

Appendix A

Lord Howe Island
Aerodrome Technical
Inspection 2017



LORD HOWE ISLAND

AERODROME TECHNICAL INSPECTION

2017

CONDUCTED ON

23rd – 26th July 2017

PREPARED FOR

Lord Howe Island Board

PREPARED BY

Airport Operation Support Pty Ltd

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CERTIFICATION

The annual Aerodrome Technical Inspection for Lord Howe Island Aerodrome was conducted over the 23rd – 26th July 2017 by Graham Oehlerich.

The inspection was conducted in accordance with the requirements set by the Civil Aviation Safety Authority in Civil Aviation Safety Regulations 1998 Part 139 Aerodromes, and the Manual of Standards Part 139 – Aerodromes.

The Aerodrome Technical Inspection was a physical inspection of the aerodrome's facilities together with the operational and management protocols that are in place. Its purpose is to identify any deterioration that could make the aerodrome unsafe for aircraft operations. Remedial action is recommended for each deficiency identified.

This Aerodrome Technical Inspection did not include an inspection of the aerodrome's electrical systems. This report verifies whether an Electrical Technical Inspection had been conducted by a qualified electrician.

The Aerodrome Technical Inspection included an examination of evidence recorded during the year, which has been documented in this report. The opinions expressed in this report have been formed on that basis.

I meet the requirements of the Civil Aviation Safety Regulation 1998 Part 139, Section 139.240, Paragraph 2 (a) & (c). In addition, I am a CASA approved Aerodrome Safety Inspector in accordance with Civil Aviation Safety Regulation 1998 Part 139, Section 139.320.

I hereby certify that, to the best of my knowledge and, conditional upon rectification of the indicated deficiencies, the aerodrome facilities and aerodrome equipment meet the applicable standards for a "Certified" aerodrome.



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Director, Airport Operation Support Pty Ltd

22nd August 2017

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SUMMARY AND RECOMMENDATIONS

The aerodrome is “Certified” under Civil Aviation Safety Regulations 1998 Part 139 Aerodromes. The Civil Aviation Safety Authority requires the operator of a “Certified” aerodrome to arrange for an Aerodrome Technical Inspection on an annual basis.

The purpose of this inspection is to cover the requirements of an Aerodrome Technical Inspection. The electrical component is not part of this Aerodrome Technical Inspection. This report verifies whether an Electrical Technical Inspection (ETI) had been conducted by a qualified electrician.

Except in those areas as identified in the recommendation/s below:

- The airport meets the requirements for a “Certified” aerodrome as prescribed in Civil Aviation Safety Regulations 1998 Part 139 Aerodromes and the promulgated, Manual of Standards Part 139 – Aerodromes.
- The physical characteristics of the airport and its facilities are compliant with the relevant standards or are adequate for aircraft safety.
- Operating procedures are consistent with that set out in the Aerodrome Manual, and are appropriate and adequate for the expected level of aircraft activities at the aerodrome.
- Staff are experienced, trained and qualified to conduct the safety related functions of the aerodrome.
- Management is aware of the airport safety functions and can be expected to continue correctly operating the airport.

The onus (Manual of Standards Part 139 – Aerodromes, Section 10.18.1.5) rests with management to develop and implement plans for corrective action based on the recommendations derived from the annual Aerodrome Technical Inspection.

It is the responsibility of Airport Operation Support Pty Ltd to check whether such plans for corrective action have been completed (refer to Section 11).

The manner, by which the plans for corrective action are developed and implemented, will be scrutinised and assessed by the Civil Aviation Safety Authority.

The following “ATI Plan for Corrective Actions” table is presented below for possible use and to summarise the recommendations made within this report:

2017 ATI Plan for Corrective Actions				
ATI Recommendations	Corrective Action Planned	By Whom	By When	Outcome
Recommendation 1: To monitor and seal any surface ruptures to the sealed manoeuvring areas (RWY, TWY and apron).				
Recommendation 2: To backfill and re-grade the runway strip to achieve compliant transverse slopes to the southern side of THR 10 (refer to MOS 139, Section 6.2.22).				
Recommendation 3: To mark the apron parking positions in accord with the apron parking position plan designed by Airworks Consulting Pty Ltd.				
Recommendation 4: To consider publishing all known obstacle and/or terrain Obstacle Limitation Surface infringements in the En-Route Supplement Australia under "AERODROME OBSTACLES".				
Recommendation 5: To finalise and produce a hard copy of the manual as soon as practical, and forward and electronic PDF version to CASA inclusive of the revised OLS and PANS-OPS.				
Recommendation 6: To conduct a full field Emergency Exercise and complete the formal annual review of the Aerodrome Emergency Plan.				
Recommendation 7: To lop, remove or re-locate those obstacles found to be infringing the OLS as identified by yellow highlighting and the word "LOP" in the survey result tables within Section 10.2 of this report.				

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1.0 INTRODUCTION

Lord Howe Island Board (the Board) converted Lord Howe Island Aerodrome's status to that of a "Certified" aerodrome (Certificate 1-6EGB) on 27 April 2006. The Civil Aviation Safety Authority requires the operator of a "Certified" aerodrome to arrange for an Aerodrome Technical Inspection annually.

Purpose: The purpose of this inspection is to cover the requirements of an Aerodrome Technical Inspection.

This Aerodrome Technical Inspection is a physical inspection of the aerodrome's facilities together with the operational and management protocols that are in place. Its purpose is to identify any deterioration that could make the aerodrome unsafe for aircraft operations. Remedial action is recommended for each deficiency identified.

1.1 DEFINITIONS

Throughout the report, several aviation specific abbreviated terms and / or acronyms have been used. These are defined in Appendix B, and from here-on will be used within the report.

1.2 INSPECTION DATES

The following is a history of inspection dates:

- 1992 to 2000: Various Aerodrome Technical and Safety Inspections were conducted by Aerodrome Services.
- 2001 to 2003: Various Aerodrome Technical and Safety Inspections were conducted by Aerodrome Operation Support Pty Ltd to now obsolete standards and regulations.
- 2004 to 2006: Various annual Aerodrome Technical Inspections (ATIs) were conducted by Aerodrome Operation Support Pty Ltd in accordance with the requirements of CASR 139, Section 139.230 and the MOS 139; the current regulation and standard respectively.
- June 2007: The annual ATI was conducted by the Lord Howe Island Board.
- 2008 to 2016: An initial and subsequent annual ATIs were conducted by Aerodrome Operation Support Pty Ltd in accord with current standards and regulations.
- July 2017: This annual ATI was conducted by Airport Operation Support Pty Ltd (AOSPL).

1.3 SCOPE

The inspection was conducted in accordance with the requirements set by the CASA in CASR 139 and the MOS 139. The electrical component of this ATI is not required as the aerodrome has not been equipped with runway lighting for night operations.

CASA requires that, as a minimum, a "Certified" aerodrome conducts an ATI in accordance with the Table 1 below.

2.0 GENERAL

2.1 DEVELOPMENT WORKS

In the past 12 months:

- The old terminal was removed, and a new terminal design was under construction; commencing late July 2017 with an estimated completion date of December 2017.

In the next 12 months:

- Additional TWY blue edge lights will be installed in the next 6 months.
- The GA apron has been reviewed to cater for potential larger itinerant / non-RPT ACFT, and the apron may be re-orientated.
- The Bureau of Meteorology may move their primary AWIS anemometer adjacent to the PWI to receive more meaningful wind information for aircraft operations.
- A second landside / airside gate will be installed for RPT ACFT use if required.

2.2 MAINTENANCE WORK

In the past 12 months:

- Line marking was re-instated as required.
- Edge drops are monitored and filled as required.

In the next 12 months:

- The identified Norfolk pine trees have been scheduled for removal.
- Obstruction lights will be installed on the anemometer and the critical section of Blinky Beach dune.
- The infringing secondary wind indicator will be day (hazard) marked (red and white).
- The new apron parking positions will be implemented.
- All wind indicators will be replaced.
- An OLS plan will be re-designed and implemented from a future planning perspective.

2.3 AIRCRAFT INCIDENTS

A separate file is maintained in which aircraft incidents are recorded.

- Seven bird strike occasions were reported to the ATSB by either the Board or Qantas.
 - Last reported by the Board: 6th December 2016 - The RPT Dash 8 ACFT striking a Whimbrel (bird) on landing.

2.4 AIRCRAFT ACTIVITY

The following aircraft activities occur:

- Generally, at peak operational periods, there are 10-20 RPT operations (where one operation equals two movements comprising landing and take-off) per week by Qantas Link using DHC 8-200 series aircraft depending on the holiday season.
 - Presently, there are 8 RPT operations per week.
- Charter operations and occasional operations by RAAF Hercules aircraft for training and emergency night evacuations.
- A few helicopter movement frequent the aerodrome of both the Board and private purposes.
- NSW Air Ambulance Service, Government and itinerant aircraft.

2.5 SPECIALIST ACTIVITY

The following specialist activities occurred at Lord Howe Island Aerodrome in the past year:

- Simon Hatfield from Airworks Consulting Pty Ltd was engaged (May 2017) to re-design the apron parking positions and produce an apron parking position plan, which will be implemented by the end of September 2017.
- Aerodrome Operation Support Pty Ltd conducted an annual ATI in August 2016, and the ensuing report was available for perusal.
- CASA conducted a surveillance inspection on Lord Howe Island Aerodrome during the period 10-12th of October 2016 by Mr Iain Lobegeier, and the ensuing report was available for perusal.
 - Prior to this audit, the last CASA audit occurred on the 16th and 17th of May 2012, and 29th and 30th of April, and the 1st of May 2014.
- A Bird and Animal Hazard Management Plan was reviewed and re-issued in full (dated July 2016 as version 7). Version 8 is due about August 2017.
- No Electrical Technical Inspection (ETI) is currently required airside as there are no reticulated electrical systems, and only emergency operations are permitted at night.

3.0 AERODROME LIGHTING

3.1 RUNWAY EDGE LIGHTS

Runway edge lights: No reticulated runway lighting is provided but solar powered runway emergency lights (Avlite) have been installed with a longitudinal spacing of 90m and a lateral spacing of 32m. They are provided for emergency use only.

- They can only be activated by remote control by approved Board staff.
 - Pilots are not able to activate the lights from the air.
- They were all operational when inspected at dusk.
 - They are regularly used for night training flight exercises by the RAAF and the NSW Ambulance service.

In addition, non-standard red reflectors are provided at the end of the sealed clearways and the turning node sides (re-instated November 2015).

3.2 CONDITION OF THE RUNWAY LIGHTS

The solar edge lights are checked for serviceability at least once a month and are routinely cleaned as and when required.

3.3 TAXIWAY LIGHTING

Blue solar powered (Avlite) TWY edge lights are provided and they operate like the RWY edge lights.

Amber solar powered (Avlite) TWY edge lights at the holding point are provided and they operate like the RWY edge lights.

3.4 APRON FLOODLIGHTS

No apron flood lights are provided.

Blue solar powered (Avlite) apron edge lights define the entrance of the apron and they operate like the RWY edge lights.

3.5 PRECISION APPROACH PATH INDICATOR

A PAPI is not provided.

- Provision of a single sided (left side of an approaching aircraft) PAPI system was considered by the Board in the 2011/12 financial year and was found to be unfeasible.
 - It was reviewed once in the 2012/13 financial and concluded as impossible to provide.

3.6 PILOT ACTIVATED LIGHTING SYSTEM

A Pilot Activated Lighting (PAL) system is not provided. The solar powered runway and all other movement area edge lights are remotely switched on when required by the duty Aerodrome Reporting Officer.

3.7 AERODROME FREQUENCY RESPONSE UNIT

An AFRU was installed in March 2010. It operates on the CTAF frequency 126.7MHz.

- It was functioning clear and correct when tested.

3.8 HAZARD AND OBSTRUCTION LIGHTS

Hazard and obstruction lights: The inner horizontal surface is infringed by terrain. To enhance aircraft safety during emergency operations at night, the Board has installed solar powered obstruction lights on Transit Hill and Intermediate Hill.

- They are both remotely activated together with the runway lights.

- Both were found to be in a working condition.

3.9 AERODROME BEACON

Not provided and not required.

3.10 WIND DIRECTION INDICATOR LIGHTS

The primary wind indicator is not currently illuminated.

3.11 LIGHTING AND ELECTRICAL INSPECTION

Not currently required.

3.12 EARTHING POINTS

Earthing points are not provided on the apron areas and nor are they required.

3.13 AWIS

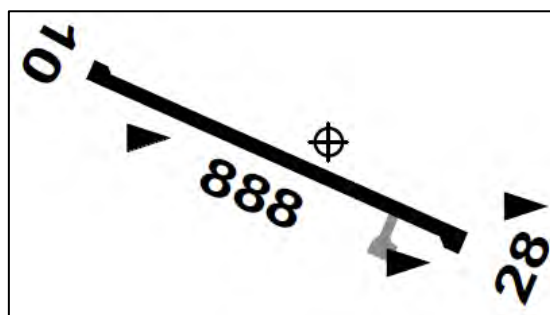
Two Automated Weather Information Systems were provided by the Board but they are maintained by the Bureau of Meteorology.

- Both were reported fully functional.
- One, located the greater distance away from the runway will be re-located near the PWI.

4.0 MOVEMENT AREA PAVEMENTS AND DRAINAGE

Several movement areas are present at the aerodrome (see the diagram below) and they include:

- One runway:
 - RWY 10/28.
- One taxiway and several taxilanes:
 - One sealed RPT taxiway.
 - An internal RPT apron taxilane.
 - Several grass GA apron taxilanes.
- Two aprons:
 - A sealed RPT apron.
 - A grass GA apron.



This section of the report appraises the compliance of the physical pavement with respect to the MOS 139 by way of a visual inspection of the surface.

It provides a visual assessment of the movement area surfaces' condition from a perspective of whether it is safe for operations.

Recommendations will be made if there are any MOS 139 non-compliances, if further technical assessment requiring specialist equipment (such as for friction and / or bearing capacity testing) is needed, safety is compromised by failures, and / or ruptures to the surface that appear to compromise the bearing capacity of the compacted subgrade.

4.1 RWY 10/28

Description: RWY 10/28 has a sealed surface on a magnetic bearing of 100 degrees with a 14 degree variation to the east as published in the ERSA.

- Turning nodes are provided at both RWY ends; LHS of APCH.

Classification: Code 2 instrument non-precision approach runway.

Dimensions: The runway is 888m long by 30m wide as published between the TKOF end bars; 785m between APCH end bars.

- The following RWY physical characteristics were published, and this was checked as correct.

RWY	(CN)	TORA	TODA	ASDA	LDA
10	(2)	888 (2913)	948 (3110) (20%)	888 (2913)	888 (2913)
28	(2)	888 (2913)	948 (3110) (1.6%)	888 (2913)	785 (2575)

- It is noted that the 60m of clearway at each end of the runway has been prepared with a pavement to the same standard as the runway.
 - The clearways also act as turning nodes and blast areas.
 - The turning nodes are located on the LHS of approach to each end.
 - If pilots choose to take-off from the sealed RWS end bar, then 60m distance can be added to TORA, TODA, ASDA and STODAs, which is a benefit.

Surface Description: The runway comprises of a flexible asphalt surface.

- History: The runway was originally built in 1974 by the Australian Defence Force. The surface was re-sealed (chip seal) with bitumen in 1996/97 following storm damage. A surface enrichment seal was applied to the central 15m in 1999. Between May and July 2015, an asphalt nominal 45mm correctional overlay was applied.
- Surface failures, seal condition and MOS 139 compliance are discussed in detail below but can be summarised as:
 - There are no outstanding surface failures warranting immediate closure of the movement area.
 - The surface condition remains MOS 139 compliant.

Surface Failures: Failures are associated with excess live loads, excess use / movements, poor construction, and / or loss of surface and subgrade integrity compromising the design strength associated with a deviation from the design optimum moisture content. Failures are evidenced by cracking, rutting, corrugation, depression and shoving of the surface in one or all dimensions. Any rupture to the seal which exposes the subgrade to variation from optimum moisture content is a surface failure.

- Cracking: One isolated longitudinal crack was observed to the runway (see photograph below).



- This crack along with any type of surface rupture must be maintained sealed to prevent the ingress of water into the pavement subgrade.
- ➔ **Recommendation 1: To monitor and seal any surface ruptures to the sealed manoeuvring areas (RWY, TWY and apron).**

- Rutting: No visual signs of rutting were observed.
- Corrugations: No corrugations were observed.
- Depressions / Bird baths: Only minor / negligible depressions were observed.
- Shoving: No shoving failures were observed.
- Vegetation outbreaks: Maintained poisoned and clear.
- Other: There were no outstanding failures observed to be warranting immediate repair.

Seal Condition: The condition of the pavement is assessed by looking for visual signs of aging. Specifically signs of aging are classified as; flushing (bleeding), stripping, raveling (fretting), polishing and delamination.

- Flushing / Bleeding: No visual signs of flushing leading to bleeding were observed.
- Stripping: No visual signs of stripping (removal of aggregate in mix) were observed as adverse to ACFT safety.
 - As part of routine maintenance, the Board regularly check the status of the overlay and proactively seek to stabilise the asphalt were the surface appears to be brittle / potential stripping.
- Ravelling: No visual signs of ravelling were observed as adverse to ACFT safety.
 - As part of routine maintenance, the Board regularly check the status of the overlay and proactively seek to stabilise the asphalt were the surface appears to be brittle / potential unravelling.
- Polishing: No visual signs of polishing (rounding of aggregate in mix) were observed.
- Delamination: None observed.
- Other: None observed.

Surface Condition:

- Cleanliness / FOD: No Foreign Object Debris and loose aggregate / stones were observed on the surface.
- Pavement texture: The sealed surface of the runway meets the texture requirements of MOS 139, Section 6.2.9.1.

- Strength / Pavement classification: The rating of the pavement is PCN 10/F/A/550(80PSI)/U which is adequate for the type of aircraft presently serving the aerodrome.
 - There was nothing to indicate that this rating cannot be maintained.
 - The Dash 8-200 operates on a tyre pressure concession which is issued every 2 years.
- Shoulders: No constructed / prepared shoulders are provided, and none are required.
- Edge drop off: The drop off from the edge of the seal to the runway strip appeared to be compliant (less than 25mm).
- Rideability: When traversed at high speed in a conventional vehicle the surface rideability was assessed as excellent.
- Slopes: All transverse and longitudinal slopes appeared compliant.
- Drainage: Water appears able to readily flow off the surface.

Runway Strip:

- Dimensions: The overall strip dimensions are 1008m long by 90m wide.
 - The 90m wide RWS width is mildly truncated at both ends (right hand side of approach) and details of this non-compliance against the requirements of CASR 139, Section 139.015 have been included in the Aerodrome Manual under the "Aerodrome Information" chapter (paragraph 4.0 Aerodrome Exemptions) as an explanation.
- Surface: The surface is generally well graded with evenly mown dense grass that is evenly maintained at about 200mm in height.
- Slopes: For most of the RWS, the transverse and long section slopes appeared minimal but met the specifications MOS 139.
 - At the southern side of THR 10 (RHS of APCH), the transverse slopes appeared to be too steep (refer to photograph to determine approximate location).



- ▲ When crudely assessed based on 6 ground level survey points, the results revealed that the transverse slope was not compliant for a Code 2 runway.
- ▲ For a Code 2 runway, the maximum permitted slope on the graded portion of the runway strip must not be more than 3.0% (refer MOS 139 Section 6.2.22.1(a) excerpt).
- ▲ It is important for the Board to maintain the RWS compliant especially because the full required RWS is not provided (truncated at two corners).

6.2.22 Runway Strip Transverse Slope

- 6.2.22.1 The transverse slope of the graded area of the runway strip must not be more than:
- (a) if the runway's code number is 3 or 4 — 2.5%; and
 - (b) if the runway's code number is 1 or 2 — 3%.
- 6.2.22.2 The transverse slope of the graded runway strip adjacent to the runway shoulder, for the first 3 m outwards, must be negative and may be as great as 5%.
- 6.2.22.3 No part of a fly-over area, or any object on it, must project through a plane:
- (a) that starts along each outer side of the graded area; and
 - (b) has an upward slope away from the graded area of more than 5%.

→ **Recommendation 2:** To backfill and re-grade the runway strip to achieve compliant transverse slopes to the southern side of THR 10 (refer to MOS 139, Section 6.2.22).

- **Drainage:** Water runoff has been achieved over and away from the strip but would be susceptible to any blockage such as long grass.
 - As part of the runway asphalt re-surfacing work (September 2015), all drains located outside of the runway strip were re-established, deepened and vegetation removed. A consistent effort to maintain the drains unblocked is crucial and ongoing.
- **Cleanliness / FOD:** Any object such as large tufts of grass, rocks, ant nest and so on greater than 50mm diameter renders that area as unserviceable requiring immediate remediation.
 - Large loose stones: No non-compliances were observed.
 - Ant nests: No non-compliances were observed.
 - Rills: No non-compliances were observed.
 - Tufts of grass: No non-compliances were observed.
- **Holes / cracks / depressions:** With respect to holes / cracks / depressions such as from erosion or slasher wheel ruts within the RWS, that section of the RWS is deemed non-compliant if they are greater than 75mm in any dimension.
 - Dry weather cracks: No non-compliances were observed.
 - Depressions: No non-compliances were observed.
 - Wheel ruts: No non-compliances were observed.
 - Erosion: No non-compliances were observed.
- **Rideability:** The overall rideability of the runway strip was considered compliant.

