and 65 m AHD (approximately equivalent to five, 10 and 20 storey buildings above an assumed ground level of 5 m AHD in order to enable the following key questions to be answered:

- are there parts of the site which are more tolerant than others for the location of tall buildings?
- are there threshold heights at which tall buildings on-site will be visible from sensitive viewpoints, or within significant view corridors?

Although the design ground level in the Resort Complex Precinct has been raised to 7.5 m AHD, the top of the buildings for the purposes of modelling remain at 20 m AHD, 35 m AHD and 65 m AHD due to aircraft height restrictions. Five points on the site were selected as locations for hypothetical buildings of various heights and the GIS model used to determine points from where these could be seen as shown in Figure 6-1 and Figure 6-2. See the following figures.

Figure 6-1 Location of the five 'Location Points' modelled.

Source: Appendix E (Figure 8).
Figure 6-2 shows areas from where ‘Location 1’ in Figure 6-1 could be seen. For example, the yellow band shows all places from which a 30 m tower located at ‘Location 1’ could be seen. Similar figures were produced for Locations 2 to 5.

This modelling shows that a building taller than 50 m AHD located in the northern part of the site is likely to be visible to the right of the two Trinity Hills as seen from the Cairns Esplanade boardwalk, and that a building taller than 45 m AHD located in the western part of the site may be visible from Redlynch Valley.

More specifically, the visual constraints analysis indicated that the tall buildings on the site will be:

- fully visible as seen from the elevated lookout of Skyrail and Henry Ross Lookout, at distances of 5.5 km to 6 km
- fully visible from Yorkeys Knob Road, where the existing canefields and lack of roadside trees currently offer little screening
- partly visible (tops of tall buildings only) as seen by Captain Cook Highway motorists at Smithfield, over the tree canopies of roadside and other vegetation
- partly visible (tops of northern buildings only) as seen by beach users near the mouth of Richters Creek, over the tree canopies of mangroves
- barely visible (top one or two floors only of northern buildings) over the mangroves of Cairns Airport at long distances (> 10 km), from Cairns Esplanade and from East Trinity and from offshore (boats and tourist ferry routes).

Although not modelled, tall buildings will also be visible from some hillside houses at Yorkeys Knob and Smithfield, but not from the majority of residences in these areas.
The results of this work were used in the project refinement process. In particular, the landscape sensitivity of the site with respect to tall built form, was identified as one of the site constraints and the proposed development, as initially proposed in the IAS, was modified in response to this work.

Although the various project elements of Aquis Resort have not yet been designed in detail, preliminary design concepts for the proposed built form (by Aedas Architects) as included in Chapter 4 (Description of Proposed Project) are suitable for the purposes of visual impact assessment. The future visual environment is described below, focusing on those elements of the project likely to cause changes in character and scenic amenity of the Yorkeys Knob area as the basis for assessment of visual impacts.

![Aquis concept as used for photomontage work.](image)

Areas likely to be within view of the proposed built form (including sensitive visual receptors and view corridors) are analysed by modelling the visibility (ZVI) in Vertical Mapper, assuming that mitigation measures (such as roadside buffer planting) are in place. The built form visibility is modelled using a combination of CAD, 3D Studio Max, Google Earth Pro and Sketchup, within a DTM derived from LiDAR data for the site and surrounds, and an assumed vegetation height of 7 m for existing coastal vegetation near Yorkeys Knob, and 10 m contour data for the wider Cairns region. The ecological survey reveals that vegetation in this area is 20 m to 30 m high on the dunes. Based on this advice, it appears that the screening effect of coastal vegetation in the visual analysis is understated (i.e. buildings will be less visible than the assessment concludes).
Figure 6-4 is based on conservatively low screening vegetation and shows the points from which at least parts of the Aquis Resort can theoretically be seen by ground-based observers.

Visualisation of the height and potential visibility of the proposed built form, in the context of the existing landscape, is achieved by a series of photomontages which insert the concept designs into photographs taken from known locations and elevations (accurately located by GPS points or from Google Streetview) and represent the proposed development at the culmination of Stage 2.

