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Providence Consulting Group

Final Assessment Report

Risk and Crowd Capacity Assessment for the Gallipoli Commemorative Services for the Department of Veterans Affairs

24 October 2011

Version 1.2 Final

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EXECUTIVE SUMMARY

> *"Managing crowds involves significant risk. The extent, severity and exposure to risk will vary depending on: the circumstances that crowd controllers find themselves in; how well they have been prepared; and how effectively risks have been identified, assessed and controlled. To fully appreciate the risks involved in any business, time needs to be taken to investigate, identify and assess them.[1]"*

Providence Consulting Group Pty Ltd (Providence) was engaged to provide assistance and advice to the Department of Veterans Affairs (DVA) in undertaking an assessment of the safety and security risks at the ANZAC Commemorative Sites on the Gallipoli Peninsula, Turkey. Specifically, DVA sought to understand the safe crowd capacity of each site to assist with their planning ahead of the 2015 commemorative services.

It was agreed with the Department of Veterans Affairs that Providence would conduct the study through an assessment of existing documentation (prepared by Agencies and consultants who had visited the sites), interviews with key stakeholders and calculations based on accepted industry standards. Providence was not required to view the site(s) to confirm the initial assessments against actual topography.

Approach

Providence has undertaken this study using the combined experience and expertise of an experienced Security, Safety and Risk Practitioner; and an experienced Project Manager and Logistics Planner.

Providence has used a number of principle references in conducting the study. These include:

- Guide to Safety at Sports Grounds (Green Guide) – 5th Edition, 2008.
- The Event Safety Guide (Purple Guide) – 1999
- Safe and Healthy Mass Gathering's – (EMA 1999)
- National Approach for the Protection of Mass Gatherings – 2006

As there is no single overriding authoritative document which prescribes safety standards for events such as the Anzac Commemorative Services, key aspects and considerations have been adopted from all of the above references. The study on the ANZAC Commemorative Site was conducted on the premise that the layout of temporary seating would be remain extant. A study of alternative temporary seating arrangements was outside the scope of this study.

The assigned Consultants have not had the opportunity to view the site or the related infrastructure. All findings and recommendations are based on a review of documentation provided by the Department of Veterans Affairs, the Attorney General's Department, interviews with key Departmental staff and the commemorative ceremony event manager, Definitive Events.

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[1] *Crowd Control at Events and Venues, A Practical Occupational Guide Health and Safety Guide, 2007*

Key Findings

Coordination. The key finding and major concern for the reviewing team is the ultimate lack of control and effective risk mitigation that DVA is able to exercise over the commemorative services. The reality is that the activity is being hosted by a foreign government (The Turkish Government) and their Sovereignty, law and jurisdiction over the event has primacy. This is a significant limitation for the Australian Government agencies involved, which gives greater impetus and importance to the Risk Management Plan for the conduct of the services.

Risk Planning. The Risk Management Plans that were reviewed were generally thorough and produced in accordance with the Risk Standard (AS/NZ 4360:2010) however, the proposed treatments for many of the risks were unclear as the treatment responsibility rested with Turkish authorities. A degree of "faith" has been placed in the Turkish authorities that treatment responses, to security risks in particular, will be appropriate, timely and effective.

Crowd Capacity. Recognising that DVA and other Australian Government agencies have little control over the management of the response to any potential safety or security incident, a conservative approach has been adopted for the crowd capacity estimation.

The safe crowd capacity for the Anzac Cove Site is **8676.**

The safe crowd estimate for the Chunuk Bair Site is **3362.**

The safe crowd estimate for the Lone Pine Site is **6842.**

The calculations and assumptions supporting these estimates are contained within the body of this report.

It should be noted, that these capacity estimates are not limited as a result of any concerns regarding the ability to safely evacuate personnel from the sites. All sites have significant capacity in thoroughfares and egress points which will not restrict the ability to safely and quickly evacuate personnel from immediate danger. The consultants have not been able to make an assessment regarding the capacity of Turkish authorities to move personnel, via transportation, away from the "safe areas" further afield from the Peninsula.

Infrastructure. The current infrastructure set up is well within accepted standards (as defined in the Green Guide). Definitive Events have worked closely with local Turkish contractors over the past years to develop the expertise required to build this temporary infrastructure safely. The infrastructure has been well designed, makes maximum use of available real estate and is commissioned by a credible international engineering firm.

Some minor modifications to the current infrastructure set up have been identified. These modifications will serve to improve the rapid evacuation of patrons in the event of an emergency.