RESA: Instrument non-precision approach circling procedures have been designed for RWY 10/28. The new RESA standard would not be obtainable. The 60m of full strength pavement provided within the marked runway strip on each end of the runway could serve as Runway End Safety Areas in accordance with a previous Australian Standard.

Stopway: Not provided, and nor required.

Clearway: 60m is provided at each end within the confines of the runway strip. Both meet the current standards.

Overall Drainage: As part of the asphalt re-surfacing works (completed September 2015), site drainage outside of the runway strip was re-established with deeper v-drains.

- The overall drainage has been observed and reported improved and effective and is subject to ongoing maintenance and evaluation.

4.2 TAXIWAYS

One taxiway and several taxilanes exist at the aerodrome:

- One sealed RPT taxiway.
- An internal RPT apron taxilane.
- Several grass GA apron taxilanes.

4.2.1 RPT TAXIWAY

Description: The RPT taxiway is the main sealed taxiway connecting the runway and main apron.

Dimensions: The taxiway is sealed (asphalt overlay) 15m wide.

Classification: The taxiway is suitable for all Code B aircraft and all Code C aircraft with a wheelbase less than 18m, which includes the Dash 8-100/200/300 ACFTs.

Surface Description: The taxiway comprises of an asphalt surface which is the same as that described for the runway (refer above).

- The taxiway was originally about 10m wide. In 2013, the taxiway was widened by 2.5m west of the centreline to produce a 12.5m wide TWY. Following this, (2013 / 14 financial year), the taxiway was again widened by 2.5m, but on eastern side to provide an overall 15m wide taxiway. The entire taxiway was asphalt overlaid in 2015 along with the runway.
- Surface failures, seal condition and MOS 139 compliance are discussed in detail below but can be summarised as:
 - There are no outstanding surface failures warranting immediate closure of the movement area.
 - The surface condition remains MOS 139 compliant.

Surface Failures:

- Cracking: No visual signs of cracking were observed.
- Rutting: No visual signs of rutting were observed.
- Corrugations: No corrugations were observed.
- Depressions / Bird baths: Only minor / negligible depressions were observed.
- Shoving: No shoving failures were observed.
- Vegetation outbreaks: Maintained poisoned and clear.
- Other: There were no outstanding failures observed to be warranting immediate repair.

Seal Condition:

- Flushing / Bleeding: No visual signs of flushing leading to bleeding were observed.
- Stripping: No visual signs of stripping (removal of aggregate in mix) were observed.
- Ravelling: No visual signs of ravelling were observed.
- Polishing: No visual signs of polishing (rounding of aggregate in mix) were observed.
- Delamination: None observed.
- Other: None.

Surface Condition:

- Cleanliness / FOD: No Foreign Object Debris and loose aggregate / stones were observed on the surface.
- Pavement texture: Frictional characteristics of the surface appear adequate.
- Strength / Pavement classification: There was nothing to indicate that the strength of the taxiway was anything less than that of the runway.
 - The Dash 8-200 operates on a tyre pressure concession which is issued every two years.
- Shoulders: No shoulders are provided and nor are required.
- Edge drop off: The drop off from the edge of the seal to the taxiway strip appeared to be less than 25mm.
- Rideability: When traversed in a conventional vehicle at taxiing speeds, the surface rideability was assessed as excellent.
- Slopes: All transverse and longitudinal slopes appeared compliant.
- Drainage: Water appears able to flow off the surface without large or prolonged collection points.

Taxiway Strip:

- Dimensions:
 - Ungraded width: A total width of 52m is provided as required for Code C aircraft.
 - Graded width: A graded width of 25m is provided as required for Code C aircraft.
- Surface: The surface is well graded and evenly mown dense grass.
 - To improve drainage and minimise water damage to the sealed movement area, the grass taxiway strip should be maintained short.
 - The reasons for this are detailed above under "Runway Strip" subheading in Section 4.1 above.
- Slopes: All slopes are minimal but adequately serve to remove water runoff.
- Drainage: The drainage associated with the minimal slopes would not fare well or function correctly with long grass due to asymptotical negative hydraulic impacts, and therefore must be maintained short.
 - Note that water above and below grass taxiway strips must be designed to drain away into external side drains that eventuate to creek / river / sea level; away from the designed asphalt taxiway.

- Cleanliness / FOD:
 - Large loose stones: No non-compliances were observed.
 - Ant nests: No non-compliances were observed.
 - Rills: No non-compliances were observed.
 - Tufts of grass: No non-compliances were observed.
 - Other: No other non-compliances were observed.
- Holes / cracks / depressions:
 - Dry weather cracks: No non-compliances were observed.
 - Depressions: No non-compliances were observed.
 - Wheel ruts: No non-compliances were observed.
 - Erosion: No non-compliances were observed.
- Rideability: Overall the rideability of the taxiway strip was suitable for its intended purpose.

Overall Drainage: A natural drainage path traverses the taxiway / taxiway strip.

- The overall drainage of the taxiway and taxiway strip was found to be adequate for average rainfall patterns when the grass associated with the taxiway strip is maintained short.
 - Note that outer v-drains external the movement areas were re-established in September 2015 to better remove all overland flow.

4.2.2 RPT APRON TAXILANE

Description: An unmarked / undefined taxilane is located on the main RPT apron along the north-eastern edge between the main taxiway and grass GA apron. Its purpose is to give GA ACFT access to the grass GA apron.

Dimensions: Its dimension appear adequate for its intended purpose but with restrictions.

- Access to the grass GA apron is only possible when RPT parking bay 2 is not being used.
- If parking bay 2 was being used, then GA ACFT could only safely pass by if they utilised the surrounding grass areas.
- The LHIB are aware of the apron constraints and operate bay 2 free of parked RPT ACFT. In the future, the LHIB may provide / re-align yellow cone markers to permit GA ACFT to bypass the sealed apron via the grass surrounds to access the GA apron area.
 - Note that an unrestricted Code A taxilane must be 24m wide.

Classification: The taxilane appears suitable for all Code A ACFT when RPT parking bay 2 is not utilised.

Surface Description: The surface comprises of designed subgrade overlain by high strength pavers.

- Surface failures, seal condition and MOS 139 compliance are discussed in detail below but can be summarised as:

- There are no outstanding surface failures warranting immediate closure of the movement area.
- The surface condition remains MOS 139 compliant.

Surface Failures:

- Cracking: None observed to the pavers.
- Rutting: No rutting deformations were observed.
- Corrugations: No corrugation failures were observed.
- Depressions / Bird baths: No depressions or bird baths were observed.
- Shoving: No shoving failures were observed to the taxilane area.
- Vegetation outbreaks: Maintained poisoned and clear.
- Other: There were no outstanding failures observed to be warranting immediate repair.

Seal Condition:

- Flushing / Bleeding: Not applicable.
- Stripping: Not applicable.
- Ravelling: None observed.
- Delamination: None observed.
- Other: None.

Surface Condition:

- Cleanliness / FOD: No Foreign Object Debris and loose aggregate / stones were observed on the taxilane.
- Pavement texture: The surface of the taxilane appears to provide adequate frictional characteristics especially at the lower taxiing speeds.
- Strength / Pavement classification: The pavement strength of taxilane appears adequate with no obvious loading failures apparent.
- Shoulders: No prepared shoulders are provided, and none are required.
- Edge drop off: The drop off from the edge of the pavers appeared to be compliant, with any that were observed less than 25mm.
- Rideability: When reviewed, the rideability was assessed as good and safe.
- Slopes: All transverse and longitudinal slopes appeared compliant.
- Drainage: Located on the RPT apron, the design slope of the apron combines well with the surrounding slopes of adjoining grassed areas that lead away into natural drainage paths.

Taxiway Strip: Not applicable to taxilanes.

4.2.3 GA APRON GRASS TAXILANES

Description: The grass GA apron, located east of the RPT apron appears as a large open well prepared grassed area. On closer inspection, several sets of tie-down cables have

been provided / installed within the GA apron; roughly east to west in alignment to park GA ACFT as indicated by painted white tyres. The areas between the tie-down cables / parking areas are the GA apron grass taxilanes.

- The purpose of the grass taxilanes is to allow GA ACFT to power in and out of the GA apron safely avoiding parked ACFT that are aligned with the orientation of the provided tie-down cable sets; self-regulate.

Dimensions: The taxilane widths are not marked out with yellow cone markers. If they were, yellow cone markers would be used.

- Note that the correct taxilane width suitable for all Code A ACFT is 24m, and 33m for all ACFT up to Code B. Any provided width must be clear of all obstacles.
 - A 24m wide taxilane would be appropriate for this apron.

At present the taxilane widths are purely implied based:

- Assumed ACFT lengths and wing spans,
- The distance between the apron boundaries or obstacles located close just outside the apron boundaries, and the outer tie-down cable set placements, or
- The distance between one tie-down cable set and another tied-down cable set.

Based on this, there would appear to be appropriate net taxilane widths available / suitable for Code A ACFT limited to a maximum mass of 5700kg and wing span of 15m.

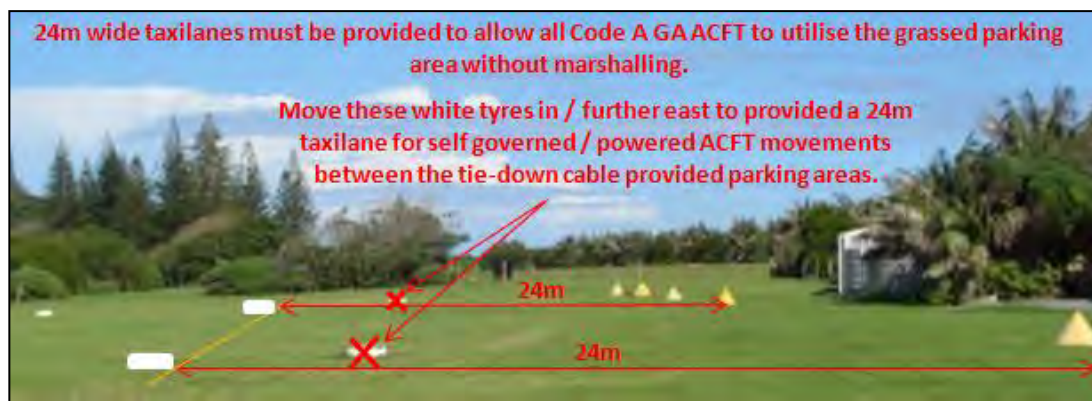
It is noted that the entire area is obviously weight restricted due to the grass surface and self-regulated, and this is permitted under Section 8.5.1.2 of the MOS 139 (see excerpt below).

8.5.1.2	Where aprons accommodate only aircraft of less than 5,700 kg MAUM, there is no mandatory requirement for taxi guidelines nor for marked aircraft parking positions. In these cases, the aerodrome operator may decide whether to provide markings, or to allow random parking.
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Should the board provide dedicated parking areas, markers and / or markings, then they must be provided compliant with the MOS 139.

In the 2013 ATI, it was brought to the Board's attention that the painted white tyres (that reveal the tie-down cable locations and therefore parking extents) locate too close the boundary and the RPT apron. It was recommended that the tyres be moved further east to provide a clear 24m wide taxilane along the boundary and clear of the RPT apron.

- The LHIB has acknowledged this and has stated that they intend to improve this in the future.
- It is noted that in all past ATI inspection, no ACFT has ever been observed parking in this area.



EXAMPLE FROM 2013 ATI REPORT.

- Considering Section 8.5.1.2 of the MOS 139 and the LHIB intentions to re-configure the grass apron and general non-use of the area, any recommendation and / or advice will be reserved for when necessary.

Classification: The taxilane appears suitable for all intended Code A ACFT less than 5700kg and 15m maximum wing span (read discussion above).

Surface Description: The surface comprises well graded dense grass maintained evenly short.

- Surface failures, seal condition and MOS 139 compliance are discussed in detail below but can be summarised as.
 - There are no outstanding surface failures warranting immediate closure of the movement area.
 - The surface condition remains MOS 139 compliant.

Surface Failures:

- Cracking: Not applicable in this climate.
- Rutting: No rutting deformations were observed.
- Corrugations: No corrugation failures were observed.
- Depressions / Bird baths: No depressions, soft spots or bird baths were observed.
- Shoving: No shoving failures were observed.
- Other: There were no other outstanding failures observed that warranted immediate repair.

Seal Condition: Not applicable to grass surfaces.

Surface Condition:

- Cleanliness / FOD: No Foreign Object Debris and loose aggregate / stones were observed on the surface.
- Surface texture: The grass surface is generally suitable for dry weather use only.
- Strength / Pavement classification: The strength of taxilanes appear adequate for the intended ACFT (less than 5700kg) under favourable weather conditions.
- Shoulders: No prepared shoulders are provided, and none are required.
- Edge drop off: Not applicable.

- Rideability: When reviewed, the rideability was assessed as good and safe at taxiing speeds.
- Slopes: All transverse and longitudinal slopes appeared compliant.
- Drainage: Located on the GA apron, the design slope of the GA apron combines well with the surrounding slopes of adjoining grassed areas that lead away into natural drainage paths. In large storm related floods, the current drainage paths need to be improved for the entire aerodrome as aforementioned in previous movement areas.

Taxiway Strip: Not applicable to taxilanes.

4.3 APRON AREAS

There are 2 aprons provided at the aerodrome:

- A RPT main apron, and
- A GA grass apron.

4.3.1 RPT APRON

Description: The paved RPT apron is located south of the main runway towards the eastern RWY end.

Dimensions: The RPT apron is capable of simultaneously operating and parking 2 Dash 8-100/200 aircrafts.

- The small TWY-RPT apron asphalt fillet, was re-established with the 2015 RWY/TWY asphalt works. This enables parking bay 2 to be utilised by providing the correct OMGWS clearance to the sealed TWY / apron edges.
- The entire eastern edge of the RPT apron received a newly constructed asphalt pavement associated with the 2015 RWY/TWY asphalt works. This additional sealed area is not considered part of the ACFT apron movement area, and has been constructed for stabilising the RPT apron paver edges and providing a long-term solution to handle baggage and refueling vehicle traffic.

Classification: The RPT apron is capable of simultaneously servicing 2 Code 2C ACFTs; namely the Dash 80-100/200 ACTFs.

Operations: The RPT aircraft were observed to be marshaled into their parking bays.

- They have however, been designed for self-regulation as shown in the Apron Parking Position plans (2002, and 2005), as no marshalling stop lines are shown.
- When observed, the RPT ACFT marshaller, did not require a marshalling stop line, and operations appeared safe.

Surface Description: The surface comprises high strength pavers laid over compacted design subgrade.

- Surface failures, seal condition and MOS 139 compliance are discussed in detail below but can be summarised as.
 - There are no outstanding surface failures warranting immediate closure of the movement area.

- The surface condition remains MOS 139 compliant.

Surface Failures:

- Cracking: None observed to the pavers.
- Rutting: No rutting deformations were observed.
- Corrugations: No corrugation failures were observed.
- Depressions / Bird baths: No depressions or bird baths were observed.
- Shoving: No shoving failures were observed.
 - In the past, the western grass shoulder / edge adjoining the paved RPT apron showed wheel tracks and deformation.
 - This was investigated and it was determined as being due to the refuelling truck. The refuelling truck's refuelling procedures have since been changed to minimise any failures / deformations.
- Other: There were no other outstanding failures observed that warrant immediate repair.

Seal Condition: The prepared design subgrade overlaid with high strength pavers are provided; not chip seal.

- Flushing / Bleeding: Not applicable.
- Stripping: Not applicable.
- Ravelling: None observed.
- Delamination: None observed.
- Other:
 - Vegetation outbreaks: None observed.

Surface Condition:

- Cleanliness / FOD: No Foreign Object Debris and loose aggregate / stones were observed on the surface.
- Pavement texture: The surface of the taxilane appears to provide adequate frictional characteristics especially at the lower taxiing speeds.
- Strength / Pavement classification: The pavement strength of taxilane appears adequate with no obvious loading failures apparent.
- Shoulders: No prepared shoulders are provided, and none are required.
- Edge drop off: The drop off from the edge of the pavers appeared to be compliant, with any that were observed less than 25mm.
- Rideability: When reviewed, the rideability was assessed as good and safe.
- Slopes: All transverse and longitudinal slopes appeared compliant.
- Drainage: The design slope of the apron combines well with the surrounding slopes of adjoining grassed areas that lead away into natural drainage paths. In large storm related floods, the current drainage paths need to be improved for the entire aerodrome as aforementioned in previous movement areas.

Earthing Points: There are no earthing points provided.

Tie-down Cables: No tie-down cables are provided and none are required.

4.3.2 GRASS GA APRON

Description: The grass GA apron adjoins east of the RPT apron, and appears as an open well prepared grassed area.

- Access is gained via an implied RPT apron internal taxiway (see Section 4.2.3 above), or via the nose wheel guidelines for bay 2 on the RPT apron when no ACFT are utilising bay 2.
- The entire area is self-regulated; pilots power in and out.
- Several sets of tie-down cables have been provided / installed within the GA apron; roughly east to west in alignment to park GA ACFT as indicated by painted white tyres.
- The areas between the tie-down cables / parking areas are the GA apron grass taxiways.

Dimensions: The apron area / size appeared far more than adequate for intended use.

Classification: The taxiway appears suitable for all Code A ACFT <5700kg and 15m maximum wing span.

Surface Description: The surface comprises well graded dense grass maintained evenly short.

- Surface failures, seal condition and MOS 139 compliance are discussed in detail below but can be summarised as.
 - There are no outstanding surface failures warranting immediate closure of the movement area.
 - The surface condition remains MOS 139 compliant.

Surface Failures:

- Cracking: Not applicable in this climate.
- Rutting: No rutting deformations were observed.
- Corrugations: No corrugation failures were observed.
- Depressions / Bird baths: No depressions, soft spots or bird baths were observed.
- Shoving: No shoving failures were observed.
- Other: There were no other outstanding failures observed that warranted immediate repair.

Seal Condition: Not applicable to grass surfaces.

Surface Condition:

- Cleanliness / FOD: No Foreign Object Debris and loose aggregate / stones were observed on the surface.
- Surface texture: The grass surface is generally suitable for dry weather use only.

- Strength / Pavement classification: The strength of apron appears adequate for the intended ACFT (less than 5700kg) under favourable weather conditions.
- Shoulders: No prepared shoulders are provided, and none are required.
- Edge drop off: Not applicable.
- Rideability: When reviewed, the rideability was assessed as good and safe.
- Slopes: All transverse and longitudinal slopes appeared compliant.
- Drainage: The design slope of the GA apron combines well with the surrounding slopes of adjoining grassed areas that lead away into natural drainage paths.
 - In large storm related floods, the current drainage paths need to be improved for the entire aerodrome as aforementioned in previous movement areas.

Earthing Points: There are no earthing points provided.

Tie-down Cables: Three rows of tie-down cables about 35m apart are provided west to east on the grass GA apron.

- All the cables were replaced in late 2007.
- They were free of obstruction, correctly tensioned, free from structural compromising rust, and in a compliant serviceable state.
- They are inspected and routinely strain tested every six (6) months.

5.0 MOVEMENT AREA VISUAL AIDS AND SIGNAGE

5.1 RWY 10/28 MARKERS AND MARKINGS

Except where further discussed below, all markers and marking were clear and correct. They included the following:

Markers:

- The runway strip boundary markers were standard fibreglass gables.
 - Note that the northeast RWS gable corner was missing due to a gazetted roadway, and so too the southwest RWS gable due to the beach / rock seawall.
 - ▲ This has always been the case since operation in the 1970s and was accepted by CASA when the aerodrome was "Certified".
 - Non-standard red reflectors are provided at the end of the sealed clearways and the turning node sides (re-instated November 2015).

Markings:

- Runway TKOF end bars on each end.
- A 103m displaced APCH end bar at the eastern THR 28 end.
 - Permanent displacement (arrow) markers for APCH.
- Appropriate runway identification numbers at each end.
- A runway centreline 300mm wide (correct for a Code 2 instrument non-precision approach runway).

- 8 threshold bars (piano keys) at each end.
- Lead in/out nose wheel guidelines in continuation of the TWY centreline.
- Two pairs of abbreviated touchdown zone and fixed distance markings are provided at each end of the runway at the request of CASA.
 - The fixed distance markings are 6m wide by 45m in length as per the MOS 139 (Section 8.3.7.3) and the 3m wide touchdown zone markings are also correct as required by the standards.

5.2 TAXIWAY MARKERS AND MARKINGS

5.2.1 RPT TAXIWAY

Except where further discussed below, all markers and marking were clear and correct. They included the following:

Markers:

- No markers are provided and nor are they required.

Markings:

- A yellow centreline is provided from the runway to the apron area.
- Lead in/out nose wheel guidelines from the taxiway centreline to the runway.
- A pattern "A" holding position located 45m from the runway centreline across the taxiway.

5.2.2 RPT APRON TAXILANE

Except where further discussed below, all markers and marking were clear and correct. They included the following:

Markers:

- No markers are provided and nor are they required.

Markings:

- A centreline leading to the grass GA apron is not provided. Therefore, it is difficult to ascertain whether a clear 24m wide taxilane has been provided.
 - GA / Code A ACFT self-regulate in and out the GA apron via the RPT apron. It appears that adequate width has been provided with use of the grassed area further north east of the apron.
 - ▲ The Board will have to diligently monitor use of the taxilane if bay 2 is utilised, and enhance safety when required.