Visualisation of the proposed development, by before and after photomontages showing the existing landscape context, is considered preferable to alternative approaches which place a marker (balloons, poles or scaffolding) on the project site to show the height of proposed structures. Such markers are appropriate for smaller scale developments, but not for tall buildings or clusters of buildings across a large site. Even if a suitable marker could be erected, it would indicate only the height of proposed buildings, not their bulk or scale, and would not take into account any proposed screen planting or other mitigation measures.

The proposed Aquis Resort built form will be visible over a wide area as shown on Figure 6-4. The area modelled as being within view of the top of the proposed buildings (taking into account Earth’s curvature) extends over the coastal plain from Mt Whitfield northwards, elevated areas surrounding Cairns, the CBD foreshore and esplanade, other areas south of Cairns where view corridors correspond to gaps between hills, and in an arc off-shore. However, this modelling is conservative, based on average assumptions regarding vegetation height (for example mangroves have been modelled as 7 m height).

The conservative nature of this approach is shown by photomontages indicating that buildings will be screened from view (for example from the Cairns Esplanade) by airport mangroves and other existing vegetation.
6.2.2 Visibility

The Aquis Resort will be a large-scale development with a concentration of tall buildings located in a mainly rural flat coastal plain beneath the flight paths of commercial aircraft, and is not able to be hidden from all views. The visual impacts are primarily associated with the visibility of buildings (in both long distance and more localised views), and the associated contrast and changes to existing character of the Yorkeys Knob area. The analysis addresses what project elements can be seen, and from where.

The site is located on the low, open plains of the Barron River delta where any development taller than four storeys would be visible in a number of view corridors, and change the current landscape character. Based on modelling, the buildings can be expected to be visible from a number of vantage points, as shown on Figure 6-4.

The following viewpoints are used for photomontages, taking into account the ZVI modelling and field validation:

- Cairns City Esplanade (Photopoint 01)
- Across Trinity Inlet at East Trinity (Photopoint 02)
- Captain Cook Highway at Smithfield (Photopoint 03-04)
- Yorkeys Knob beach at Richters Creek mouth (Photopoint 05)
- Skyrail (Photopoint 06)
- Yorkeys Knob Road southbound (Photopoint 07)
- Yorkeys Knob Hill on Janett Street (Photopoint 08)
- Yorkeys Knob Road northbound (Photopoint 09).

Locations are shown on Figure 6-5.
The Aquis Resort built form has been modelled using a combination of GIS software, CAD, Google Sketch-Up and Adobe Photoshop. These have then been overlaid on high-resolution photographs taken during field work (with GPS data), to create realistic photomontage images (post-construction). It is important to note that, due to the combination of perspective and the curvature of the earth, the relative heights of hills and structures, as seen from a distance, appear anomalous in that modelled buildings can appear taller than high hills behind, but shorter than the airport control tower (approximately 51 m AHD). Refer Figure 6-6.
PP01 – Cairns Esplanade

From the Cairns Esplanade, the development will not be visible above the fringing mangroves during the day.

![View from Photopoint 01 – The Pier (Cairns Esplanade).](image)

*Source: Appendix E (Figure 23).*

At night, lighting will illuminate an otherwise unlit area, however, from this viewpoint it will be diminished by distance, and seen in the context of the brighter airport lighting and the lights of the control tower in the middle ground.
PP02 – Off-shore (across water from East Trinity)

Parts of the Aquis Resort buildings will be visible in the distance when viewed across Trinity Bay from East Trinity (approximately 12 km away) and from boats and marine tourist routes. It will also be seen above the mangroves on clear days, but against a backdrop of mountains, with no discernible detail.

Figure 6-8 View from Photopoint 02 – Bessie Point.
Source: Appendix E (Figure 24).