Crowd Movement. As part of the safety assessment and crowd capacity assessment, Providence Consulting examined the likelihood and consequences of spontaneous, uncontrolled crowd movement. The most likely scenario for this to occur is as a result of a serious safety incident (e.g seating stand collapse, fire in the catering or media tents etc). The site design dictates that any uncontrolled movement is likely to be towards the open areas and access roads minimising the prospect of crowd crush injuries.

Further detail is required on crowd separation barriers to determine if these in fact could be a hazard during the unlikely situation of uncontrolled crowd movement. The concern relates to the restriction on securing these barriers to the ground. This is a restriction imposed by local Turkish authorities.

Recommendations

As a consequence of this review, Providence Consulting Group makes the following recommendations:

- Recommend that a P and S Factor of 1.0 be applied to the temporary seating infrastructure dictating that actual seating capacity is the safe seating capacity.
- Recommend that DVA conduct a Risk Assessment to ascertain their own tolerance for crowd density given factors such as duration of time patrons are in place.
- Providence conservatively recommends a crowd density of 0.75 sqm/pers for ACS and not exceeding 0.5/sqm/pers at Lone Pine and Chunuk Bair.
- The capacity of the ANZAC Commemorative Sites, using the current infrastructure, be capped at:
    - ACS – 8676;
    - Lone Pine – 6842;
    - Chunuk Bair – 3362.
- Consideration be given to staging the arrival of patrons at ACS to maximize the safe capacity without compromising the comfort of patrons. This could effectively increase the capacity at ACS to 10,500 patrons;
- Recommend as a priority, greater degree of traffic control over the access road between the sites to minimise interaction between pedestrians and traffic.
- Recommend specific briefing to patrons on response to safety incidents in seated areas, such as fire, mechanical failure etc.
- Recommend that DVA adopt the Bernstein Master Planning methodology in lead up to 2015.
- Recommend further liaison with Turkish Authorities with a view to gaining greater visibility on Emergency Response Plans.

Table of Contents

INTRODUCTION

Providence Consulting Group Pty Ltd (Providence) was engaged to provide assistance and advice to the Department of Veterans Affairs (DVA) in undertaking an assessment of the safety and security risks at the ANZAC Commemorative Sites on the Gallipoli Peninsula, Turkey. Specifically, DVA sought to understand the safe crowd capacity of each site to assist with their planning ahead of the 2015 commemorative services. The outcomes of this assessment will assist DVA in determining the appropriate mechanisms to manage the expect influx of visitors to the ceremonies.

It was agreed with the Department of Veterans Affairs that Providence would conduct the study through an assessment of existing documentation (prepared by Agencies and consultants who had visited the sites), interviews with key stakeholders and calculations based on accepted industry standards. Providence was not required to view the site(s) to confirm the initial assessments against actual topography.

Furthermore, an assessment of alternative temporary seating arrangements at the ANZAC Commemorative Sites was outside the scope of this study.

BACKGROUND

The study is prepared at the request of the Australian Government Department of Veterans Affairs to enable detailed planning to continue for the 2015 Centenary of the ANZAC Landings at Gallipoli. The study was initiated through a discussion with senior DVA staff in late July 2011. The initial discussions focussed on understanding the safety and security risk assessment process in place for the ANZAC Commemorative Services but gave rise to determining the baseline safe crowd capacity for the sites.

The results of this study will be used to inform the planning process and initiate the dialogue between the Australian Government Agencies and their New Zealand and Turkish counterparts.

A previous study commissioned by DVA (the Bernstein Report) recommended that consideration should be given to pre-determining the attendance numbers at the ceremonies, particularly ahead of 2015. The study acknowledged that this would require extensive collaboration with travel agents and tour and bus company operators. Natural control of attendance numbers can be influenced through the management of transport, accommodation and infrastructure to a certain extent. However the greatest control mechanism is the dialogue and coordination which needs to occur between Turkish, New Zealand and Australian authorities. The Australian Government is not in a position to make any assumptions regarding proposed event numbers until a further understanding is gained from Turkish authorities in the lead up to 2015.

At the Australian/New Zealand Bi-Lateral Meeting Monday 22 August 2011, the process for reaching agreement with all parties was discussed. The proposed decision making process for Australian Government Approval prior to a Joint AUST/NZ/Turkish decision is shown in the chart below.