5.2.3 GA APRON GRASS TAXILANES

Except where further discussed below, all markers and marking were clear and correct. They included the following:

Markers:

- Several sets of tie-down cables have been provided / installed within the GA apron and are indicated by painted white tyres.
 - The areas between the tie-down cables / parking areas are the GA apron grass taxilanes.
 - ▲ The tyres to the western side of the GA apron locate very close to the GA apron boundary and RPT apron such that a 24m wide taxilane cannot be guaranteed. This issue has been discussed in more depth above in Section 4.2.3 of this ATI report.

Markings:

- Not applicable for unsealed surfaces.

5.3 APRON MARKINGS

Except where further discussed below, all markers and marking were clear and correct. They included the following:

5.3.1 RPT APRON**Markers:**

- No markers are provided and nor are they required.

Markings:

- The apron edges are generally self-defined and contrast well against its grass surrounds.
 - Double yellow edge lines have been provided on the western edge to enhance safety.
- Two parking position bays have been marked; each capable of servicing the Dash 8-100/200 aircrafts.



- The western parking position or bay 1 has been marked in accord with an older plan design (2002). Whilst sighted in past inspections, this plan was no longer available for perusal.
 - ▲ In this older 2002 design, it was observed that parking bay 1 located further to the east than the parking bay 1 design revised in the latter design (discussed below). Hence, in theory, wing tip clearances must be greater.
 - ▲ This has been deemed satisfactory by CASA and all previous CASA inspections by Mr Kevin Dyer.
 - The eastern parking position or bay 2 has been marked in accord with the most recent apron parking position design produced by subcontractor, Mr Mike Thompson, under Aerodrome Operation Support Pty Ltd at the time (Plan: AOS 05 055 sh1; 14th March 2005).
 - The parking positions have not been marked in entirety consistent with the drawings. In addition, set out dimensions of the ancillary markings that comprise the entire parking position are not dimensioned correctly (see the 2013 ATI report for more details).
 - The Board has since engaged (2017) Simon Hatfield from Airworks Consulting Pty Ltd to re-design the apron parking positions and produce an apron parking position plan, which will be implemented by the end of September 2017.
- ➔ **Recommendation 3: To mark the apron parking positions in accord with the apron parking position plan designed by Airworks Consulting Pty Ltd.**

5.3.2 GRASS GA APRON

Except where further discussed below, all markers and marking were clear and correct. They included the following:

Markers:

- The entrance to this apron and the entire perimeter are correctly defined by yellow cone markers; 3 to corners, entrances and change of direction, and single cones in between. The western edge of this apron is well clear of the terminal building and the water tanks.
- White tyres indicate where tie-down cables are provided, and thus imply the parking areas.

Markings:

- Not applicable for unsealed surfaces.

5.4 WIND DIRECTION INDICATORS

Wind Direction Indicators:

- The primary wind indicator (not illuminated) is located on the southern side of RWY 28 threshold. The sleeve was flying freely and in good condition.
 - The surrounding circle was clear of grass, the surface suitably darkened and correctly marked with 15 white cone markers.

- Two (2) secondary wind indicators are provided. One is situated on the southern side of the western THR 10 end, and the other one is situated on the northern sand dune side of the eastern THR 28 end. Their sleeves were correctly coloured yellow, in good condition and swinging freely.
 - The secondary sock at the western end, infringes the transitional surface by nearly 3m.

5.5 SIGNAL CIRCLE

The signal circle was correctly marked by 6 standard white cone markers, free of weed growth, and correctly blackened to provide satisfactory contrast with the surrounding areas and its windsock.

- A dumb-bell is stored in the equipment shed adjacent to the terminal and a rolled-up U/S cross is stored just inside the signal circle.

5.6 MOVEMENT AREA GUIDANCE SIGNS

No MAGS are provided.

5.7 PUBLIC FACILITIES

A terminal building with toilets and a public telephone is provided.

6.0 FACILITIES AT THE AERODROME AND LISTED FUNCTIONS

6.1 AERODROME EMERGENCIES

Illumination: No mobile generators or mobile floodlights are kept at the aerodrome. If an emergency occurs at night the local SES can provide them from the depot.

Command post: No mobile command post is provided at the airport. The terminal building is likely to be used as the command post during emergencies. However, this is decided at the discretion of the resident senior Police Officer on the island.

First aid equipment: A basic first aid kit is available at the aerodrome and the local emergency services are relied on in the event of an emergency.

Fire-fighting equipment: Three 22500L water tanks are provided adjacent to the terminal building and another 22500L tank at the sole hangar. Hand held fire extinguishers are provided inside the terminal building. The Rural Fire Service Category (1) Fire Engine is located at the LHIB Depot and it is equipped with aviation fire-fighting foam additive if required.

- An additional 45000L water tank has been installed late 2015 taking further advantage of the Bureau of Meteorology roof's run-off.

Forward Command Post (FCP): The FCP is flexible in location and will be sited as necessary.

Emergency Operations Centre (EOC): The EOC is flexible in location and will be sited where the Police decide at each emergency, otherwise it is at the Board's office in the first instance.

Casualty Process Area (CPA): In general, the CPA on the aerodrome will be located adjacent to the FCP and will be coordinated by the treating medical staff.

Passenger Reception Centre (PRC): At LHI Aerodrome, the airport terminal will be used as a PRC. The PRC can be used to process uninjured or slightly injured passengers, arrange registration and provide basic welfare.

Relative Reception Centre (RRC): The provision of a centre to provide care of relatives and friends to wait for news of the passengers needs to be established on the aerodrome in the first instance but then forwarded to Windy Point as the recognized RRC.

Reuniting Facility (RF): The RF is initially flexible in location and generally to be located offsite away from active emergency services but eventually established at Windy Point with the RRC.

Crew Reception Facility (CRF): The CRF are to report to the FCP to assist the Police.

Media Centre (MC): The MC will be coordinated by the Police to ensure that timely provision of release of information on the emergency situation is available for all media outlets. The site of the media centre will be nominated by Police at the time of the incident, and will be used to co-ordinate media requirements.

6.2 HANDLING OF HAZARDOUS MATERIALS

Procedures for hazardous waste handling are well documented in the Aerodrome Manual. Board personnel are trained in the procedures to follow in the case of a hazardous material spillage.

- Hazardous materials other than aviation fuels are not usually handled at the aerodrome.

Storage of aviation fuel: Jet A1 and Avgas fuel is provided / stored in 1800L self-bunded Intermediate Bulk Containers (IBCs) and supplied by Aero Refuellers in a designated fuel depot / storage area situated approximately 300m west of the apron area; southern side of the runway strip.

Dispensing of aviation fuel: The Aero Refuellers agent is tasked with dispensing fuel at the airport. Staff have been trained in fuel handling and refueling by Aero Refuellers.

- Two (2) tankers (one for Jet A1 and the other for Avgas) are used to dispense the fuel in accordance with procedures as detailed in the Aerodrome Manual.

6.3 BIRD AND ANIMAL HAZARD MANAGEMENT

Procedures have been prepared in the Bird and Animal Hazard Management Plan. Qantas is provided with a "Bird Activity Report" on request when they operate RPT operations into the aerodrome.

No equipment for bird harassment procedures, other than the Aerodrome Reporting Officer's vehicle, is provided at the aerodrome. Note that the vehicle has the lights and sirens to help disperse the birds.

- At the Board's request, the ranger stationed on the island occasionally culls and disperses the birds using a firearm (under the licence to harm protected fauna through the NSW National Parks & Wildlife Act).
- All culling and dispersal activities are recorded in the aerodrome logbook.
- Lines of bunting are erected on the sand dune in the RWY 28 approach to discourage from nesting in that area as required (usually October and March).

6.4 STAND-BY AND EMERGENCY LIGHTING

Stand-by power is not provided. As a back up to the solar powered lights the Board maintains a set of battery flares stored on a trailer in the dozer shed. The Aerodrome Reporting Officer ensures that the flares are regularly checked and maintained to ensure that they are functional should their need arise.

7.0 AIRSIDE VEHICLE CONTROL

7.1 AERODROME ACCESS

Regulatory signs displayed at the terminal and apron access points are of a satisfactory standard. The entrance to the apron area is restricted by a fence around the RPT apron and terminal area.

The gate through this fence was and is maintained locked. "No trespassing" signs have been installed at the points where vehicle and pedestrian access is most likely.

Additional signage has been placed as required by Department of Infrastructure and Regional Development (DIRD).

- They warn of the penalties for trespassing and the possession of firearms on aircraft.

7.2 AIRSIDE VEHICLE CONTROL

All perimeter access gates were locked and fitted with master keyed locks. Keys are issued only to persons approved by the Board and who have a genuine requirement to have airside access. A list of key holders and vehicles authorised to operate airside is held by the Aerodrome Manager. Keys are only issued to the approved persons once it has been established that the driver is aware of the rules and airside requirements.

7.3 SECURITY CLASSIFICATION AND TRANSPORT SECURITY PROGRAM

Lord Howe Island Aerodrome is a designated security sensitive aerodrome and DIRD conduct regular audits of the facility.

- A TSP was first issued 14th February 2005.
 - It has been revised and re-issued 25th January 2006, 29th April 2008, 25th June 2009, and 13th January 2010.

- It was last reviewed and re-issued in full on the 31st of March 2015, which resulted in the aerodrome title being re-gazetted.
 - ▲ The TSP must be reviewed every 2 years by an independent auditor.

7.4 BOUNDARY FENCE

The aerodrome boundary fence was completely replaced in 1999 / 2000. It predominantly consists of a five-strand stock fence with five (5) access gates around the perimeter with some sections along the grass GA apron being a combination of 3 stand barb wires and 3 strand wires with 2 "live" (electric) strands.

The gates are locked to prevent stock and wildlife from straying onto the aerodrome.

The fence is checked regularly by the Aerodrome Reporting Officer as part of the serviceability inspection and immediately repaired if required.

8.0 AERODROME INFORMATION

8.1 EN-ROUTE SUPPLEMENT AUSTRALIA

ERSA (August 2017 edition): The data in En-Route Supplement Australia (ERSA) was checked with a few changes being required.

- Airport Management have requested Document Amendments (Airservices Australia) implement two changes within the ERSA. These changes have not yet been published. They include:
 - Under the "AERODROME AND APPROACH LIGHTING" heading, a second note will be stated as, "(2) RWY THR and RWY end lighting in wing bar configuration."
 - Under the "ADDITIONAL INFORMATION" heading, note 3 needs to now read, "For Australian Border Force related services phone 02 6563 2481".
 - It must be noted that several infringements to the Obstacle Limitation Surfaces (OLS), which have been known for some time now (refer to Section 10 of this ATI report), have not been appropriately published within the ERSA.
 - Hence, it would be prudent of Airport Management to publish all known obstacle and/or terrain OLS infringements in the ERSA "AERODROME OBSTACLES".
- ➔ **Recommendation 4: To consider publishing all known obstacle and/or terrain Obstacle Limitation Surface infringements in the En-Route Supplement Australia under "AERODROME OBSTACLES".**

RDS (August 2017 edition): An AIP survey check established that the data in RDS required minor amendment to reflect current TKOF data.

- Current published TODA end gradients and STODAs:

RUNWAY DISTANCE SUPPLEMENT		17 AUG 2017		RDS YLHI - 1	
LORD HOWE ISLAND					
RWY	(CN)	TORA	TODA	ASDA	LDA
10	(2)	888 (2913)	948 (3110) (20%)	888 (2913)	888 (2913)
28	(2)	888 (2913)	948 (3110) (1.6%)	888 (2913)	785 (2575)
SUPPLEMENTARY TAKEOFF DISTANCES					
RWY10-	803(2634)(2.5)	877(2877)(3.3)	906(2972)(5.0)		

- The following TKOF data should be relayed within the RDS as a result of this ATI:

RWY	CODE	TODA (%)	STODA (m)					
			1.60%	1.90%	2.20%	2.50%	3.30%	5.00%
10	2	20.00%	<800	<800	<800	803	876	906
28	2	1.6%	TODA	TODA	TODA	TODA	TODA	TODA

- RDS permanent NOTAM: No permanent NOTAM was issued to reflect the minor change to the TKOF data.
 - Note that NOTAMs are only issued to update TKOF data if changes to the published gradients and/or the calculated STODA equivalent is more than 0.05%. For this reason, a request to implement the minor TKOF data change has been prepared for Airport Management to forward to Document Amendments (Airservices Australia).

SUPPLEMENTARY TAKEOFF DISTANCES					
RWY10-	803(2634)(2.5)	877(2877)(3.3)	906(2972)(5.0)		
		876(2874)			

- RDS notes: Changes to the RDS notes were also required. This was easiest to implement by simply revising the text in whole as this is preferred by Document Amendments (Airservices Australia).
 - The notes have been placed in the RDS to pro-actively warn pilots of the many OLS infringements:

RUNWAY DISTANCE SUPPLEMENT		17 AUG 2017		RDS YLHI - 1	
LORD HOWE ISLAND					
RWY	(CN)	TORA	TODA	ASDA	LDA
10	(2)	888 (2913)	948 (3110) (20%)	888 (2913)	888 (2913)
28	(2)	888 (2913)	948 (3110) (1.6%)	888 (2913)	785 (2575)
<ol style="list-style-type: none"> 1. TORA is the LEN FM TKOF 10 end bar to TKOF 28 end bar. 60M sealed CLY provided to each end. 2. If SOT FM sealed RWS end bar, then add 60M to TORA, TODA, ASDA and STODAs. 3. RWY 10 TKOF critical 20% TODA end GRAD based on sand dune 14M (962M SOT) out FM and 40M left of E RWS end. 4. Critical APCH GRAD to 103M DISP THR 28 is 3.8% over the traversing sand dune, and trees at 3.8% on a hillside 1206M out FM and 206M left of APCH to the E RWS end. 5. RWY 28 TKOF critical 1.6% TODA end GRAD and STODAs ignore 3FT high sea wall 20M (968M SOT) out FM and 39M right of W RWS end. 6. Several significant transitional and inner horizontal OLS terrain infringements exist to both sides of the RWS. 7. Beware, several Norfolk pine trees 199M out FM and 165M left of APCH to the W RWS end as they infringe the transitional OLS by 30FT. 8. Beware, an anemometer about 260M back FM and 65M right of APCH to the W RWS end as it infringes the transitional OLS by 22FT. <p>Slope: Level. RWY WID 30M. RWS WID 90M.</p>					
SUPPLEMENTARY TAKEOFF DISTANCES					

8.2 DEPARTURE AND APPROACH PROCEDURES

Aerodrome Chart (August 2017 edition) in DAP East: This edition (dated 3rd of March 2016) of the Aerodrome Chart was checked and found to be correct.

- No further action required.

9.0 AERODROME MANUAL OPERATING PROCEDURES

9.1 CURRENCY OF THE AERODROME MANUAL

The Aerodrome Manual is electronically updated as required to reflect items requested by CASA in addition to staff changes.

- The manual remains under constant review.
 - The manual was comprehensively reviewed and re-issued in full (dated 31st July 2016, version 16-01).
 - ▲ All contact details, the AEP, the current apron parking position plan, and so on, were found to be correctly placed within it.
 - ▲ Note that the OLS plan was based on the non-instrument approach, where now, a non-precision approach design procedure is published. This will need to be amended in the manual. The electronic version of the manual has already implemented the revised OLS but a hard copy had not yet been printed; nor has CASA received this electronic version.
 - ▲ It was also noted that instrument non-precision approach design procedures were not included in the hard copy but implemented in the current electronic copy. It too must be printed out in hard copy and forwarded to CASA.
 - The manual references the LHI Aerodrome Bird and Animal Hazard Management Plan (July 2016) as Volume 2 of the manual.
 - ▲ This document has been reviewed and is scheduled for release in August 2017. The changes have resulted from the BAHMC meeting held 7th of December 2016.
 - The 'Aerodrome Particulars' section required correction to the published TODA end gradients, which had been re-written in the electronic version to a general statement referring to the RDS.
 - The two changes to ERSA, covered in Section 8, have not been applied yet.
 - The Board is reminded that any changes issued in hardcopy, must also be provided to CASA.
- **Recommendation 5: To finalise and produce a hard copy of the manual as soon as practical, and forward an electronic PDF version to CASA inclusive of the revised OLS and PANS-OPS.**

9.2 SAFETY MANAGEMENT SYSTEM

An SMS has been prepared by the Board.

- Present management have now incorporated regular SMS review meetings.
 - In the last 12 months, the SMS was formally reviewed by the SMS SC on the 25th of July 2017, and was facilitated by AOSPL.
 - ▲ Prior to this date, the SMS was formally reviewed by the SMS SC on the 10th of March 2016, which was facilitated by Aerodrome Operation Support Pty Ltd.
 - ▲ In addition, the SMS has been reviewed on every occasion when an incident occurred airside. This is validated with the Operational Risk Register, which assigns a risk rating to each incident using the SMS document. It was noted that all identified risk/incident were dealt with at the time, eliminating the risk in accord with an action plan. The incidents adopt a collaborative approach if the incidents involve other airside users.
 - ▲ Minutes to this effect were available for perusal. No further changes to the SMS were required.
 - ▲ The SMS document is signed and the contact details are correct.
 - ▲ The contact details were found to be current.
 - It is noted that if the Operational Risk Register cannot eliminate the risk or incident entirely, then it is transferred to the Ongoing Risk Register where it is dealt with co-operatively by the SMS SC and nominated partners.

9.3 DRUG AND ALCOHOL MANAGEMENT PLAN

The aerodrome specific DAMP was prepared and issued initially 19th March 2009, and again in January 2010 after CASA approval.

- Reviews were conducted:
 - 2nd of August 2013.
 - 14th of April 2014.
 - 11th of December 2014 in the new DAMP document format.
 - A complete revision / re-issue was available for perusal dated July 2016. It has been peer reviewed, but is awaiting a final sign off from the DAMP Medical Review Officer.

9.4 EMERGENCY PROCEDURES

The Board has prepared an Aerodrome Emergency Plan (AEP), which is incorporated in the manual.

- This document must be reviewed annually within a 12-month period.
 - Proof of review is normally demonstrated by conducting a full field emergency exercise every second year as this forces management to read and apply the AEP.
 - On every other year, a desktop emergency exercise is performed in readiness for next year's mandatory full field emergency exercise, and this process is used to formally review the AEP.
- Emergency Exercise history:

- A desktop emergency exercise completed on the 4th of November 2013; "Exercise Lapwing". Ensuing document were available to verify this exercise. No changes resulted to the AEP.
 - On the 19th of March 2015, a full field emergency exercise was conducted called "Day Tripper". An accident resulting from a GA ACFT striking the GPU (Ground Power Unit) pole from RPT parking bay 1 occurs due to pilot haste, which disable the ACFT resulting in the ACFT losing control into / through the terminal picket fence. All AEP committee members including emergency services participated except the RPT airline representative. The exercise was deemed successful. A full debrief occurred on the same immediately after. Several issues were discussed. Relevant to the AEP, no changes resulted with more focus / changes applied to the relevant response agencies procedures.
 - On Thursday 10th of March 2016, a desk top exercise ("Flying High") was conducted involving an RPT Dash8-200 ACFT, which was in the process of refueling when a split in the refueler's pump house spilled fuel about the apron. All emergency services were present. A full debrief meeting was conducted immediately afterwards, and minutes / documents detailing the findings were available for perusal. As a result of the exercise, no changes to the AEP were required. Several SOPs (standard operating procedures) to effect better results were identified. Note that the last revision date on the AEP is July 2016.
 - A full field EE has been scheduled for late August 2017.
 - ▲ A desk top EE was re-conducted from last year in preparation of the scheduled full field EE on the 6th of July 2017.
 - ▲ The EE is now overdue.
- ➔ **Recommendation 6: To conduct a full field Emergency Exercise and complete the formal annual review of the Aerodrome Emergency Plan.**

9.5 AERODROME LIGHTING

Reticulated aerodrome lighting is not provided. Solar powered emergency lighting is provided and controlled to only switch on with prior notice.

9.6 AERODROME REPORTING

The nominated Aerodrome Reporting Officer is Ms Kate Dignam (formally trained on the 14th of April 2009, and has re-sat training with Aerodrome Operation Support Pty Ltd in March 2016). She has held this position as required since 2009. Ms Kate Dignam is also the Manual Controller.

The Deputy AROs are Mr Barrie Wise and Mr Luke Hickey. Mr Ian Fitzgerald acts in as a relief ARO on occasions.

- Mr Ian Fitzgerald was initially trained in 2005 by Aerodrome Operation Support Pty Ltd, and has re-sat training with Aerodrome Operation Support Pty Ltd in March 2016.
- Mr Barrie Wise and Ms Kate Dignam were initially trained on the 14th of April 2009, and have re-sat training with Aerodrome Operation Support Pty Ltd in March 2016.
- Mr Luke Hickey was initially trained by Aerodrome Operation Support Pty Ltd in March 2016.

Note that all Aerodrome Reporting Officers have been trained and are aware of the tasks and responsibilities of their position. They have been “field” assessed as competent against the six competency units, which were prepared by Australian Airports Association (AAA) and endorsed by CASA.

The Aerodrome Reporting Officers all hold Aeronautical Radio Operator Certificates (AROC), which enables them to operate an airband radio.