As seen from this direction, the proposed Aquis Resort buildings will not be on the skyline, and their visual clarity will be reduced by haze and distance. The buildings will comprise a very small proportion of the view, and will be visually subordinate to the forested mountain ranges which dominate the skyline and frame the view. However, especially in night-time views across the bay, the Aquis Resort buildings will be perceived as an isolated node of built form separate from the Cairns CBD.

PP03-04 Captain Cook Highway at Smithfield

Two viewing locations were identified at Smithfield, where tall buildings on the project site are likely to be visible from the Captain Cook Highway.
Figure 6-9 View from Photopoint 03 – roundabout on Captain Cook Highway.

Source: Appendix E (Figure 25).

Figure 6-10 View from Photopoint 04 – from Captain Cook Highway with landscape buffer.

Source: Appendix E (Figure 26).
This part of the Highway passes through the low open Barron River delta floodplain, with a generally rural character which is becoming progressively urbanised in the Smithfield – Yorkeys Knob area. As highlighted on Figure 6-9 and Figure 6-10, from some points along the highway, intervening vegetation will screen all views of the proposed resort development, including the hotel towers (Figure 6-9) while from other points along the highway (Figure 6-10), motorists are likely to see the hotel towers on the skyline and part of the southern casino in between, rising above the sugar cane and the proposed landscape buffer, and other intervening vegetation. However, the buildings will be seen in the background and are likely to be noticed in side views or when motorists slow down at the roundabout.

PP05 – Yorkeys Beach/Richters Creek

The beach south of Yorkeys Beach, near the inlet of Richters Creek, is one of the few publicly accessible places within a mid-ground viewing distance (approximately 300 m from the Aquis Resort boundary) where it is likely that at least one of the hotel buildings located in the northern part of the Resort Complex Precinct (in particular the rooftop of Hotel/tower B) will be visible above the mangroves and dune vegetation.

There is some potential for night-time resort lights to be visible from the beach, but with additional screen planting on the foredunes, direct light spillage can be avoided, although there will be a discernible night-time glow from the hotel buildings.
Skyrail is one of the most popular tourist attractions in the Cairns region with tens of thousands of tourists visiting the Rainforest Cableway and Kuranda each year. From this viewpoint (at approximately 350 m AHD), the project site is visible in the background and the proposed tall buildings will be visually prominent and incapable of being screened.

The proposed resort will be a marked contrast to the surrounding rural landscape, as seen from this perspective. However the distance of view and the existing mosaic of various land uses visible from the cableway soften this contrast. Panoramic views from Skyrail, and from Henry Ross Lookout, include the highway, residential areas, the cable ski park tourist complex, Cairns Airport and a large retail hardware warehouse at Smithfield, as well as rural canefields.

![Figure 6-12 View from Photopoint 06 – Skyrail.](image)

Source: Appendix E (Figure 28).

At night, the lighting associated with the proposed resort complex will be a marked contrast to the surrounding dark rural landscape, but these lookouts and Skyrail vantage points are unlikely to be visited at night.
PP07 Yorkeys Knob Road Southbound

Yorkeys Knob Road is the nearest main road to the proposed resort, and currently has part-open views to the project site over the canefields, in combination with some existing intervening vegetation on the site frontage (Figure 6-13). Photopoint 07, at the end of Yorkeys Knob township, is at the edge of the project site looking south.

Although the development will be visible between vegetation from this point, it will not dominate the skyline (Inset C). Modelling also indicates that proposed roadside buffering (20 m wide, conservatively modelled to 7 m height) will generally screen views to all buildings, including the hotel roofs, as shown in Inset D. While Yorkeys Knob Road is expected to be raised by approximately 1 m and upgraded to four lanes (thereby changing its existing ‘back road’ character), the wide band of roadside trees will continue to screen most of the resort buildings. However, the band of trees will be broken in several places by future access and egress roads, and some buildings and lighting will be seen above or between trees, and directional / promotional signage will ensure that passing motorists are aware of the presence of the resort.
PP08 Yorkeys Knob Hill on Janett Street

Yorkeys Knob Hill offers a combination of open and partly enclosed views depending on vegetation in private gardens.