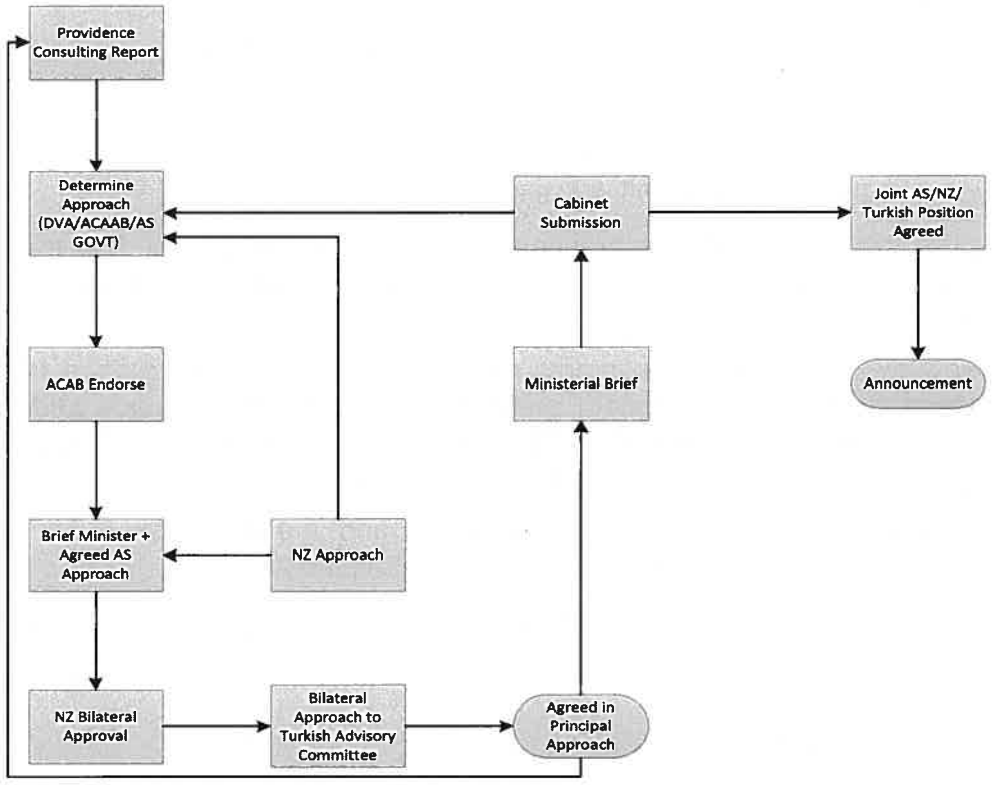

Figure 1 - Suggested Decision Making Process

Assumptions Influencing Planning

Data gathered from the 2010 services indicate the following visitor numbers:

Location	Visitor Numbers
ANZAC Cove	7079
Lone Pine	6000
Chunuk Bair	2500

It is against these figures as the baseline that the estimates for interest in attendance for the 2015 ceremony have been made. (See Bernstein Report). Bernstein estimates that as many as 20,000 visitors may wish to attend the ceremonies on the Gallipoli Peninsula. It is worth noting that the estimated attendance in 2005 (for the 90th Anniversary) was 16,500 although some DVA staff are sceptical of this estimate and believe it may be inflated. The average attendance in the years 2006 – 2009 was 8,500. The numbers dropped back in 2010 as a result of international flight interruptions caused by the volcanic ash.

The estimates for interest in attendance for 2015 attendance are as follows:

Location	Visitor Numbers
ANZAC Cove	15,000 – 20,000
Lone Pine	12,750 – 17,000

Chunuk Bair	4,200 – 5,600

STATEMENT OF WORK

Providence was engaged to specifically examine the following:

- Analyse the Anzac Commemorative Site, Lone Pine and Chunuk Bair to determine the safe site capacity at each location given the present infrastructure set-up and design.
- Review existing Risk Assessments relating to security, infrastructure failure, and transport and provide comment and guidance on their adequacy and currency. The focus should be on measures to improve existing mitigation strategies and the cost implications of addressing mitigation strategies.
- Undertake crowd modelling of movements and areas of risk in the event of managed evacuation or spontaneous crowd movement.

The complete Statement of Work (an extract from the Contract) is included as Annex A to this report.

DOCUMENTS REVIEWED

DVA have undertaken considerable work over the previous years in planning, reviewing and improving the management of the ANZAC Commemorative Services. As such there is a myriad of existing documentation addressing many aspects of the planning and operations of the event. DVA acknowledges that the amount of documentation is considerable and it is unlikely that any single DVA Staff member would have had the opportunity to review all the documents. For this reason, Providence Consulting considered that it was important to conduct a complete review of all documents that were available.