Aside - In March 2016, the following LHIB staff were also trained for ARO duties:

- Mr Damien Ball, Mr Andrew Logan and Mr James McFadyen.

Logbook: All serviceability inspections and other matters of interest were recorded in the aerodrome logbook.

- Ms Kate Dignam reviews the logbook on a regular basis and issues directives and comments as appropriate.

NOTAMs: Details of requests for NOTAMs are provided in the ARO logbooks and electronically on TRIM (the Board’s electronic record system).

- All NOTAM are sent by email and a few are issued by phone.
- No confirmation is received and can only be checked online.
- Current NOTAMs: There are no current NOTAMs.
- Last NOTAM: Occurred on the 19th of September 2016, which submitted RDS changes that were required as a result the 2016 ATI.

9.7 UNAUTHORISED ENTRY TO AERODROME

Procedures for dealing with unauthorised airside access are covered in the Aerodrome Manual.

- A Transport and Security Program has been produced by the Board in accordance with DIRD requirements.
- A Safety Management System manual has also been produced.

Both these manuals have been deemed as discrete sensitive documents which are therefore kept apart from the Aerodrome Manual.

- They are assessed and reviewed as and when required.

No access is allowed onto the aerodrome unless specifically authorised by the Board and vehicular or pedestrian access is restricted to the apron and aircraft parking areas.

9.8 AERODROME SERVICEABILITY INSPECTIONS

Aerodrome Serviceability Inspections are conducted, at a minimum, on each day that a Regular Public Transport (RPT) operation is scheduled, as early as possible, but not less than 30 minutes prior to the first RPT.

Regardless of RPT schedules, the LHIB also inspect the runway every day at around 7am.

Additional inspections are done for air ambulance operations, and during and after heavy rainfall.

All inspections are conducted and recorded in accord with the Aerodrome Manual.

9.9 AERODROME TECHNICAL INSPECTIONS

A copy of the report on the last annual Aerodrome Technical Inspection, conducted by Aerodrome Operation Support Pty Ltd in August 2016, was available.

- Other inspections are carried out by the Manager of Infrastructure, Engineering Services or the Aerodrome Operations Manager as required but normally they are not formally recorded.

9.10 CASA SURVEILLANCE INSPECTIONS

CASA conducted a surveillance inspection on Lord Howe Island Aerodrome during the period 10-12th of October 2016 by Mr Iain Lobegeier, and the ensuing report was available for perusal.

- Prior to this audit, the last CASA audit occurred on the 16th and 17th of May 2012, and 29th and 30th of April, and the 1st of May 2014.

9.11 AERODROME WORKS SAFETY

The Board is aware of the requirements when planning aerodrome works.

- The day-to-day maintenance is carried out as “Time Limited Works on less than ten minutes recall” (TLW).
- The last MOWP (YLHI01/2015) was produced for works occurring from 11th May 2015 to the 22nd of August 2015 for RWY and TWY asphalt application, external drainage works associated, RWY grooving and paint marking re-instatement.

9.12 AIRCRAFT PARKING

The procedures for parking on the RPT apron have continued as desired by QantasLink since pre-2002. However, they have not been completely MOS 139 compliantly operated.

- Bay 2 has been marked in accordance with the most recent design (Plan: AOS 05 055 sh1; 14th March 2005). It is located within the manual but is not entirely complete with respect to all the required markings on the actual apron.
 - The bay 1 design in this plan has not been utilised.
- Bay 1 has remained as originally marked (that is, in accord with a 2002 design), which cannot be found within the manual.
 - In this older 2002 design, it was observed that parking bay 1 located further to the east than the parking bay 1 design revised in the latter 2004/05 design. Hence, in theory, wing tip clearances must be greater.
 - This has been deemed satisfactory by CASA and all previous CASA inspections by Mr Kevin Dyer.

The Board has since engaged (2017) Simon Hatfield from Airworks Consulting Pty Ltd to re-design the apron parking positions and produce an apron parking position plan, which will be implemented by the end of September 2017; refer to Recommendation 3.

Apron tie-down cables are provided on the grassed apron which help to regulate the parking of light aircraft.

9.13 AIRSIDE VEHICLE CONTROL

The procedures in the Aerodrome Manual reflect the legislative requirements extending from the DIRD.

9.14 BIRD AND ANIMAL HAZARD MANAGEMENT

Lord Howe Island is recognized as the nesting ground for large numbers of sea birds and is a proclaimed sanctuary for the breeding colonies.

- This has been ratified in it having been granted World Heritage status by the United Nations.

The presence of these birds in huge numbers during the nesting periods is recognized as a potential hazard but, as the whole island is a sanctuary, there is very little that can be done to reduce the hazard from these indigenous birds.

- A Bird and Animal Hazard Management Plan (BAHMP) was last reviewed and re-issued in full (dated July 2016 as version 7).
 - As part of this plan, the Board continue to monitor and produce “bird watch” reports as specified.
 - The BAHMP has been reviewed and will be re-issued version 8 in August 2016.

Other bird species, such as plovers and ducks, which have recently arrived from the mainland are a more immediate hazard as they are breeding on or adjacent to the aerodrome. The Aerodrome Reporting Officers harass these birds away using their vehicle and when their numbers are assessed as forming a hazard, the Board requests the ranger stationed on the island to advise on permissions and/or procedures to follow. This procedure is strictly adhered to, and a record of all such requests including the species and number of birds culled is kept by the Board.

- The Ranger, approved contractor, and/or AROs with a firearm licence, are the only persons authorised to cull birds.
 - Periodic culling of the plover population on the aerodrome aims to keep the number of resident birds to approximately 10 to 15.

Bird Strikes: Records of bird strike reports and information recorded was satisfactory.

- Bird strikes for the last 12 months are mentioned in Section 2.3 above.

Animal Hazard: No indication of any animal activity on the aerodrome was found during the inspection. Cattle can graze in paddocks at the eastern end of the aerodrome. They are contained within a cattle proof electric fence fitted with two (2) “live” wires. The fence is in good condition with all gates closed and locked.

9.15 OBSTACLE CONTROL

Originally, an Obstacle Limitation Surfaces (OLS) plan for the aerodrome was prepared in 2002 and this is used by the Board to protect the OLS for RWY 10/28 as a Code 2, non-instrument runway with a circling approach.

However, now that Code 2 instrument non-precision runway approach procedures have been published for both directions on RWY 10/28 by Airservices Australia, the Board now protect the OLS commensurate of its design approach conditions.

- The manual reflects the protection of a Code 2 instrument non-precision approach (INPA) runway.
- The Board intend to have a Code 2 INPA approach OLS plan produced for planning purposes.

The Aerodrome Manual also recognizes the PANS-OPS resultant from the INPA design, and monitor the airspace accordingly.

9.16 DISABLED AIRCRAFT REMOVAL

The procedures contained in the Aerodrome Manual were assessed as being satisfactory.

9.17 HAZARDOUS MATERIAL

Procedures are contained in the Aerodrome Manual and the Aerodrome Reporting Officer is aware of the actions to follow in the case of a hazardous spillage.

- The only hazardous materials normally handled at the Lord Howe Island Aerodrome are aviation fuels, "AVGAS" and "AVTUR".

9.18 PROTECTION OF RADAR AND NAVIGATIONAL AIDS

The Non-Directional Beacon (NDB) installation is owned and maintained by Airservices Australia (AA).

- The old NDB was decommissioned and a new one erected; newly sited and commissioned in July 2009.
- In addition, the Distance Measuring Equipment (DME) was decommissioned in the 2010/11 financial year by AA.
- Note that the new NDB also has a DME in operation. These navigational aids locate external to the aerodrome.

9.19 LOW VISIBILITY OPERATIONS

Not applicable at Lord Howe Island Aerodrome.

9.20 RADIO PROCEDURES

A portable air-band radio transceiver is provided in the vehicle used by the duty Aerodrome Reporting Officers when carrying out airside area inspection duties.

In addition, the Aerodrome Operations Manager carries a portable air-band transceiver. Only authorised personnel with a current Aeronautical Radio Operator Certificate (AROC) are permitted to transmit if necessary on the air-band frequency.

Aerodrome Frequency Response Unit (AFRU): The ARFU was checked on the 126.70MHz frequency and found to be serviceable and responded correctly.

9.21 AUTOMATIC WEATHER INFORMATION SERVICE

An Automatic Weather Information Service (AWIS) unit is installed on the aerodrome near the light aircraft apron area. The unit provides the current observations collected by the AWIS such as surface wind, pressure, air temperature, dew point temperature and rainfall.

- The information can be obtained by phone or frequency 119.05MHz.
- The Bureau of Meteorology may be moving the station closer to the PWI within the next 12 months.

An additional AWIS has been installed on the anemometer mast at Windy Point. This unit greatly infringes the transitional surface.

- The anemometer is shielded by trees on the northern side of the runway and the AWIS is not being monitored so close to touch down.

Two AWIS' are provided to separately service their respective ends, which can exhibit different wind conditions due to the surrounding hills.

10.0 OBSTACLE LIMITATION SURFACES

10.1 SURVEY SCOPE

Consistent with that published in the various AIPs, RWY 10/28 was surveyed to meet the full requirements of a Code 2 instrument non-precision approach runway.

The survey satisfies the requirements specified in the MOS 139 and CASR 139 for both an Aerodrome Technical Inspection (ATI) and Aerodrome Safety Inspection (ASI).

The surveyed data is initially assessed for infringements to the ideal design OLS limits stated in the MOS 139, and if unable to provide this, then to other MOS 139 tolerated limits.

- MOS 139 – Aerodromes, Section 6.2.1.1 Notes, permit an approach gradient of 5% for a Code 3 or less (Code 2) for an instrument non-precision approach runway.
 - As the desired 3.33% approach gradient is not readily attainable due to the natural terrain, and the threshold cannot be displaced any further to be of practical use, the approaches for these procedures may be based on a maximum gradient of 5% for both directions on RWY 10/28 in accordance with Section 6.2.1.1 Notes of the MOS 139.

Failing ability to satisfy the MOS 139, the data is then assessed in accord to the OLS published in relevant AIPs, which is assumed known and accepted by CASA.

If applicable (PAPIs or T-VASIS provided), then the OAS (Obstacle Assessment Surface) is gauged for compliance.

- A VASIS system (such as PAPIs) is not utilised at the aerodrome, and the OAS was not assessed for the RWY.

If applicable (instrument non-precision approach procedures provided), then the VSS (visual segment surface) is checked for compliance relative to the PANS-OPS for a straight in approach. Vertical and horizontal angle offsets and / or displaced approach landings can be catered for with prior notice.

- The VSS was assessed assuming a straight in approach.

10.2 SURVEY RESULTS

The raw survey data pertaining to the take-off directions can be provided to Airport Management in the format preferred by aircraft operators.

Photographs for each TKOF end are supplied below. Obstructions within the TKOF and / or APCH OLS are only approximately located where possible in the photograph.

The survey results in the tables below are provided as a management tool to aid in the monitoring of obstacle heights and the scheduling of tree lopping / removal within the approach splays and other surfaces.

- All OLS / surfaces are covered but only mentioned where the surveyed obstacle locates.
- Gradients are provided if the obstacle locates within the take-off and approach OLS.

Yellow highlighted obstacles (marked "LOP") infringe the OLS or worsen the take-off performance (that is, worse STODAs), can be removed, and therefore need to be lopped or removed.

Green highlighted obstacles reflect the critical data (TODA end gradient and STODAs) published in the RDS.

Blue highlighted obstacles (marked with "#") are the fixed / immovable infringements that are known to CASA, Airservices Australia, and accordingly published within appropriate AIPs.

Magenta / purple highlighted are the NEW surveyed fixed / immovable infringements that are or may be unknown to CASA, Airservices Australia, and accordingly should be published within appropriate AIPs and brought to appropriate attention.

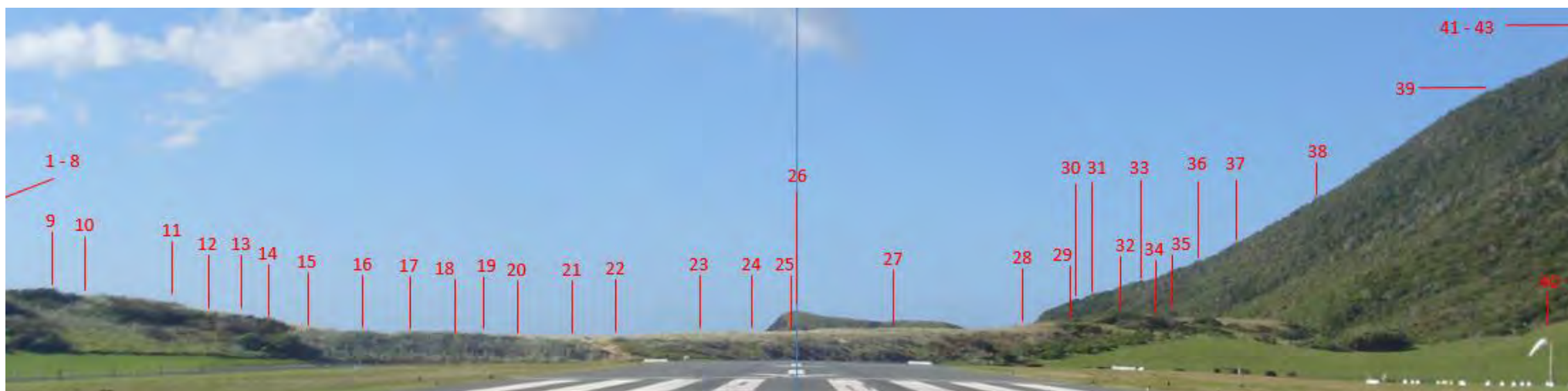
- **Note that CASA must be informed of all OLS infringements.**

Manual of Standards Part 139—Aerodromes	Chapter 7: Obstacle Restriction and Limitation
<hr/>	
7.1.4	Procedures for Aerodrome Operators to Deal with Obstacles
7.1.4.1	The aerodrome operator must monitor the OLS applicable to the aerodrome and report to CASA any infringement or potential infringement of the OLS.

- Recommendation 7: To lop, remove or re-locate those obstacles found to be infringing the OLS as identified by yellow highlighting and the word “LOP” in the survey result tables within Section 10.2 of this report.
 - APPLICABLE for TKOF 10.
 - APPLICABLE for TKOF 28.

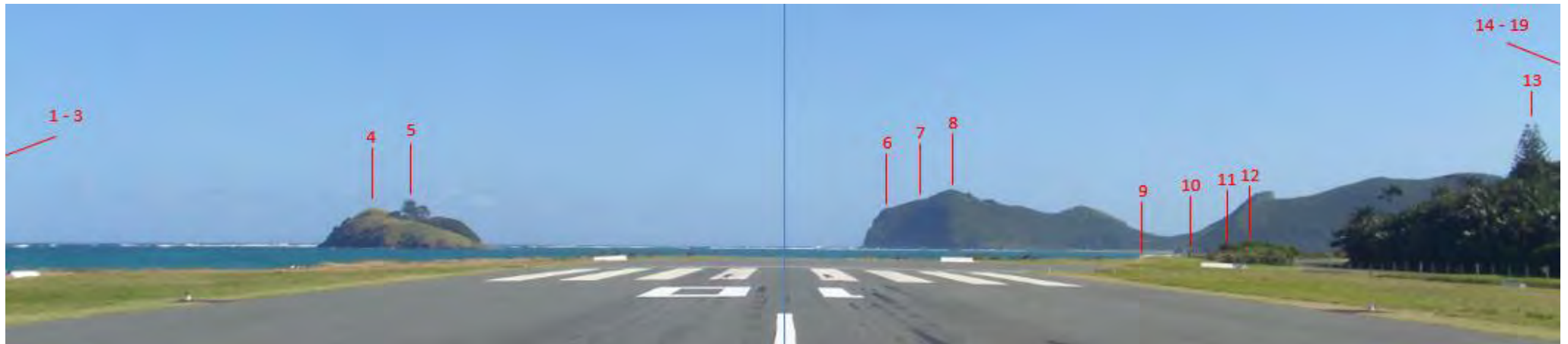
10.2.1 RWY 10 TAKE-OFF (EASTERN END)

LORD HOWE ISLAND AD: RWY 10/28 C2 INPA TODA = 948 TORA = 888														TKOF FM THR 10 HEADING EAST.				MOS 139: OAS - Obstacle Assessment Surface?	Airservices Australia: VSS - Visual Segment Surface?	
TKOF to eastern end: 90m inner edge + 10% div. to 2500m.							APCH: 90m inner edge + 15% div. @ 3.33% slope etc. to 2500m.							Other OLS						
Obst. No.	Obstruction Description	Ext. C/L Dist. (m)	Height (m)	Perp. Dist. (m) Left (-) or Right (+) of ext. C/L	Grad. (%) 162.7m CLY	STODAs (m)						Ext. C/L Dist. (m)	Height (m)	Perp. Dist. (m) Left (-) or Right (+) of ext. C/L	Grad. (%) 60m CLY	Infringes?	OLS location	Infringes?		
						1.6%	1.9%	2.2%	2.5%	3.3%	5.0%									
	LOP = remove/top/lower obstacle # = fixed/known/published obstacle																			
# 1	Transit Hill	-265.95	80.96	-514.10		--	--	--	--	--					IHS	Infringes 36.16	Not Applic.	--		
# 2	Transit Hill	-157.55	69.95	-503.70		--	--	--	--	--					IHS	Infringes 25.15	Not Applic.	--		
# 3	Transit Hill Obstr. Light	-507.85	129.70	-493.40		--	--	--	--	--					IHS	Infringes 84.9	Not Applic.	--		
4	2ndry windsock	-63.15	14.36	-147.90		--	--	--	--	--					TS	Under 6.35m	Not Applic.	--		
5	Grass on dune	-38.55	10.55	-118.50		--	--	--	--	--					TS	Under 4.36m	Not Applic.	--		
6	Grass on dune	-27.85	10.23	-113.60		--	--	--	--	--					TS	Under 3.74m	Not Applic.	--		
7	Bully bush	-21.34	8.83	-94.80		--	--	--	--	--					TS	Under 1.4m	Not Applic.	--		
8	Stake on dune	-10.55	9.11	-98.50		--	--	--	--	--					TS	Under 1.9m	Not Applic.	--		
9	Stake on dune	-6.35	8.74	-94.50		--	--	--	--	--					TS	Under 1.47m	Not Applic.	--		
10	Grass on dune	-7.42	8.43	-91.42		--	--	--	--	--					TS	Under 1.16m	Not Applic.	--		
11	Stake on dune	7.21	7.17	-85.79		--	--	--	--	--					TS	Under 1.35m	Not Applic.	Under 7.63m		
12	Stake on dune	7.41	6.03	-80.10		--	--	--	--	--					TS	Under 1.35m	Not Applic.	Under 8.77m		
13	Grass on dune	-8.62	5.54	-71.27		--	--	--	--	--					TS	Under 0.02m	Not Applic.	Under 9.26m		
14	Grass on dune	19.27	5.25	-75.18		--	--	--	--	--					TS	Under 1.19m	Not Applic.	Under 9.55m		
LOP 15	Grass on dune	-5.39	4.11	-63.83		--	--	--	--	--					TS	Infringes 0.02m	Not Applic.	Under 10.69m		
LOP 16	Grass on dune	-1.00	3.58	-56.61		--	--	--	--	--	101.70	3.78	-56.61	3.71	Infringes 0.39m		Not Applic.	Under 11.22m		
LOP 17	Grass on dune	3.77	3.72	-51.98		--	--	--	--	--	106.47	3.92	-51.98	3.68	Infringes 0.37m		Not Applic.	Under 11.08m		
LOP 18	Grass on dune	7.33	3.73	-46.67		--	--	--	--	--	110.03	3.93	-46.67	3.57	Infringes 0.27m		Not Applic.	Under 11.07m		
19	Stake on dune	33.16	3.10	-46.21	9.36	<800	812	836	854	886	919	135.86	3.30	-46.21	2.43	Under 1.22m		Not Applic.	Under 11.7m	
LOP 20	Grass on dune	13.85	2.77	-39.30	20.00	<800	811	832	848	876	906	116.55	2.97	-39.30	2.55	Under 0.91m		Not Applic.	Under 12.03m	
21	Grass on dune	16.78	2.82	-31.56	16.80	<800	811	833	849	878	908	119.48	3.02	-31.56	2.53	Under 0.96m		Not Applic.	Under 11.98m	
22	Grass on dune	28.90	3.36	-26.26	11.62	<800	<800	820	839	873	909	131.60	3.56	-26.26	2.70	Under 0.83m		Not Applic.	Under 11.44m	
23	Grass on dune	44.42	3.16	-14.97	7.11	<800	821	845	864	895	929	147.12	3.36	-14.97	2.28	Under 1.54m		Not Applic.	Under 11.64m	
24	Stake on dune	99.45	5.10	-8.50	5.21	<800	<800	811	840	892	945	202.15	5.30	-8.50	2.62	Under 1.44m		Not Applic.	Under 9.7m	
25	Stake on dune	94.95	4.95	-0.90	5.21	<800	<800	813	842	892	944	197.65	5.15	-0.90	2.60	Under 1.43m		Not Applic.	Under 9.85m	
26	Muttonbird Point	1348.45	36.39	-0.80	2.70	<800	<800	<800	838	TODA	TODA	1451.15	36.59	-0.80	2.52	Under 11.73m	IHS	Under 8.41	Not Applic.	Under 11.04m
27	Stake on dune	138.55	6.05	19.90	4.37	<800	<800	807	841	902	TODA	241.25	6.25	19.90	2.59	Under 1.78m		Not Applic.	Under 8.75m	
28	Stake on dune	240.45	9.53	57.10	3.96	<800	<800	<800	803	899	TODA	343.15	9.73	57.10	2.83	Under 1.7m		Not Applic.	Under 5.27m	
29	Stake on dune	255.64	10.65	72.52		--	--	--	--	--		358.34	10.85	72.52	3.03	Under 1.08m		Not Applic.	Under 4.15m	
# 30	Intermediate Hill	1206.15	44.59	206.00		--	--	--	--	--		1308.85	44.79	206.00	3.42	Infringes 1.2m		Not Applic.	Infringes 1.83m	
# 31	Intermediate Hill	1201.15	48.65	217.50		--	--	--	--	--		1303.85	48.85	217.50	3.75	Infringes 5.43m		Not Applic.	Infringes 6.05m	
LOP 32	Bully bush	261.36	13.62	84.44		--	--	--	--	--		364.06	13.82	84.44	3.80	Infringes 1.7m		Not Applic.	Under 1.18m	
# 33	Intermediate Hill	1192.65	58.58	252.10		--	--	--	--	--					IHS	Infringes 13.78	Not Applic.	Infringes 16.26m		
LOP 34	Grass on dune	254.94	12.82	92.21		--	--	--	--	--		357.64	13.02	92.21	3.64	Infringes 1.11m		Not Applic.	Under 1.98m	
LOP 35	Sallywood tree	250.15	12.87	97.20		--	--	--	--	--		352.85	13.07	97.20	3.70	Infringes 1.32m		Not Applic.	Under 1.93m	
# 36	Intermediate Hill	1171.95	75.70	296.70		--	--	--	--	--					IHS	Infringes 30.9	Not Applic.	--		
# 37	Intermediate Hill	1161.75	86.85	317.40		--	--	--	--	--					IHS	Infringes 42.05	Not Applic.	--		
# 38	Intermediate Hill	1123.65	117.45	364.00		--	--	--	--	--					IHS	Infringes 72.65	Not Applic.	--		
# 39	Intermediate Hill	1041.45	181.20	455.70		--	--	--	--	--					IHS	Infringes 136.4	Not Applic.	--		
40	PWI	-33.85	4.33	91.10		--	--	--	--	--					TS	Under 5.11m	Not Applic.	--		
# 41	Intermediate Hill	1025.35	241.24	621.30		--	--	--	--	--					IHS	Infringes 196.44	Not Applic.	--		
# 42	Intermediate Hill	661.95	200.05	517.30		--	--	--	--	--					IHS	Infringes 155.25	Not Applic.	--		
LOP 43	Norfolk pines	-324.75	41.07	200.10		--	--	--	--	--					TS	Infringes 10.18m	Not Applic.	--		