Figure 6-14 View from Photopoint 08 – Janett Street looking south from Yorkeys Knob hill.
Source: Appendix E (Figure 30).

From residences on the elevated parts of Janett Street looking south, there may be glimpses of the proposed development between or over intervening vegetation, although no such viewpoints were identified from the road (Figure 6-14).
PP09 Yorkeys Knob Road northbound

Figure 6-15 View from Photopoint 09 – corner Yorkeys Knob Rd and Cattana Rd looking north.
Source: Appendix E (Figure 31).

Figure 6-15 shows that the proposed resort precinct development will be visible on the skyline at the end of the long sightline from this viewpoint and it is possible that other buildings and structures associated with the maintenance area, equestrian centre and tennis centre will also be visible from the road. However, Inset D indicates that the proposed roadside buffering (conservatively modelled to 7m height) will considerably reduce the visibility and visual impacts as seen by northbound motorists (even when the road is raised and upgraded to four lanes) although some built form will be visible.

6.2.3 Landscape Character and Values

Figure 6-7 to Figure 6-15 demonstrate what the Aquis Resort will look like from designated viewpoints. It is clear that the project will change the landscape character of the local Yorkeys Knob area from a mosaic of rural canefields, wetlands, beach and residential suburb, to an area dominated by the built form and activity of a major resort complex. However, the retention of vegetated corridors along creeks, together with design and management of wide landscaped buffers and ecological restoration, will soften the interfaces. While the ‘international resort’ character will be confined to the site, with appropriate transitions to rural character beyond the site, the visual character of land uses in the Yorkeys Knob area will change.

The loss of rural character will mainly impact at the local level from ground-level views, such as driving along Yorkeys Knob Road (although as shown on Figure 6-13, screening vegetation will be highly effective in this location). It will also be visible from lookouts and from Skyrail, but at a distance of approximately 6 km and in the context of the mosaic of different land uses and changing patterns of the Barron River delta (Figure 6-12).
The proposed development will remove an area of canefields, a ‘valued Landscape Character Type’ in the Cairns region. The canefields of the site are visible mainly from Yorkeys Knob Road (not from the Captain Cook Highway), so it is the Yorkeys Knob area that will experience the most change in character.

Although the Captain Cook Highway at Smithfield is not identified as a scenic route or significant gateway, it is an important road for residents, tourists and holidaymakers, and is considered to be a sensitive visual receptor. Visibility analysis of the site, with no built form, indicates that those parts of the highway aligned towards the site are generally screened from view, and the part of the highway with potentially clear views to the site are near a roundabout, with mainly side-ways view.

From the Captain Cook Highway at the Yorkeys Knob Road roundabout, the development will be seen above the vegetation on the plains and will form part of the local skyline, although in the distance and for only a short period of time. This part of the Captain Cook Highway passes through a changing mosaic of different uses, and is not a sensitive receptor location.

6.2.4 Landscape Integrity and Wilderness (Remoteness)

Yorkeys Knob has no areas which exhibit ‘remoteness’, although the Yorkeys / Holloways Beach at Richters Creek mouth has local value as a place which is relatively free of visible development. There will be localised impacts of the proposed development on this section of beach, because the tops of tall buildings will be visible, as will the increased lighting at night, despite vegetative screening. The visible presence of tall buildings will reduce the perceived naturalness of this beach and the estuarine inlet.

The canefields and wetlands around Yorkeys Knob display landscape integrity, in the sense of long-standing patterns of natural vegetation, rural production and community expectations regarding the character of canefields. However in wider context, the Barron River delta is a mosaic of different land uses, with some parts of the Yorkeys Knob-Smithfield areas undergoing rapid changes, and the sense of an integral landscape being eroded.

The Aquis Resort development will change the character of the local area, and introduce a scale and modernity of development in marked contrast to its surrounds, and will accelerate the rate of change. These are considered to be the most significant visual impacts of the resort.

