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Ella Bay Architectural Inundation Report

Satori Resort Ella Bay Pty Ltd June 2011







1.0 Introduction

This report outlines the possible risk of storm tide inundation on the proposed Ella Bay resort parcels, and explores the methods to effectively manage, reduce or mitigate these potential risks.

The fundamental aim of this inundation/terrain management report is to negate the need for importing or exporting of spoil from the proposed Ella Bay resort parcels, whilst effectively managing potential coastal inundation threats as empirically measured in BMT/WBM's - Ella Bay, Coastal Inundation Study – RB16650.002.00.doc, March 2008. (Volume 6.4 a)

The proposed construction management methodology provides an environmentally responsible `best practice` solution, minimises inundation risk to the resort facilities.

The process undertaken is summarised as follows -

- The proponent proposes to build 3 resort precincts along the Ella Bay foreshore in carefully considered locations in order to preserve the environmental integrity of the site.
- The majority of resort precincts are located above the inundation level at nominated RL 3.1 metres – refer Appendix A
- The resorts have been set back from the foreshore in accordance with BMT/WBM's Ella Bay, Erosion Prone Area Reassessment. Set backs are shown in Appendix A and coloured in green and blue. Refer SEIS appendix A2.8.
- BMT/WBM recommended that habitable floor areas be R.L 3.1 metres or above in their report.
- (Appendix A Volume 6.4 a) shows the contour lines RL 3.100 and RL 2.500 with built form resort areas below R.L. 3.1 highlighted in purple.
- The proponent has chosen the habitable floor level @ RI 3.400 (300mm above the inundation level).

2.0 General Construction and Design Methodology

The basic premises of the proposed earthworks management methodologies are to:

- Strategically and sympathetically site the resort facilities to minimise need for earthworks and reduce risk of inundation refer Appendix E.
- Elevate and suspend (where practical) resort facilities above the nominated storm surge level (RL 3.100) to minimise earthworks requirements refer Appendix E.
- Locally use and balance required excavated construction spoil (constructed wetlands, pools and lagoons and basements, where used) to lift levels of building pads above the minimum habitable floor level (RL 3.400). This is a fundamental aim to ensure that no resort precincts will require importing or exporting of earthworks material from offsite and only a balanced volume solution is acceptable - refer Appendix E.
- The Northern Precinct has had a preliminary design of constructed wetlands, storm drainage and development levels and has been included in greater detail. All excavation will be managed as per the Acid Sulfate Soils Management Subplan.
- Considered construction methodologies will be implemented to ensure excavated material is placed as close as possible to the source of the excavations.
- Basements will be waterproofed and entry levels will be a minimum of RL 3.100.
- Basements' and pools' levels and sizes will be adjusted in the detailed design phase to maximise earthwork efficiencies.
- All podium levels to be minimally set at RL 3.100.
- All habitable levels to be minimally at RL 3.400.





3.0 Specific Mitigation and Management Techniques



Refer to Appendix for section detail.

3.1 Village Precinct

The Village precinct comprises a mix of attached higher density 3 to 4 storey resort accommodation buildings and detached 2 storey villas with mixed use commercial facilities addressing a village centre and public plaza. Refer to Appendix B for more detail.

Construction methodology summary-

- · Largely concrete and blockwork construction techniques.
- Basement carparking is restricted to one level under the resort central facilities and commercial areas.
- Limited podium area above basements area only.
- Indicative Podium level RL 5.000
- Site excavation will be required for the constructed wetlands, lagoons, pools and basement areas. Approx 4100m3 of excavation.
- Fill will be required to lift the areas of the site which are below RL 3.100 Approximately 140m3 of fill
- Surplus spoil will be used across the site to lift developable area above RL 3.100 to balance the use of excavated materials
- The proposed public pool is located in the area indicated and the amount of fill in this area will be further reduced.
- The depth of the fill required to reach RL 3.100 will range from 0mm to approximately 600mm with the average height of 300mm





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3.2 Central Resort Precinct

The central resort precinct comprises a mix of attached medium density 2 to 3 storey resort accommodation buildings and 2 storey detached villas. Refer to Appendix C for more detail.