10.2.2 RWY 28 TAKE-OFF (WESTERN END)

LORD HOWE ISLAND AD: RWY 10/28 C2 INPA TODA = 948 TORA = 888											TKOF FM THR 28 HEADING WEST.					MOS 139: OAS - Obstacle Assessment Surface?	Airservices Australia: VSS - Visual Segment Surface?		
TKOF to western end: 90m inner edge + 10% div. to 2500m.						APCH: 90m inner edge + 15% div. @ 3.33% slope etc. to 2500m.					Other OLS								
Obst. No.	Obstruction Description	Ext. C/L Dist. (m)	Height (m)	Perp. Dist. (m) Left (-) or Right (+) of ext. C/L	Grad. (%) 60m CLY	STODAs (m)						Ext. C/L Dist. (m)	Height (m)	Perp. Dist. (m) Left (-) or Right (+) of ext. C/L	Grad. (%) 60m CLY	Infringes?	OLS location	Infringes?	
						1.6%	1.9%	2.2%	2.5%	3.3%	5.0%								
# 1	2ndry windsock	-264.87	7.97	-70.91	--	--	--	--	--	--						TS	Infringes 2.63m	Not Applic.	--
# 2	Anemometer	-258.57	10.89	-65.21	--	--	--	--	--	--						TS	Infringes 6.7m	Not Applic.	--
# 3	Palm trees	-368.87	11.05	-81.31	--	--	--	--	--	--						TS	Infringes 3.57m	Not Applic.	--
4	Blackburn Isl. windsock	1111.63	33.80	-310.71	--	--	--	--	--	--						IHS	Under 11.2	Not Applic.	--
5	Blackburn Isl. pine	1067.63	33.88	-270.71	--	--	--	--	--	--						IHS	Under 11.12	Not Applic.	--
# 6	Hill (North Head)	3478.33	87.41	214.20	--	--	--	--	--	--						IHS	Infringes 42.41	Not Applic.	Under 26.76m
# 7	Hill (North Head)	3463.33	107.40	286.20	--	--	--	--	--	--						IHS	Infringes 62.4	Not Applic.	Under 6.28m
# 8	Hill (North Head)	3470.33	129.81	353.20	--	--	--	--	--	--						IHS	Infringes 84.81	Not Applic.	Infringes 15.9m
# 9	Sea wall end - IGNORED	20.33	0.81	39.20	3.98	919	926	932	936	944	TODA	20.33	0.81	39.20	3.98	Infringes 0.13m		Not Applic.	Under 14.19m
LOP 10	Hand rail and post	41.14	1.49	50.02	--	--	--	--	--	--		41.14	1.49	50.02	3.62	Infringes 0.12m		Not Applic.	Under 13.51m
11	Bush	47.90	2.33	56.23	--	--	--	--	--	--						TS	Under 0.08m	Not Applic.	Under 12.67m
12	Bush	48.38	2.60	59.62	--	--	--	--	--	--						TS	Under 0.48m	Not Applic.	Under 12.4m
LOP 13	Norfolk pines	199.40	32.25	165.68	--	--	--	--	--	--						TS	Infringes 7.46m	Not Applic.	--
14	Norfolk pine	221.06	28.46	190.09	--	--	--	--	--	--						TS	Under 1.29m	Not Applic.	--
15	Norfolk pine	383.07	33.81	291.29	--	--	--	--	--	--						IHS	Under 11.19	Not Applic.	--
16	Norfolk pine	262.47	37.97	242.51	--	--	--	--	--	--						TS	Under 2.4m	Not Applic.	--
# 17	Transit Hill	146.63	40.20	185.90	--	--	--	--	--	--						TS	Infringes 11.53m	Not Applic.	--
18	Bush	-274.33	0.68	57.42	--	--	--	--	--	--						TS	Under 1.96m	Not Applic.	--
# 19	Transit Hill	-10.07	64.18	221.30	--	--	--	--	--	--						TS	Infringes 28.91m	Not Applic.	--



11.0 REVIEW OF PREVIOUS ATI RECOMMENDATIONS

It is the responsibility of AOSPL to check whether previous plans for corrective action have been completed.

The manner, by which the plans for corrective action are implemented, will be scrutinised and assessed by CASA.

The following was observed during this ATI:

- Plans for corrective action were sighted for last year's ATI recommendations.
 - All staff were familiar with the recommendations and the status of their correction. This implies that management was to attend to the recommendations.
 - It is the duty of the Aerodrome Manager to formulate plans for corrective action, and ensure their implementation and completion.
 - ▲ A template "ATI Plan for Corrective Actions" table is provided in the "SUMMARY AND RECOMMENDATIONS" at the front of this report.

Following was the status of last year's ATI recommendations:

- Recommendation 1: To gravel backfill the sealed edge drop offs / lips > 25mm for the runway and / or taxiway, and grade the backfill level with the respective strip.
 - COMPLETED.
- Recommendation 2: To continue / complete the gravel backfilling of the re-established RWY light pad bases so that they are graded level with the RWS surface.
 - COMPLETED.
- Recommendation 3: To mark / provide the apron parking plan positions as shown in the most recent design (2004/05) as soon as practical, and following discussion with AOS to ensure dimension and colour correctness.
 - PARTIALLY COMPLETED. The apron parking positions were re-designed. The markings are scheduled to occur soon.
- Recommendation 4: To lop / lower vegetation on the dune (obstacle Nos. 35, 39 and 40 as located in the RWY 10 take-off survey results) as they infringe the APCH OLS, and / or seek advice / exemption from CASA.
 - PARTIALLY COMPLETED. The area appeared reduced in vegetation. However, only obstacle No. 39 was lopped.
- Recommendation 5: To lop the Norfolk pines located as obstacle No. 48 (and those nearby) in the RWY 10 TKOF survey results in Appendix A south of the runway as they infringe the transition OLS, and / or seek advice / exemption from CASA.
 - NOT COMPLETED.
- Recommendation 6: To lop / remove / re-locate obstacle Nos. 1 (secondary wind indicator), 2 (hazard marked anemometer) and 3 (palm trees and similarly heightened trees) on the southern side of the runway (located in the RWY 28 TKOF survey results in Appendix A) as they infringe the transition OLS, and / or seek advice / exemption from CASA.
 - NOT COMPLETED.

- Recommendation 7: To lop / remove obstacle Nos. 19 (or the bushes along the surveyed fence line) and 14 (all the Norfolk pine trees) at Windy Point / north western RWY end (located in the RWY 28 TKOF survey results in Appendix A) as they infringe the transition OLS, and / or seek advice / exemption from CASA.
 - PARTIALLY COMPLETED. The bushes have been reduced in height (No. 19). The Norfolk pine trees (No. 14) are being addressed but a longer permission process is required.

APPENDIX A: OBSTACLE SURVEYS

Lord Howe Island Airport

RWY 10/28

TKOF / APCH inner edge width = 90m

Splay divergence = 10% TKOF / 15% APCH

Overall length = 2,500m

RWY 10 TKOF: **TORA = 888m**

TODA = 948m

TODA end RL = 5.15mAHD

No.	Obstruction Description	Extended C/L Distance (m)	Mean Height (m)	Perpendicular distance (m) left (-) or Right (+) of extended C/L	TKOF Gradient (%)	Elevation (mAHD)	SOT C/L Obstruction Distance (m)
# 1	Transit Hill	-265.95	80.96	-514.10	30.44	86.11	682.05
# 2	Transit Hill	-157.55	69.95	-503.70	44.40	75.10	790.45
# 3	Transit Hill Obstr. Light	-507.85	129.70	-493.40	25.54	134.85	440.15
4	2ndry windsock	-63.15	14.36	-147.90	22.74	19.51	884.85
5	Grass on dune	-38.55	10.55	-118.50	27.37	15.70	909.45
6	Grass on dune	-27.85	10.23	-113.60	36.74	15.38	920.15
7	Bully bush	-21.34	8.83	-94.80	41.39	13.98	926.66
8	Stake on dune	-10.55	9.11	-98.50	86.31	14.26	937.45
9	Stake on dune	-6.35	8.74	-94.50	137.71	13.89	941.65
10	Grass on dune	-7.42	8.43	-91.42	113.71	13.58	940.58
11	Stake on dune	7.21	7.17	-85.79	99.43	12.32	955.21
12	Stake on dune	7.41	6.03	-80.10	81.37	11.18	955.41
13	Grass on dune	-8.62	5.54	-71.27	64.28	10.69	939.38
14	Grass on dune	19.27	5.25	-75.18	27.22	10.40	967.27
LOP 15	Grass on dune	-5.39	4.11	-63.83	76.15	9.26	942.61
LOP 16	Grass on dune	-1.00	3.58	-56.61	357.93	8.73	947.00
LOP 17	Grass on dune	3.77	3.72	-51.98	98.75	8.87	951.77
LOP 18	Grass on dune	7.33	3.73	-46.67	50.88	8.88	955.33
19	Stake on dune	33.16	3.10	-46.21	9.36	8.25	981.16
LOP 20	Grass on dune	13.85	2.77	-39.30	20.00	7.92	961.85
21	Grass on dune	16.78	2.82	-31.56	16.80	7.97	964.78
22	Grass on dune	28.90	3.36	-26.26	11.62	8.51	976.90
23	Grass on dune	44.42	3.16	-14.97	7.11	8.31	992.42
24	Stake on dune	99.45	5.10	-8.50	5.12	10.25	1047.45
25	Stake on dune	94.95	4.95	-0.90	5.21	10.10	1042.95
26	Muttonbird Point	1348.45	36.39	-0.80	2.70	41.54	2296.45
27	Stake on dune	138.55	6.05	19.90	4.37	11.20	1086.55
28	Stake on dune	240.45	9.53	57.10	3.96	14.68	1188.45
29	Stake on dune	255.64	10.65	72.52	4.17	15.80	1203.64
# 30	Intermediate Hill	1206.15	44.59	206.00	3.70	49.74	2154.15
# 31	Intermediate Hill	1201.15	48.65	217.50	4.05	53.80	2149.15
LOP 32	Bully bush	261.36	13.62	84.44	5.21	18.77	1209.36
# 33	Intermediate Hill	1192.65	58.58	252.10	4.91	63.73	2140.65
LOP 34	Grass on dune	254.94	12.82	92.21	5.03	17.97	1202.94
LOP 35	Sallywood tree	250.15	12.87	97.20	5.15	18.02	1198.15
# 36	Intermediate Hill	1171.95	75.70	296.70	6.46	80.85	2119.95
# 37	Intermediate Hill	1161.75	86.85	317.40	7.48	92.00	2109.75
# 38	Intermediate Hill	1123.65	117.45	364.00	10.45	122.60	2071.65
# 39	Intermediate Hill	1041.45	181.20	455.70	17.40	186.35	1989.45
40	PWI	-33.85	4.33	91.10	12.80	9.48	914.15
# 41	Intermediate Hill	1025.35	241.24	621.30	23.53	246.39	1973.35
# 42	Intermediate Hill	661.95	200.05	517.30	30.22	205.20	1609.95
LOP 43	Norfolk pines	-324.75	41.07	200.10	12.65	46.22	623.25

LOP - Lop or remove these obstructions as they either infringe the OLS, about to infringe the OLS, or are required to be lowered to maintain the TKOF STODAs no worse than the previous year.

-These obstacles infringe the OLS. They are known and immovable, lit or shielded by a lit obstacle, and / or appropriately published in the relevant AIP/s.

Survey by **Airport Operation Support Pty Ltd**

Lord Howe Island Airport

RWY 10/28

TKOF / APCH inner edge width = 90m

Splay divergence = 10% TKOF / 15% APCH

Overall length = 2,500m

RWY 28 TKOF: **TORA = 888m**

TODA = 948m

TODA end RL = 4.56m AHD

No.	Obstruction Description	Extended C/L Distance (m)	Mean Height (m)	Perpendicular distance (m) left (-) or Right (+) of extended C/L	TKOF Gradient (%)	Elevation (m AHD)	SOT C/L Obstruction Distance (m)
# 1	2ndry windsock	-264.87	7.97	-70.91	3.01	12.53	683.13
# 2	Anemometer	-258.57	10.89	-65.21	4.21	15.45	689.43
# 3	Palm trees	-368.87	11.05	-81.31	3.00	15.61	579.13
4	Blackburn Isl. windsock	1111.63	33.80	-310.71	3.04	38.36	2059.63
5	Blackburn Isl. pine	1067.63	33.88	-270.71	3.17	38.44	2015.63
# 6	Hill (North Head)	3478.33	87.41	214.20	2.51	91.97	4426.33
# 7	Hill (North Head)	3463.33	107.40	286.20	3.10	111.96	4411.33
# 8	Hill (North Head)	3470.33	129.81	353.20	3.74	134.37	4418.33
# 9	Sea wall end - IGNORED	20.33	0.81	39.20	3.98	5.37	968.33
LOP 10	Hand rail and post	41.14	1.49	50.02	3.62	6.05	989.14
11	Bush	47.90	2.33	56.23	4.85	6.89	995.90
12	Bush	48.38	2.60	59.62	5.37	7.16	996.38
LOP 13	Norfolk pines	199.40	32.25	165.68	16.17	36.81	1147.40
14	Norfolk pine	221.06	28.46	190.09	12.87	33.02	1169.06
15	Norfolk pine	383.07	33.81	291.29	8.83	38.37	1331.07
16	Norfolk pine	262.47	37.97	242.51	14.47	42.53	1210.47
# 17	Transit Hill	146.63	40.20	185.90	27.41	44.76	1094.63
18	Bush	-274.33	0.68	57.42	0.25	5.24	673.67
# 19	Transit Hill	-10.07	64.18	221.30	637.10	68.74	937.93

LOP - Lop or remove these obstructions as they either infringe the OLS, about to infringe the OLS, or are required to be lowered to maintain the TKOF STODAs no worse than the previous year.

- These obstacles infringe the OLS. They are known and immovable, lit or shielded by a lit obstacle, and / or appropriately published in the relevant AIP/s.

Survey by **Airport Operation Support Pty Ltd**

APPENDIX B: DEFINITIONS

ABBREVIATION	DEFINITION
AA	Airservices Australia
ABN	Aerodrome Beacon
AC	Advisory Circular
ACI	Aerodrome Compliance Inspection
ACN	Aircraft Classification Number
AEC	Aerodrome Emergency Committee
AEP	Aerodrome Emergency Plan
AFRU	Aerodrome Frequency Response Unit
AIP	Aeronautical Information Publications
AIS	Aeronautical Information Services
ALA	Aeroplane Landing Area
AO	Audit Observation
AOC	Air Operator's Certificate
AOSPL	Airport Operation Support Pty Ltd
APARS	Australasian Pacific Aviation Resource Services Pty Ltd
ARC	Aerodrome Reference Code comprising of 2 code elements (e.g. 2C)
ARFFS	Aerodrome Rescue and Fire Fighting Service
ARO	Aerodrome Reporting Officer
AROCP	Aerodrome Reporting Officer's Certificate of Proficiency
ARP	Aerodrome Reference Point
ASDA	Accelerate Stop Distance Available
ASI	Aerodrome Safety Inspection/s
ASIC	Aviation Security Identification Card
ASO	Airport Safety Officer
ATC	Air Traffic Control
ATI	Aerodrome Technical Inspection/s
ATSB	Australian Transport Safety Bureau
AVGAS	Aviation Gasoline
AVTUR	Aviation Turpentine
AWIS	Automatic Weather Information Station
BAHMP	Bird and Animal Hazard Management Plan
BTB	Bitumen Treated Base
CAAP	Civil Aviation Advisory Publication
CAO	Civil Aviation Order
CASA	Civil Aviation Safety Authority
CASR 139	Civil Aviation Safety Regulation 1998 Part 139 Aerodromes
CASR 99	Civil Aviation Safety Regulation 1998 Part 99
CCTV	Closed Circuit Television/s
CHTR	Charter
CTAF	Common Traffic Advisory Frequency
DAMP	Drug and Alcohol Management Plan
DAP	Departure and Approach Procedures (published as Part East or West).
DIRD	Department of Infrastructure and Regional Development; previously DOIT.
DME	Distance Measuring Equipment
DOIT	Department Of Infrastructure and Transport
ERSA	En-Route Supplement Australia
FCS	Frequency Confirmation System
FIFO	Fly In Fly Out
FOD	Foreign Object Debris
FWD	Falling Weight Deflectometer
GA	General Aviation
ICAO	International Civil Aviation Organisation
IMC	Instrument Metrological Conditions
IWI	Illuminated Wind Indicator
Jet A1	Jet Aviation Turpentine
LED	Light Emitting Diode
LDA	Landing Distance Available
MAGS	Movement Area Guidance Signs
MAUM	Maximum All Up Mass