6.2.5 Impact on Aesthetic Values Associated with GBRWHA

The proximity and accessibility of the Great Barrier Reef are major reasons for locating the Aquis Resort in the Cairns area, and it is expected that many resort guests will be attracted to Far North Queensland in order to experience the reef. The project site is located so as to minimise any direct impacts on the GBRWHA and deliberately excludes any connection to Richters Creek (e.g. marina, boat access channel). While the project site does not about GBRWHA waters, and the proposed tall buildings will not be seen from Green Island or from the Fitzroy Island shoreline, they will be visible from off-shore and by GBRWHA visitors including tourists on ferry routes, and other boat-based users.

There are no aesthetic OUV attributes of the GBRWHA which are present on the project site or will be directly affected by the proposed development, although the taller buildings will potentially be visible from off-shore areas and islands within the GBRWHA. There is a potential intangible effect relating to ‘response to place’, whereby GBRWHA visitors and the community generally may consider that the naturalness of the waters off Cairns is reduced by the sight of tall buildings near Yorkeys Knob. However, given that the proposed Aquis Resort buildings will be similar in height to existing Cairns CBD buildings (Figure 6-16), and that there are nodes of built form along the coastline north from Cairns which are visible from off-shore (e.g. Buchans Point), it is unlikely that this intangible impact will be realised.
Accordingly, it is considered that the OUV and aesthetic attributes of the GBRWHA will not be significantly impacted by the proposed development.

### 6.2.6 World Heritage Values and Integrity

This is discussed in Chapter 22 (Matters of NES).

### 6.2.7 Construction Impacts

The scale of the Aquis Resort project will require construction over two stages and three distinct precincts, but the lake and building levels and associated roads, bridges and infrastructure are likely to be constructed in conjunction with the first stage. Buffer planting, ecological restoration and the golf course will be early components.

The visual impacts of the construction phase, inasmuch as they are separate from the visibility of tall buildings, are those associated with a large area of earthworks and partly completed buildings. These will be prominently visible as a contrast to the otherwise rural landscape, especially as seen from some aircraft flying into and out of Cairns Airport. However this temporary disturbance will only be seen in full from the air. Elevated lookouts in the district, such as Skyrail and Henry Ross Lookout, are approximately 6 km from the project site, and the construction works will be seen as minor distant features surrounded by cane fields.

Construction works will not be visible from the Captain Cook Highway or Smithfield, although the associated access road works, screen fencing and truck movements are likely to be temporarily visible. There will be no visual impacts of earthworks as seen from Cairns Esplanade, Palm Cove, Richters Creek mouth, off-shore or from Yorkeys Knob township (except possibly from several south-facing houses on the hill). The viewpoint most likely to be affected is Yorkeys Knob Road, where motorists will see roadworks, earthworks associated with the lake and islands, and buildings under construction until screening trees are established. Mitigation measures will provide additional screening early in the construction phase.

The visual impacts of construction of the Aquis Resort will be temporary. With respect to buildings and structures, these will became progressively visible as development proceeds.
6.3 MITIGATION AND MANAGEMENT

6.3.1 Screen planting

For viewing points close to the Aquis Resort, screen planting can be very effective as Figure 6-18 and Figure 6-18 demonstrates. Even a narrow strip of suitable trees (in this case 20 m wide and 7 m tall) can effectively hide the development entirely.

Figure 6-17 Views along Yorkeys Knob Road (anscreened).

Source: Appendix E (Figure 31 Inset C).
6.3.2 Lighting

The project site and surrounding rural areas south of Yorkeys Knob, and the Richters Creek mouth, are currently dark at night, apart from some lighting on Yorkeys Knob Road. This will change quite dramatically with development of a large-scale resort, which will be brightly lit. However the extent to which lights affect surrounding areas can be limited by lighting design, ensuring the project site is a discrete brightly-lit node, while the existing township of Yorkeys Knob and surrounding wetlands and beach are minimally affected. Lighting will be designed so as to restrict glare to within the site, screened by surrounding vegetation, with all lights above tree height shielded or downward directed so as to reduce impacts on beaches, waterways, wetlands and existing nearby residents. Lighting will also need to be compliant with Cairns Airport lighting restrictions embedded within CairnsPlan.