Construction methodology summary-

- Largely concrete and blockwork construction techniques.
- Basement carparking is restricted to a minimum floor level RL 1.000 & to one level under the resort central facilities.
- Limited podium area above basements area only.
- Indicative Podium level minimum RL 3.100 Half and full basements, constructed wetlands, lagoons, pools and basements concrete construction
- Site excavation required will be for the constructed wetlands, basement and pools areas. Approx 2000m3 of excavation.
- Fill will be required to lift the areas of the site below RL 3.100. Approximately 1200m3 of fill
- Surplus spoil will be used across the site to lift developable area above RL 3.100 to balance the use of excavated materials
- The depth of the fill required to reach RL 3.100 will range from 0mm to approximately 600mm with the average height of 300mm











3.3 Northern Resort Precinct

The northern resort precinct comprises of detached low density 1 to 2 storey resort accommodation villas. Refer to Appendix D for more detail.

Construction methodology summary-

- Lightweight construction techniques.
- No Basement Carparking is proposed.
- No podium area is envisaged.
- All habitable areas will be above RL 3.400.
- Site excavation required will only be for the constructed wetlands, pools and lagoons, golf course, and residential drainage. areas. Approx 1000m3 of excavation.
- Minimal fill will be required to lift the areas of the site which are below RL 3.100. Approximately 470m3 of fill
- Surplus spoil will be used across the site to lift developable area above RL 3.100 to balance the use of excavated materials
- The depth of the fill required to reach RL 3.100 will range from 0mm to approximately 250mm with the average height of 125mm

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4.0 - Conclusion

As previously stated the aim of this report is to provide a methodology for efficiently and effectively managing potential storm surge threats through well considered construction techniques. The proposed construction methods provide an environmentally responsible `best practice` solution by minimising and balancing site specific cut and fill requirements whilst negating flood damage risk to the resort facilities.

This report explores the fundamental rationale for the management methodology and provides some nominal earthworks quantities based on initial schematic resort layouts. These quantities and resort layouts are purely schematic and will be subjected to future detailed site study, analysis and design refinement. Although purely schematic they provide a basis for analysis to assess feasibilities for earthworks management in this initial project master planning phase.

This study shows that there is a surplus of excavated materials that will be disposed locally on site to raise low points in the planned development areas to well above RL 3.100.





Appendix Ella Bay Architectural Inundation Report







ARCHITECTURAL INUNDATION REPORT

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Appendix A JUNE 2011 Inundation Plan - Overall Site



3.1 Village Precinct

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Construction methodology summary-

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- Basement carparking is restricted to one level under the resort central facilities and commercial areas.
- Limited podium area above basements area only.
- Basement floor level will above RL 1.000
- Indicative Podium level RL 5.000
- All inhabitable areas will be above RL 3.400
- Site excavation will be required for the basement and pools areas. Approx 4100m3 of excavation.
- Fill will be required to lift the areas of the site which are below RL 3.100 Approximately 140m3 of fill
- Surplus spoil will be used across the site to lift developable area above RL 3.100 to balance the use of excavated materials
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Construction methodology summary-

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- Basement carparking is restricted to above RL 1.000 & one level under the resort central facilities.
- Limited podium area above basements area only.
- Indicative Podium level minimum RL 3.100 Half and full basements, resort pools, concrete construction
- Site excavation required will be for the constructed wetlands, basement and pools areas. Approx 2000m3 of excavation.
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Construction methodology summary-

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- No Basement Carparking is proposed.
- No podium area is envisaged.
- All habitable areas will be above RL 3.400
- Site excavation required will only be for the pools areas. Approx 1000m3 of excavation.
- Minimal fill will be required to lift the areas of the site which are below RL 3.100. Approximately 470m3 of fill
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Appendix D JUNE 2011 Inundation Plan - Northern Resort Precinct



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