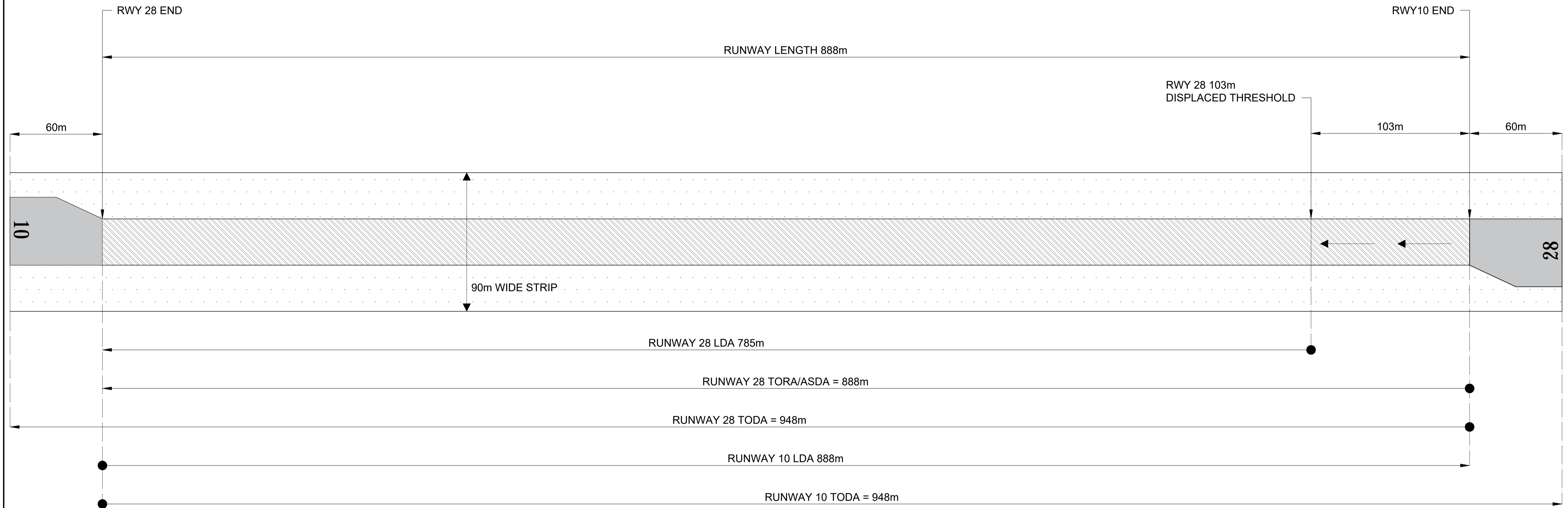
ABBREVIATION	DEFINITION
MIRL	Medium Intensity Runway Lights
MOS 139	Manual Of Standards Part 139 – Aerodromes
MOWP	Method Of Working Plan
MTOW	Maximum Take-off Weight
NCN	Non Compliance Notice
NDB	Non Directional Beacon
NOF	NOTAM Office
NOTAM	NOtice To AirMen
NPA	Non-precision approach
OAS	Obstacle Assessment Surface
OFZ	Obstacle Free Zone within OLS relevant to instrument precision APCH RWYs comprising: IAS Inner Approach Surface ITS Inner Transitional Surface BLS Balked Landing Surface
OLS	Obstacle Limitation Surfaces comprising: OFZ Obstacle Free Zone TKOFS or TKOF Take-off Surface APCHS or APCH Approach Surface TRANS or TS Transitional Surface IHS Inner Horizontal Surface CS Conical Surface OHS Outer Horizontal Surface
OMGWS	Outer Main Gear Wheel Span
OTS	Office of Transport Security
PAL	Pilot Activated Lighting
PANS-OPS	Procedures for Air Navigation Services - ACFT OPERations
PAPI	Precision Approach Path Indicator
PCN	Pavement Classification Number
PE	Photo Electric
PVC	Polymer of Vinyl Chloride
QAL	Queensland Airports Limited
RCA	Request for Corrective Action
RDS	Runway Distance Supplement
RESA	Runway End Safety Area
RPT	Regular Public Transport
RWS	Runway Strip
RWY	Runway
SAF	Singapore Air Force
SES	State Emergency Services
SMS	Safety Management System
SOP	Standard Operating Procedures
SOT	Start Of TORA
STODA	Supplementary Take-off Distance Available
SWI	Secondary Wind Indicator
SWS	Soft Wet Surface
THR	Threshold
TKOF	Take-off
TLW	Time Limited Works
TODA	Take-off Distance Available
TORA	Take-off Run Available
TSP	Transport Security Program
T-VASIS	T-Visual Approach Slope Indicator System
TWS	Taxiway Strip
TWY/TWYs	Taxiway / Taxiways
TXL/TXLs	Taxilane / Taxilanes
VASIS	Visual Approach Slope Indicator System
VSS	Visual Slope Segment, PANS-OPS

Appendix B

Runway layout and
Indicative OLS drawings

LORD HOWE ISLAND AIRPORT RUNWAY 10-28 EXISTING OPERATIONS

NOT TO SCALE



This drawing is confidential and shall only be used for the purpose of this project. The signing of this title block confirms the design and drafting of this project have been prepared and checked in accordance with the AECOM quality assurance system to ISO 9001-2000.



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PROJECT
RUNWAY EXTENSION LORD HOWE ISLAND
FEASIBILITY STUDY BOARD

CLIENT

SCALE BAR

NOT TO SCALE

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

NO
 YES

PROJECT MANAGEMENT INITIALS

RS	RM	JM
DESIGNER	CHECKED	APPROVED

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	20/04/18	FINAL ISSUE

PROJECT NUMBER

60559990

SHEET TITLE

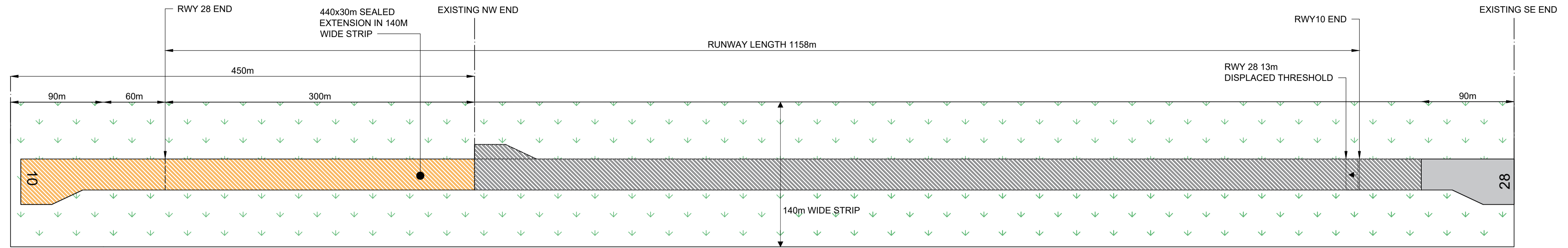
EXISTING RUNWAY LAYOUT AND DECLARED DISTANCES

SHEET NUMBER

6055990-DR-SHT-0001

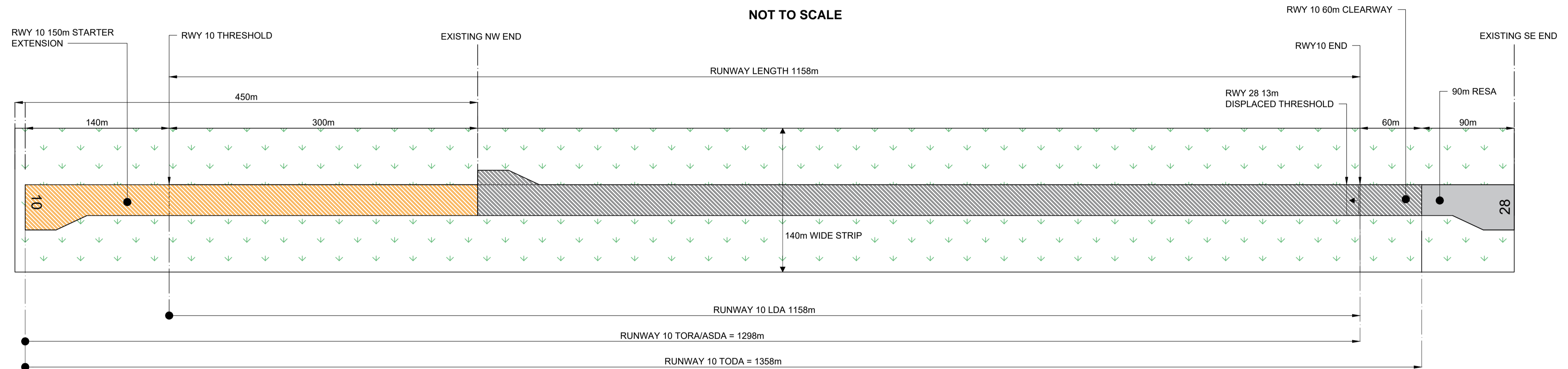
LORD HOWE ISLAND AIRPORT 450M EXTENSION LAYOUT

NOT TO SCALE



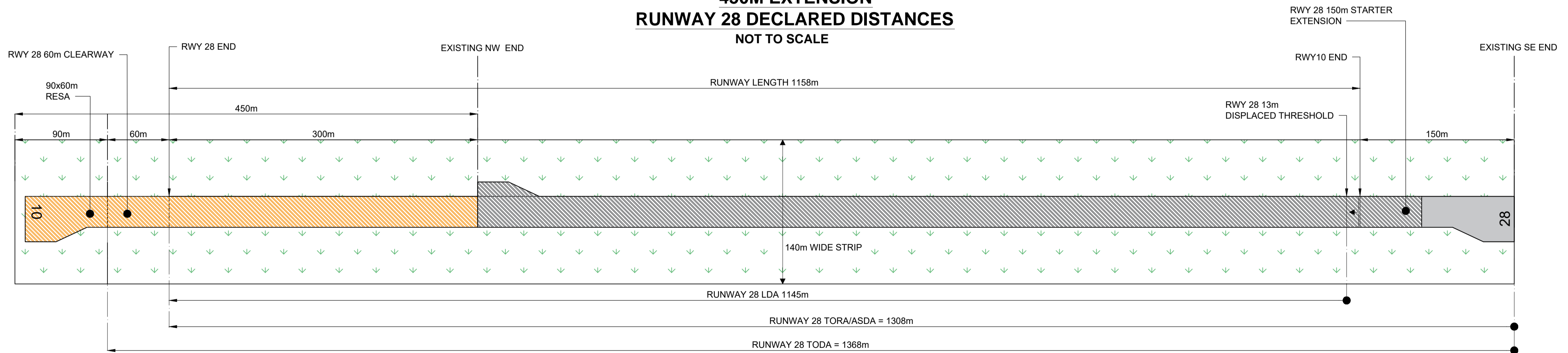
LORD HOWE ISLAND AIRPORT 450m EXTENSION RUNWAY 10 DECLARED DISTANCES

NOT TO SCALE



LORD HOWE ISLAND AIRPORT 450M EXTENSION RUNWAY 28 DECLARED DISTANCES

NOT TO SCALE



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PROJECT
RUNWAY EXTENSION LORD HOWE ISLAND
FEASIBILITY STUDY BOARD

CLIENT

SCALE BAR

NOT TO SCALE

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

NO
 YES

PROJECT MANAGEMENT INITIALS

RS	RM	JM
DESIGNER	CHECKED	APPROVED

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	20/04/18	FINAL ISSUE

PROJECT NUMBER

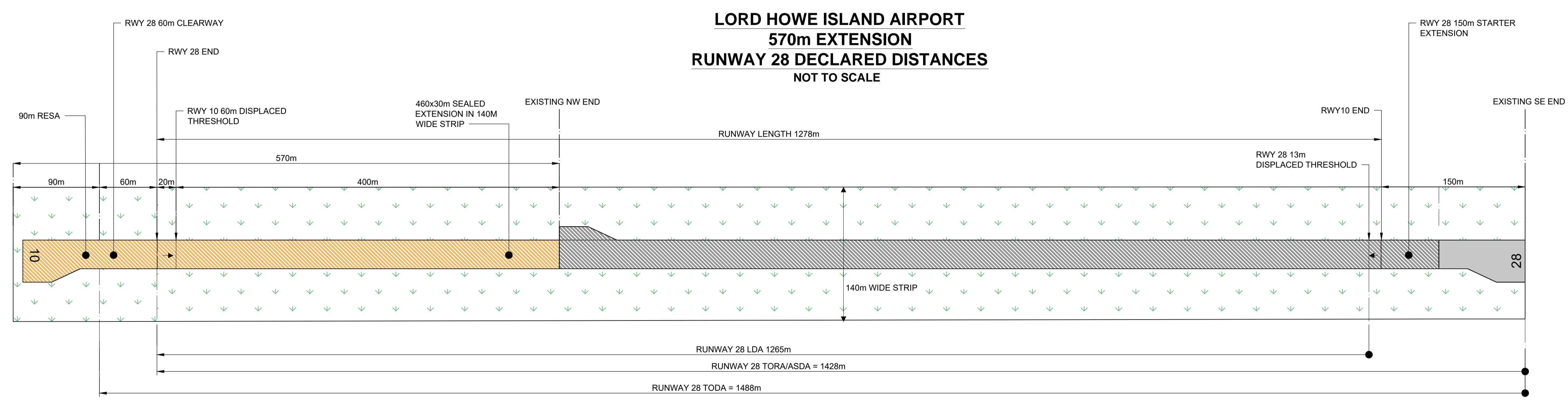
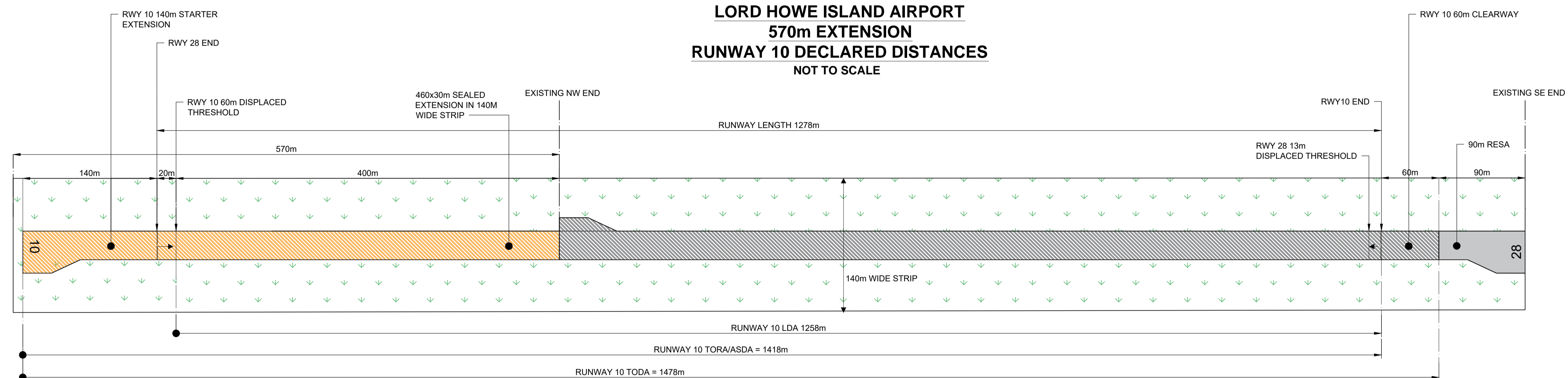
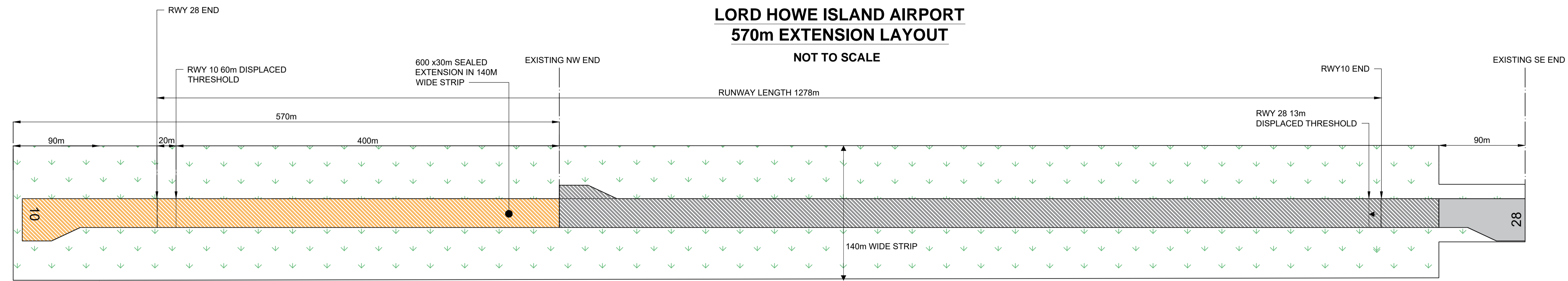
6055990

SHEET TITLE

450m RUNWAY EXTENSION
LAYOUT AND
DECLARED DISTANCES

SHEET NUMBER

6055990-DR-SHT-0002



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PROJECT
RUNWAY EXTENSION LORD HOWE ISLAND
FEASIBILITY STUDY

CLIENT
BOARD

SCALE BAR
NOT TO SCALE

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
 NO
 YES

PROJECT MANAGEMENT INITIALS

RS	RM	JM
DESIGNER	CHECKED	APPROVED

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	20/04/18	FINAL ISSUE

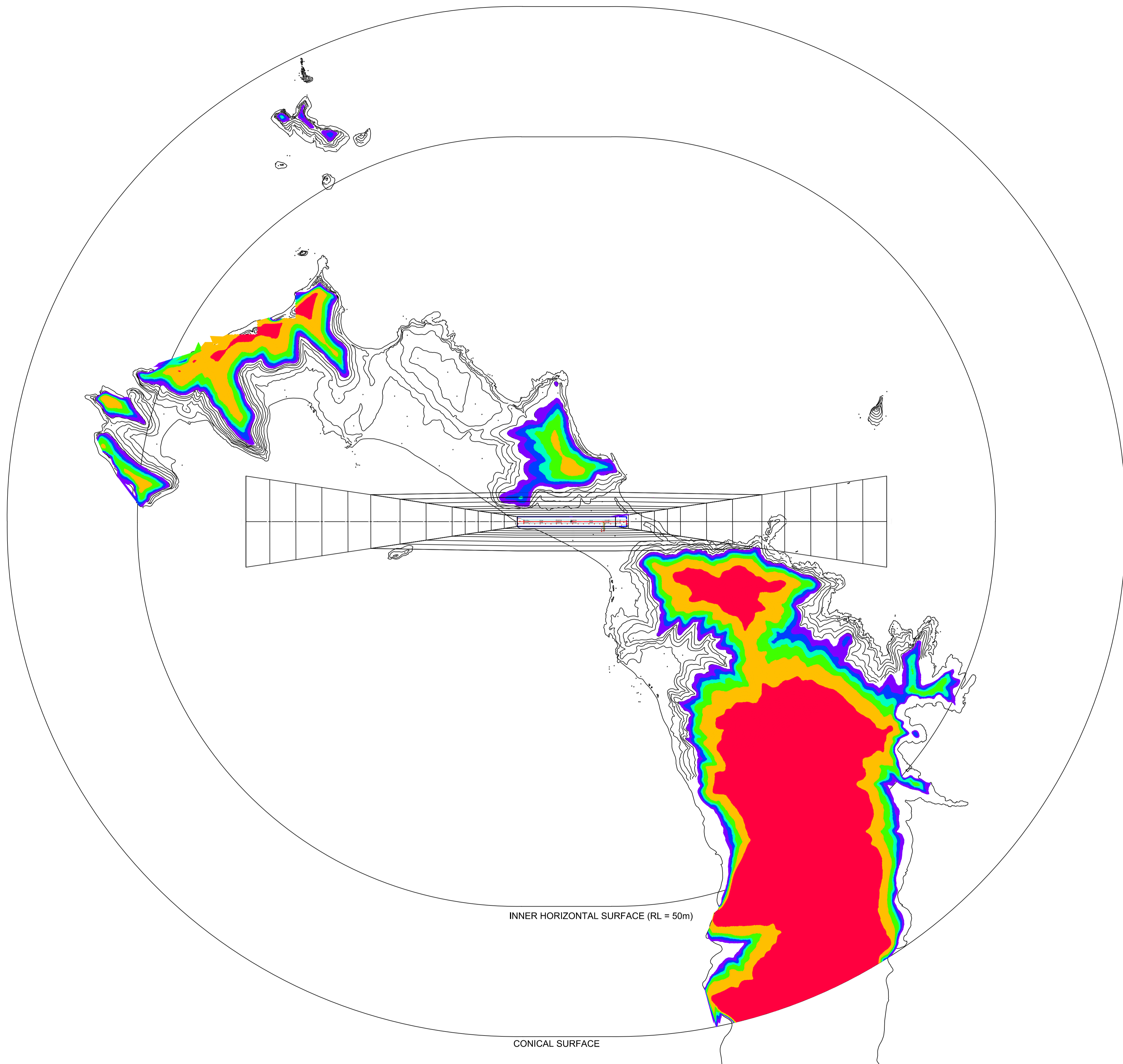
PROJECT NUMBER
6055990

SHEET TITLE
570m RUNWAY EXTENSION LAYOUT AND DECLARED DISTANCES

SHEET NUMBER
6055990-DR-SHT-0003

LEGEND:

- 0-10m OLS SURFACE PENETRATION
- 10-20m OLS SURFACE PENETRATION
- 20-30m OLS SURFACE PENETRATION
- 30-50m OLS SURFACE PENETRATION
- 50-100m OLS SURFACE PENETRATION
- +100m OLS SURFACE PENETRATION



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PROJECT RUNWAY EXTENSION LORD HOWE ISLAND
CLIENT FEASIBILITY STUDY BOARD