6.3.3 Construction Management

It is intended to firstly construct the lake and lagoons and the Stage 1 infrastructure. Ecological restoration and buffer screen planting will be undertaken early in the construction sequence, as the areas designated for planting will be available and accessible immediately, and plants will be growing through the construction phase.

Stockpiles, equipment storage and maintenance areas will be screened from external view during the construction phase, and screen fencing will be erected to reduce the visual impacts associated with earthworks, as the 20 m wide band of screen planting along Yorkeys Knob Road will take several years to achieve a tall dense screen. As seen from the air during construction, the project site will
appear as a large area of earthworks and part-completed buildings, but surrounded by bands of retained vegetation, planted trees, natural creeks and wetlands, and a golf course.

6.3.4 Presentation Opportunities

The location, name and target market for the Aquis Resort at The Great Barrier Reef present opportunities for interpretation of the natural features, conservation values and management principles of the GBR Marine Park, the Wet Tropics WHA and presentation of World Heritage attributes. A number of overseas guests will be attracted to Aquis Resort and to Cairns because of its proximity to, and association with, the Great Barrier Reef and the Far North Queensland rainforests, and will create additional demand for existing and new tourist services. Within the resort, the proposed large aquarium and rainforest will present a wide range of opportunities for nature-oriented education, awareness and interpretation. Planning for the resort themes, aquarium design and visitor activity will incorporate as many elements as possible relating to both the Great Barrier Reef and the Wet Tropics, in collaboration with the agencies responsible for managing these World Heritage Areas.

6.4 RESIDUAL IMPACTS

The proposed Aquis Resort, an intensively developed complex of buildings to 13 and 20 storeys and other major elements on a 341 ha site, is likely to have the following visual impacts, with mitigation measures in place:

- The existing rural character and landscape integrity of the Yorkeys Knob area will change to a large-scale international tourism precinct, particularly as seen from Yorkeys Knob Road, one section of the Captain Cook Highway at Smithfield, and in the distance from two lookouts (Skyrail and Henry Ross Lookout). The scale of change will be exacerbated by the likely rate of change, in that most of the development will take place in a continuous phase.

- Tall buildings on the site will also be seen from off-shore, from some elevated houses at Yorkeys Knob and Smithfield, and will be glimpsed above the mangroves as seen from the Cairns Esplanade; but will not be seen from Green Island, Fitzroy Island, Palm Cove, Redlynch or Redlynch Valley.

- The existing quiet beach at the mouth of Richters Creek may lose its perceived naturalness and seclusion, although development is quite distant from the beach and the screening effectiveness of coastal vegetation will be enhanced.

- There are unlikely to be any visual impacts on the GBRWHA, its OUV and associated aesthetic attributes, or on intangible perceptions or responses, as the built form will be no more visible from off-shore than Cairns CBD buildings (see Chapter 22 – Matters of NES).

- The lighting associated with this major complex will be noticeable over a wide distance, either directly or as night-time glow, and from a distance may appear to be similar to or compatible with airport lighting.

- Yorkeys Knob Road will be upgraded, and its character will change from a two-lane rural road to a four-lane arterial road elevated to some degree above the surrounding land. The surrounds as experienced by current residents and future guests, will change from canefields to a wider and more extensively landscaped resort access road, with a wide band of screening forest. Tall buildings will be evident in the mid-distance.

- The resort facilities proposed for the southern part of the site (golf course, tennis centre etc.) will create a gateway to both the resort and to Yorkeys Knob residential area, and these facilities will be visible from Yorkeys Knob Road and the highway, especially at night.

- The development will be seen from the air by passengers on planes approaching or taking off from Cairns Airport, and from this perspective it will appear as a highly artificial pattern of intensive tall development. The construction phase will also be most visible when seen from the air.