SCALE BAR
NOT TO SCALE

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
 NO
 YES

PROJECT MANAGEMENT INITIALS

RS	RM	JM
DESIGNER	CHECKED	APPROVED

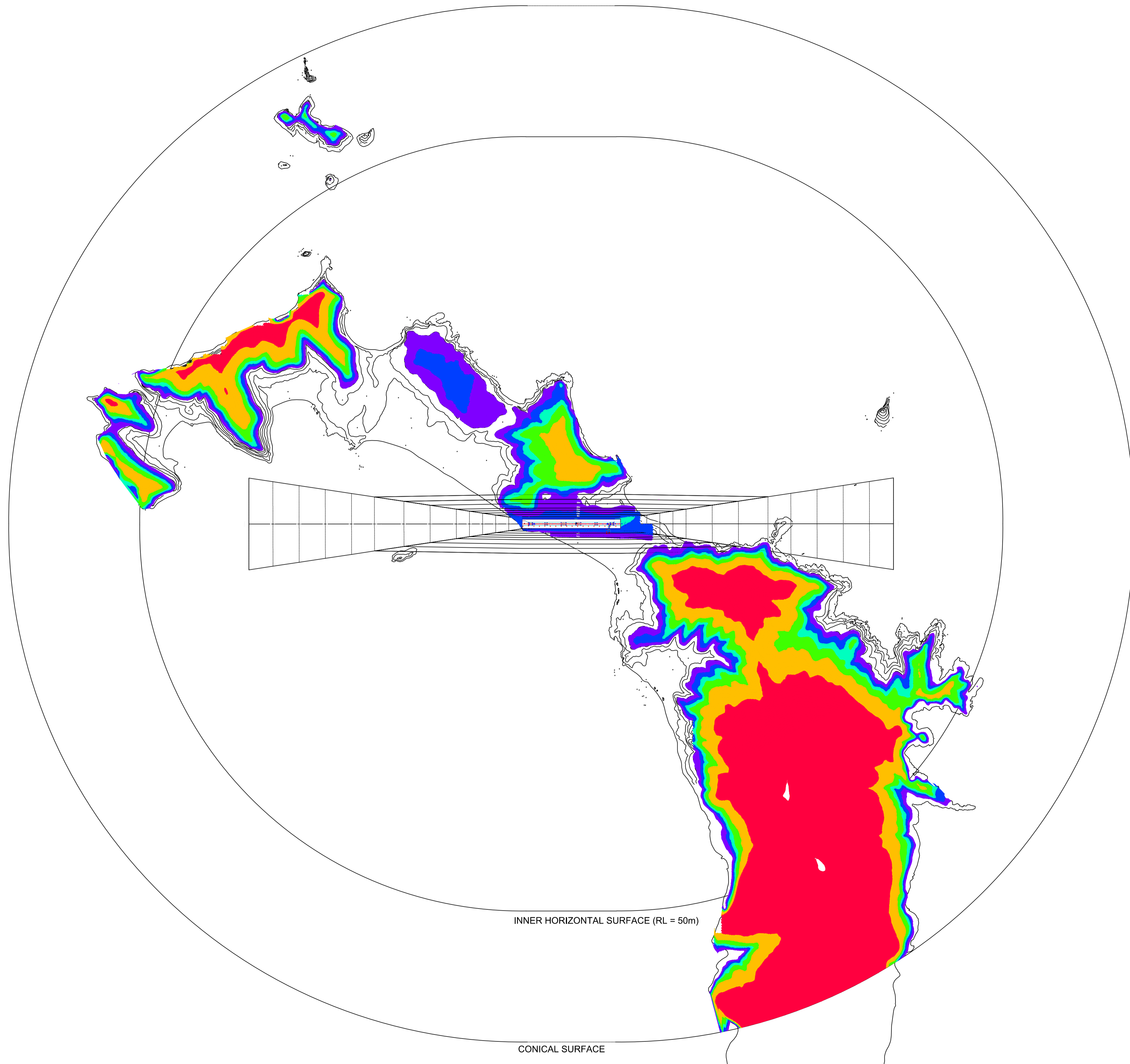
ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	20/04/18	FINAL ISSUE

PROJECT NUMBER
60559990
SHEET TITLE
EXISTING RUNWAY
OLS SURFACE PENETRATIONS
(WITHOUT VEGETATION)
SHEET NUMBER
6055990-DR-SHT-0004

LEGEND:

- 0-10m OLS SURFACE PENETRATION
- 10-20m OLS SURFACE PENETRATION
- 20-30m OLS SURFACE PENETRATION
- 30-50m OLS SURFACE PENETRATION
- 50-100m OLS SURFACE PENETRATION
- +100m OLS SURFACE PENETRATION



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PROJECT
RUNWAY EXTENSION LORD HOWE ISLAND
FEASIBILITY STUDY BOARD

CLIENT

SCALE BAR

NOT TO SCALE

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

- NO
 YES

PROJECT MANAGEMENT INITIALS

RS	RM	JM
DESIGNER	CHECKED	APPROVED

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	20/04/18	FINAL ISSUE

PROJECT NUMBER

60559990

SHEET TITLE

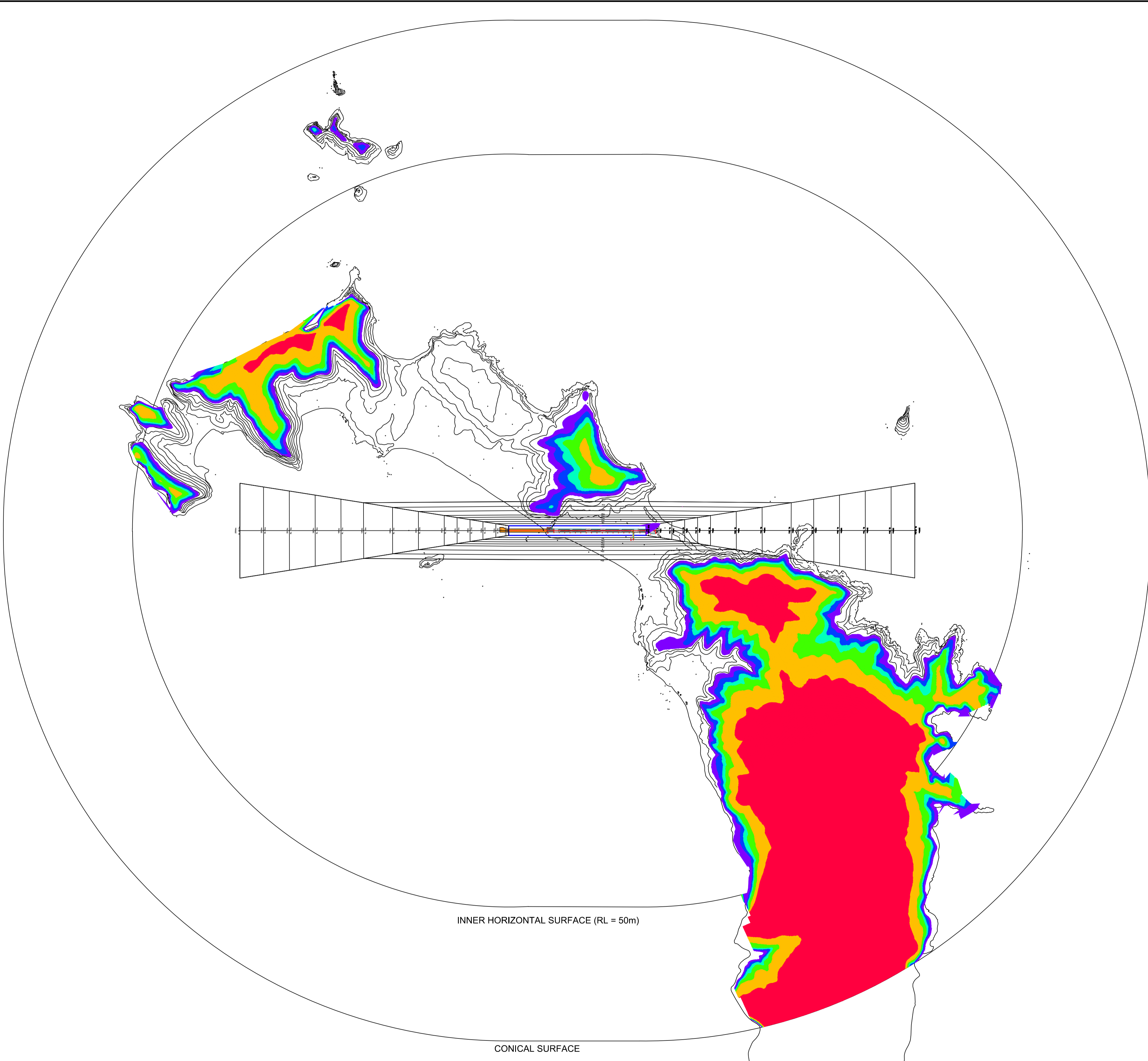
EXISTING RUNWAY
OLS SURFACE PENETRATIONS
(WITH 20m VEGETATION)

SHEET NUMBER

6055990-DR-SHT-0005

LEGEND:

- 0-10m OLS SURFACE PENETRATION
- 10-20m OLS SURFACE PENETRATION
- 20-30m OLS SURFACE PENETRATION
- 30-50m OLS SURFACE PENETRATION
- 50-100m OLS SURFACE PENETRATION
- +100m OLS SURFACE PENETRATION



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PROJECT
RUNWAY EXTENSION LORD HOWE ISLAND
FEASIBILITY STUDY

CLIENT
BOARD

SCALE BAR
NOT TO SCALE

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
 NO
 YES

PROJECT MANAGEMENT INITIALS

RS	RM	JM
DESIGNER	CHECKED	APPROVED

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	20/04/18	FINAL ISSUE

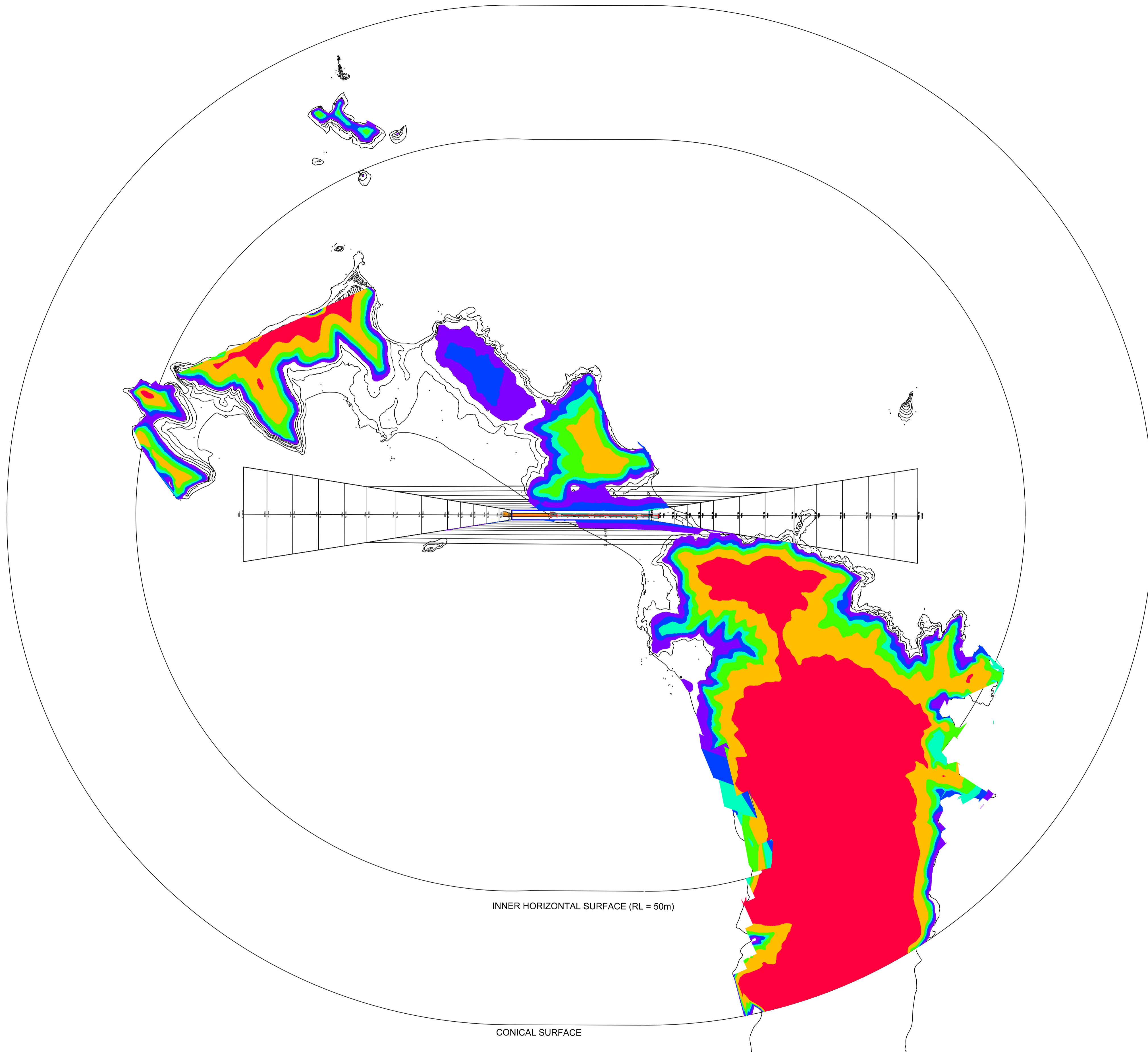
PROJECT NUMBER
60559990

SHEET TITLE
450m RUNWAY EXTENSION (CODE 2)
OLS SURFACE PENETRATIONS
(WITHOUT VEGETATION)

SHEET NUMBER
6055990-DR-SHT-0006

LEGEND:

- 0-10m OLS SURFACE PENETRATION
- 10-20m OLS SURFACE PENETRATION
- 20-30m OLS SURFACE PENETRATION
- 30-50m OLS SURFACE PENETRATION
- 50-100m OLS SURFACE PENETRATION
- +100m OLS SURFACE PENETRATION



INNER HORIZONTAL SURFACE (RL = 50m)

CONICAL SURFACE

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PROJECT
 RUNWAY EXTENSION LORD HOWE ISLAND
 FEASIBILITY STUDY BOARD

CLIENT

SCALE BAR

NOT TO SCALE

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
 NO
 YES

PROJECT MANAGEMENT INITIALS

RS	RM	JM
DESIGNER	CHECKED	APPROVED

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	20/04/18	FINAL ISSUE

PROJECT NUMBER

60559990

SHEET TITLE

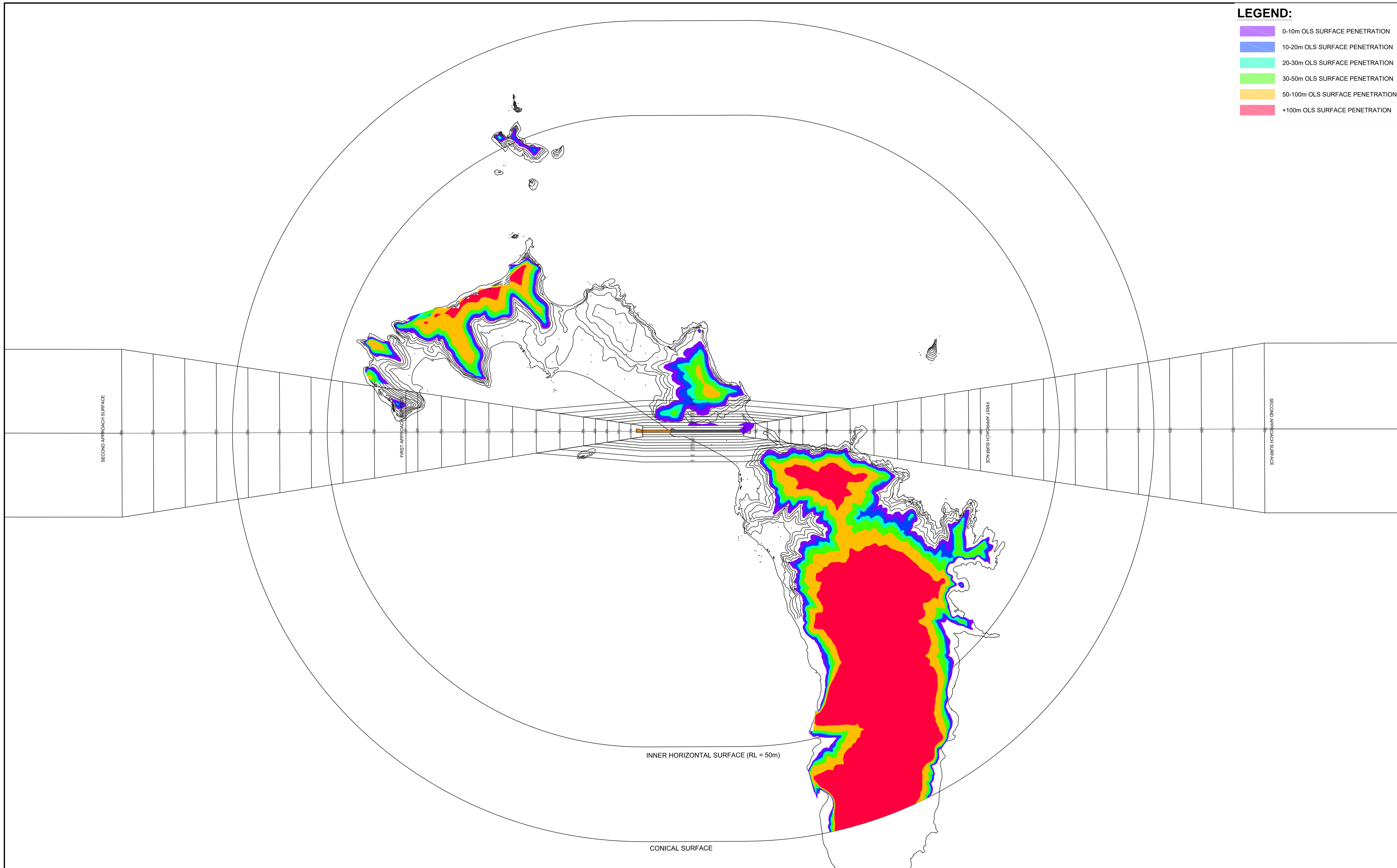
450m RUNWAY EXTENSION (CODE 2)
 OLS SURFACE PENETRATIONS
 (WITH 20m VEGETATION)

SHEET NUMBER

6055990-DR-SHT-0007

LEGEND:

- 0-10m OLS SURFACE PENETRATION
- 10-20m OLS SURFACE PENETRATION
- 20-30m OLS SURFACE PENETRATION
- 30-50m OLS SURFACE PENETRATION
- 50-100m OLS SURFACE PENETRATION
- +100m OLS SURFACE PENETRATION



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PROJECT
 RUNWAY EXTENSION LORD HOWE ISLAND
 FEASIBILITY STUDY BOARD

CLIENT

SCALE BAR

NOT TO SCALE

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

- NO
- YES

PROJECT MANAGEMENT INITIALS

RS	RM	JM
DESIGNER	CHECKED	APPROVED

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	20/04/18	FINAL ISSUE

PROJECT NUMBER

60559990

SHEET TITLE

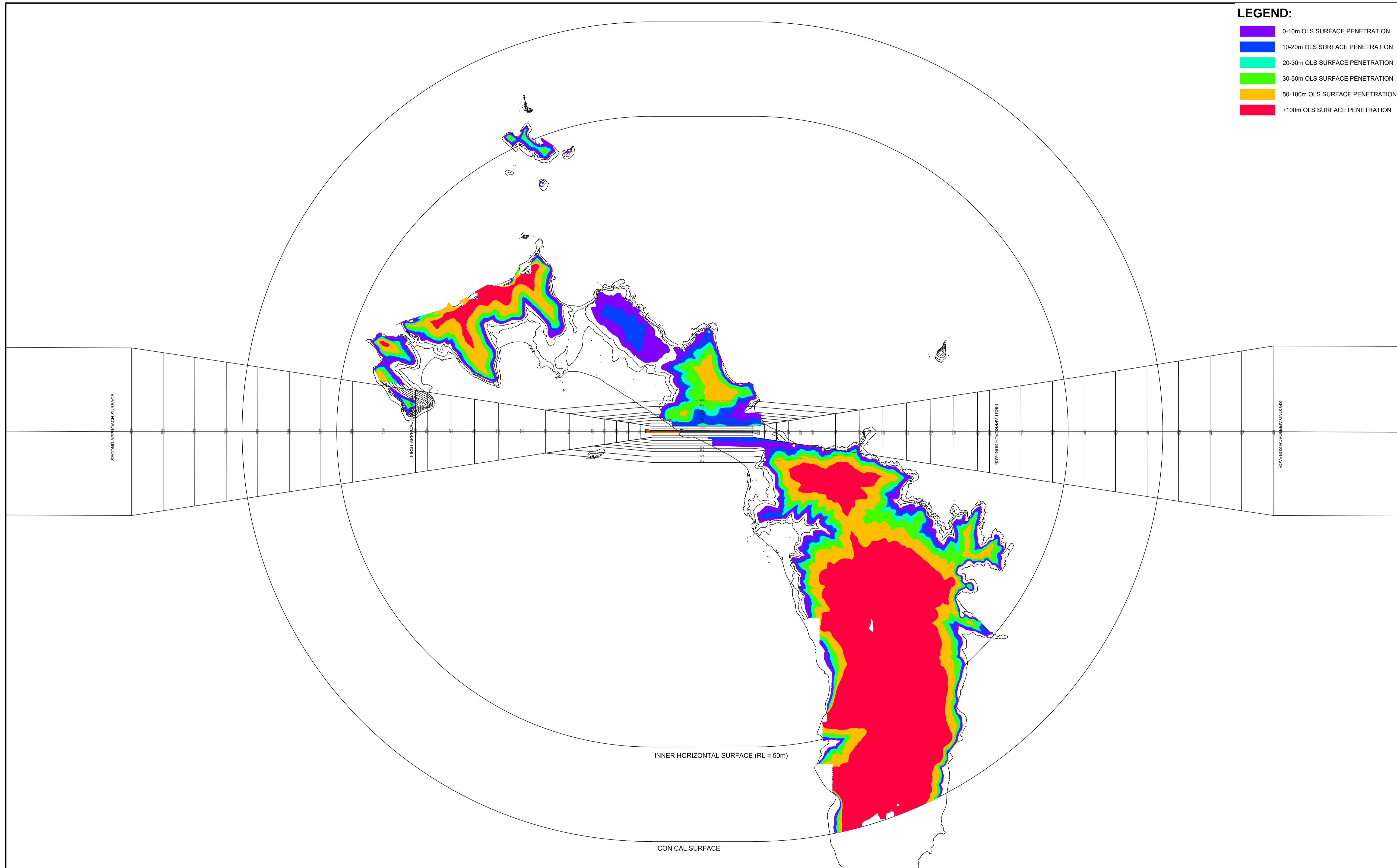
450m RUNWAY EXTENSION (CODE 3)
 OLS SURFACE PENETRATIONS
 (WITHOUT VEGETATION)

SHEET NUMBER

6055990-DR-SHT-0008

LEGEND:

- 0-10m OLS SURFACE PENETRATION
- 10-20m OLS SURFACE PENETRATION
- 20-30m OLS SURFACE PENETRATION
- 30-50m OLS SURFACE PENETRATION
- 50-100m OLS SURFACE PENETRATION
- +100m OLS SURFACE PENETRATION



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PROJECT
 RUNWAY EXTENSION LORD HOWE ISLAND
 FEASIBILITY STUDY

CLIENT
 BOARD

SCALE BAR
 NOT TO SCALE

SAFETY IN DESIGN INFORMATION
 ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
 NO
 YES

PROJECT MANAGEMENT INITIALS

RS	RM	JM
DESIGNER	CHECKED	APPROVED

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	20/04/18	FINAL ISSUE

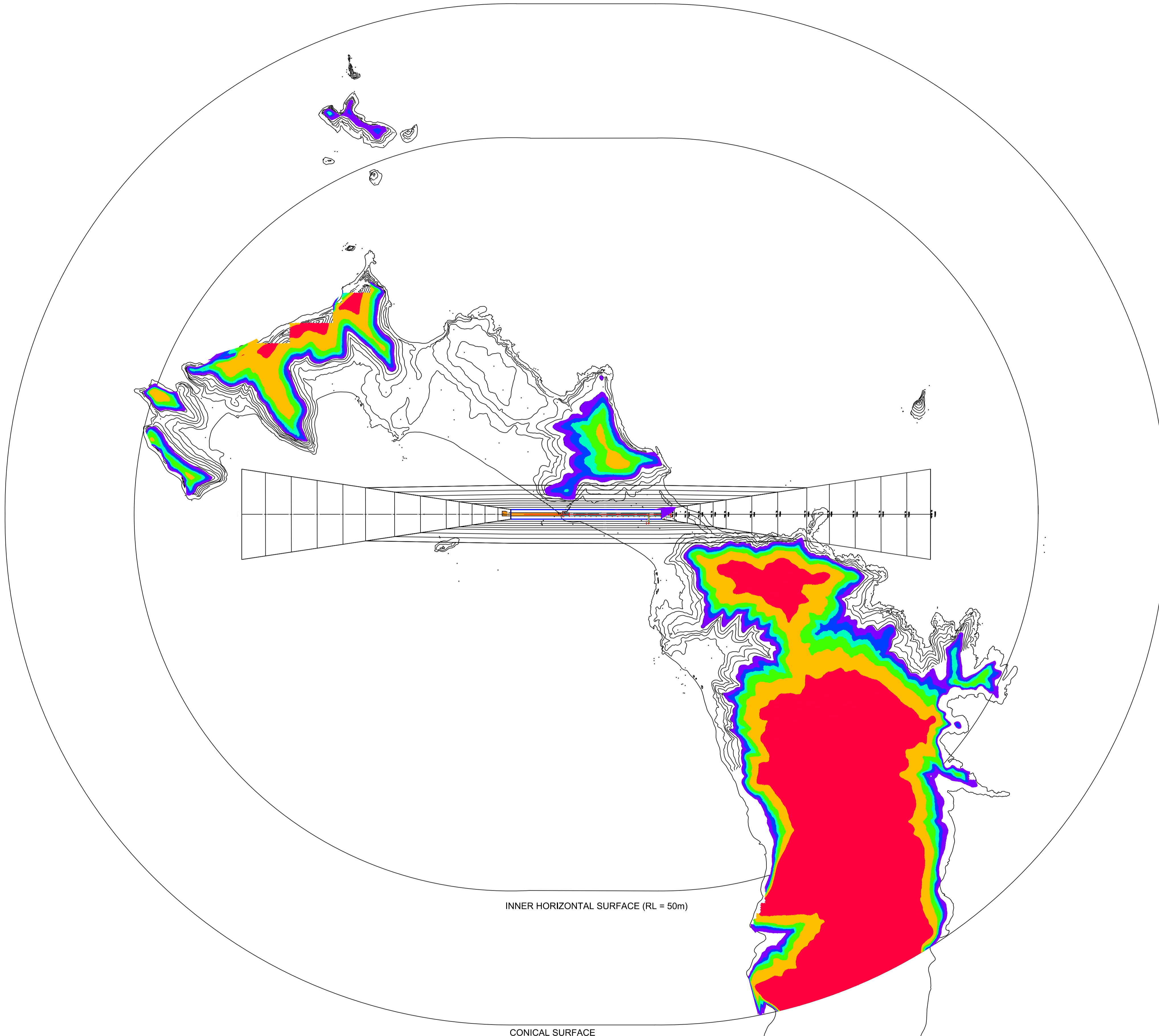
PROJECT NUMBER
 60559990

SHEET TITLE
 450m RUNWAY EXTENSION (CODE 3)
 OLS SURFACE PENETRATIONS
 (WITH 20m VEGETATION)

SHEET NUMBER
 6055990-DR-SHT-0009

LEGEND:

- 0-10m OLS SURFACE PENETRATION
- 10-20m OLS SURFACE PENETRATION
- 20-30m OLS SURFACE PENETRATION
- 30-50m OLS SURFACE PENETRATION
- 50-100m OLS SURFACE PENETRATION
- +100m OLS SURFACE PENETRATION



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PROJECT
RUNWAY EXTENSION LORD HOWE ISLAND
FEASIBILITY STUDY BOARD

CLIENT

SCALE BAR

NOT TO SCALE

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

- NO
- YES

PROJECT MANAGEMENT INITIALS

RS	RM	JM
DESIGNER	CHECKED	APPROVED

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	20/04/18	FINAL ISSUE

PROJECT NUMBER

60559990

SHEET TITLE

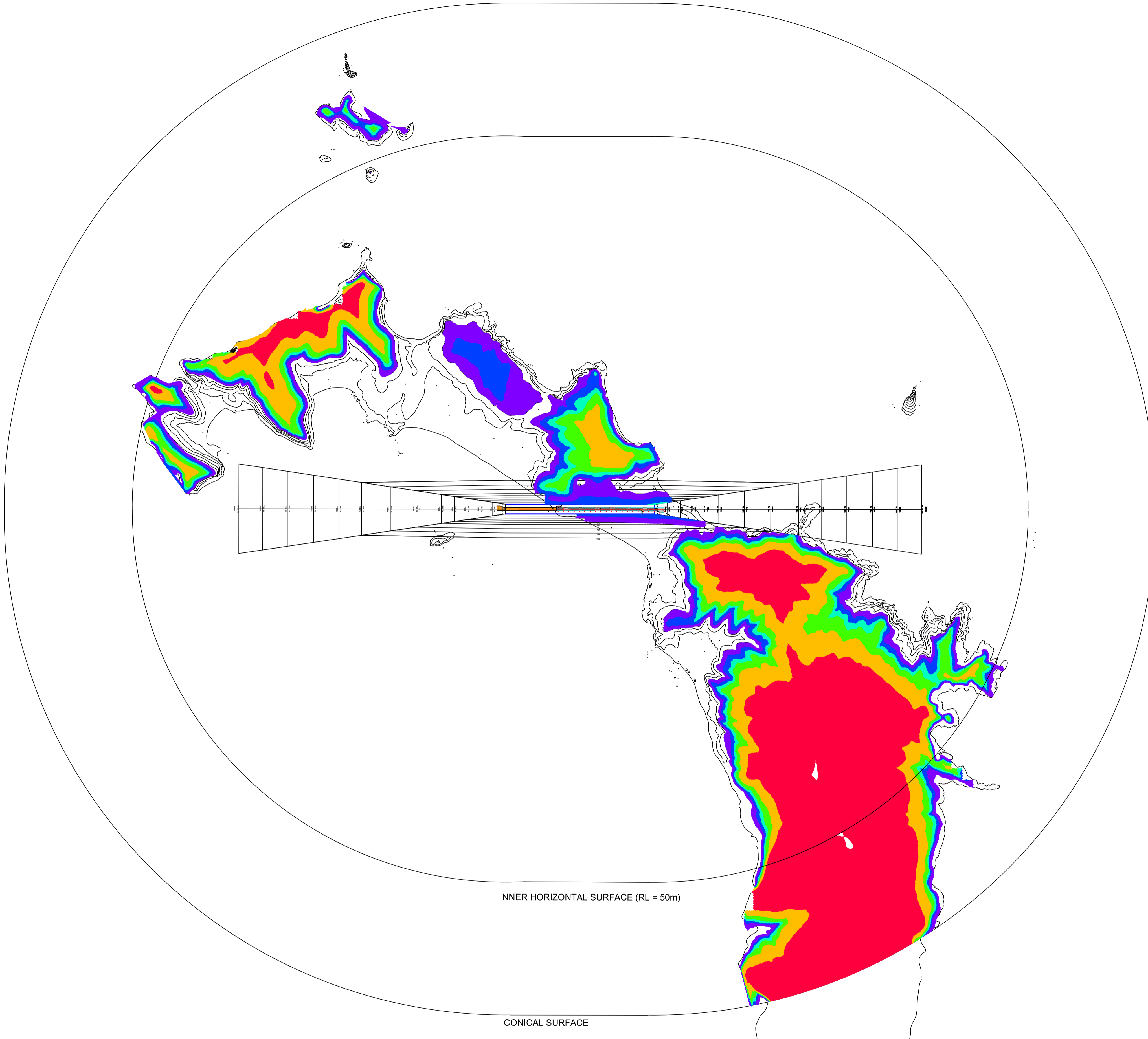
570m RUNWAY EXTENSION (CODE 2)
OLS SURFACE PENETRATIONS
(WITHOUT VEGETATION)

SHEET NUMBER

6055990-DR-SHT-0010

LEGEND:

- 0-10m OLS SURFACE PENETRATION
- 10-20m OLS SURFACE PENETRATION
- 20-30m OLS SURFACE PENETRATION
- 30-50m OLS SURFACE PENETRATION
- 50-100m OLS SURFACE PENETRATION
- +100m OLS SURFACE PENETRATION



INNER HORIZONTAL SURFACE (RL = 50m)

CONICAL SURFACE

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PROJECT
 RUNWAY EXTENSION LORD HOWE ISLAND
 FEASIBILITY STUDY BOARD

CLIENT

SCALE BAR

NOT TO SCALE

SAFETY IN DESIGN INFORMATION

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- NO
- YES

PROJECT MANAGEMENT INITIALS

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DESIGNER	CHECKED	APPROVED

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	20/04/18	FINAL ISSUE

PROJECT NUMBER

60559990

SHEET TITLE

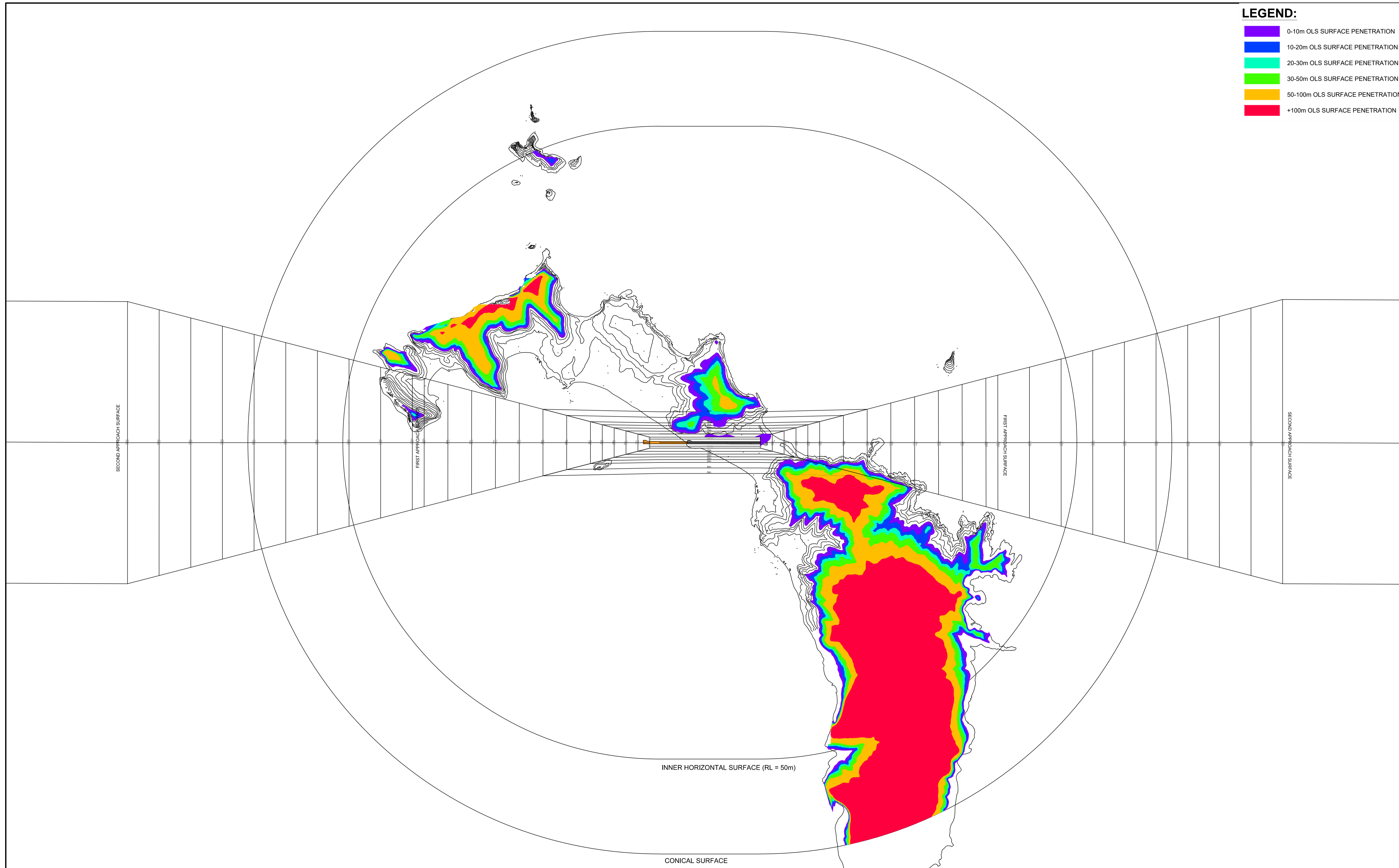
570m RUNWAY EXTENSION (CODE 2)
 OLS SURFACE PENETRATIONS
 (WITH 20m VEGETATION)

SHEET NUMBER

6055990-DR-SHT-0011

LEGEND:

- 0-10m OLS SURFACE PENETRATION
- 10-20m OLS SURFACE PENETRATION
- 20-30m OLS SURFACE PENETRATION
- 30-50m OLS SURFACE PENETRATION
- 50-100m OLS SURFACE PENETRATION
- +100m OLS SURFACE PENETRATION



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PROJECT RUNWAY EXTENSION LORD HOWE ISLAND
CLIENT FEASIBILITY STUDY BOARD

SCALE BAR
NOT TO SCALE

SAFETY IN DESIGN INFORMATION
ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?
 NO
 YES

PROJECT MANAGEMENT INITIALS

RS	RM	JM
DESIGNER	CHECKED	APPROVED

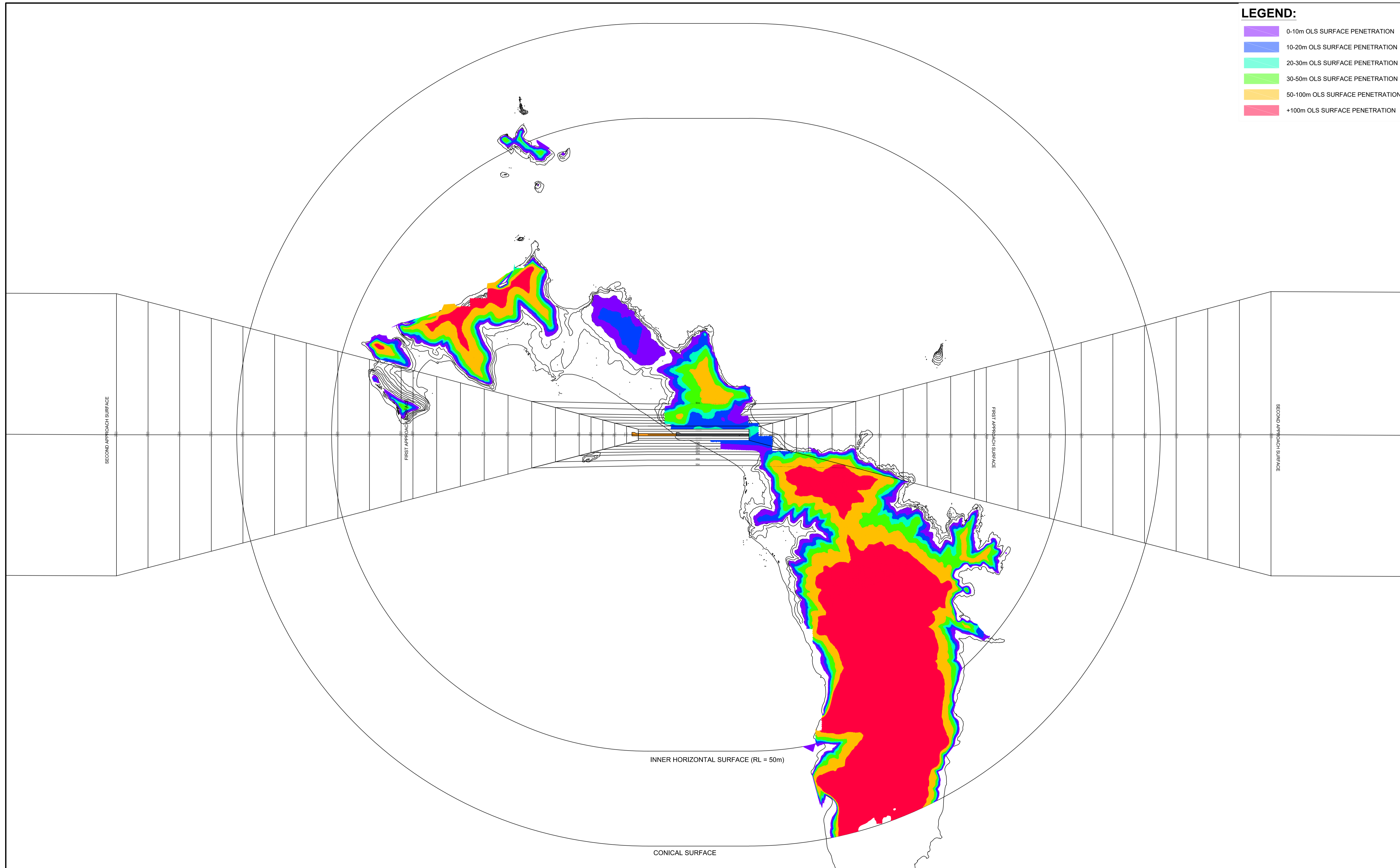
ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	20/04/18	FINAL ISSUE

PROJECT NUMBER
60559990
SHEET TITLE
570m RUNWAY EXTENSION (CODE 3)
OLS SURFACE PENETRATIONS
(WITHOUT VEGETATION)
SHEET NUMBER
6055990-DR-SHT-0012

LEGEND:

- 0-10m OLS SURFACE PENETRATION
- 10-20m OLS SURFACE PENETRATION
- 20-30m OLS SURFACE PENETRATION
- 30-50m OLS SURFACE PENETRATION
- 50-100m OLS SURFACE PENETRATION
- +100m OLS SURFACE PENETRATION



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PROJECT
RUNWAY EXTENSION LORD HOWE ISLAND
FEASIBILITY STUDY BOARD

CLIENT

SCALE BAR

NOT TO SCALE

SAFETY IN DESIGN INFORMATION

ARE THERE ANY ADDITIONAL HAZARDS / RISKS NOT NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING?

- NO
 YES

PROJECT MANAGEMENT INITIALS

RS	RM	JM
DESIGNER	CHECKED	APPROVED

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	20/04/18	FINAL ISSUE

PROJECT NUMBER

60559990

SHEET TITLE

570m RUNWAY EXTENSION (CODE 3)
OLS SURFACE PENETRATIONS
(WITH 20m VEGETATION)

SHEET NUMBER

6055990-DR-SHT-0013

About AECOM

AECOM is built to deliver a better world. We design, build, finance and operate infrastructure assets for governments, businesses and organizations in more than 150 countries. As a fully integrated firm, we connect knowledge and experience across our global network of experts to help clients solve their most complex challenges. From high-performance buildings and infrastructure, to resilient communities and environments, to stable and secure nations, our work is transformative, differentiated and vital. A Fortune 500 firm, AECOM had revenue of approximately \$18.2 billion during fiscal year 2017. See how we deliver what others can only imagine at aecom.com and [@AECOM](https://www.instagram.com/aecom).

AECOM Australia Limited

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