The complete list of documents reviewed by Providence Consulting is included in the following table:

Document Name	Provided By	Information Category
Strategic Security Framework	Security Coordination Branch	Security Risk
Strategic Security Risk Register	Security Coordination Branch	Security Risk
Security Framework – National Emergency Plans	Security Coordination Branch	Security Risk
Roles, Responsibilities and Governance Gallipoli 2011	Security Coordination Branch	Security Risk
Events Report on Lessons Learnt 2011	Security Coordination Branch	Operations/Security
Business Continuity Plan 2010	DVA	Operations
Business Continuity 2010	DVA	Operations

Evaluation		
Driver Instruction Sheet	DVA	Operations
What to Expect and How to Prepare	DVA	Visitor Assistance
Visitor Welcome Script	DVA	Visitor Assistance
2011 Visitor Survey Response Evaluation	DVA	Visitor Assistance
ANZAC Commemoration Site Operational Diagrams	Definitive Events	Operations
Chunuk Bair Operational Diagrams	Definitive Events	Operations
Lone Pine Operational Diagrams	Definitive Events	Operations
Gallipoli 2011 Post Activity Report	DVA	Operations
Gallipoli 2011 Definitive Events Post Activity Review	Definitive Events	Operations
Operations Manual	DVA	Operations
Diane Bernstein Report	DVA	Infrastructure
Safe and Healthy Mass Gatherings	EMA	Infrastructure/Operations
National Approach to Security for Mass Gatherings	EMA	Security/Operations
Evacuation Planning	EMA	Operations/Emergency Response
Crowd Control at Events	EMA	Operations/Security
Adverse Weather Plan	DVA	Operations/Emergency Response

CONSTRAINTS

A number of constraints have prevented a more thorough and accurate assessment of the safety and security risk as well as the crowd capacity at the indicated sites. These constraints are:

- A site inspection has not been undertaken. All reviews have been conducted on existing diagrams and reports. DVA have provided all available collateral.
- A redesign or modification of seating arrangements is outside the scope of this report;
- The infrastructure for seating etc has not been viewed or inspected by the consultants;

- Copies of current safety risk assessments have not been available. A copy of the Strategic Security Risk Assessment has been provided.
- The consultants have only a limited understanding of the emergency response procedures to be adopted by the Turkish authorities in response to numerous events that may give cause to evacuate one of the sites prior to or during the ceremonies.
- There is limited available information regarding the on ground command and control of an incident (by either Australian or Turkish authorities)

METHODOLOGY

Overview

In determining the safe crowd capacity for each site, Providence Consulting has used the "Guide to Safety at Sports Grounds, 2008" (*The Green Guide*) as the primary reference. The Green Guide was developed in the UK largely as a result of a number of catastrophic incidents at large sports venues between 1985 and 1996. The Guide has become the internationally accepted standard for the management of safety at major events.

The ANZAC Commemorations at Gallipoli are a unique event and don't have many of the crowd dynamics that occur at sporting events and concerts. That said, it is still a mass gathering of people within a relatively confined and controlled space and therefore the stated requirements should be applied as a baseline. The Safety Risk Assessment applied by DVA and its' Event Manager, Definitive Events, may recommend an easing of standards. Providence Consulting recommends that the standards only be eased where the Safety Risk Assessment justifies the easing and appropriate alternative risk mitigation strategies are in place.

The advice provided in the Green Guide is without prejudice to the application of the relevant Turkish health and safety regulations which will take primacy should they call for greater stringency than is recommended in the Guide.

Temporary Seating Areas

Each of the three commemorative sites has temporary seating erected for the comfort and improved management of visitors. The seating has been manufactured specifically for the ANZAC commemorative sites taking into account specific requirements of the Turkish authorities. As an example, digging or penetration of the soil is not permitted in the ANZAC Cove area as the whole area is classified as a grave site. This has necessitated a particular design to ensure that the seating stands are secure and stable.

The stands at each of the sites have the following respective seating capacity (i.e. actual number of seats, not necessarily "safe capacity"):

Site	Seating Capacity
ANZAC Cove Commemorative Site	4900
Lone Pine Cemetery	5000
Chunuk Bair	500*

**Designs in place to increase this to 1000 seats in 2015.*

To calculate the safe seating capacity for these sites, requires the application of "P" and "S" factors. The "P" factor is a consideration of the applied physical condition of the infrastructure. When applying the P factor consideration is given to:

- The condition of the infrastructure;
- The maintenance regime that is in place;
- The degree to which the infrastructure meets mandated engineering requirements.

The "S" factor is a consideration of the safety regime that is in place. When determining the S factor, consideration is given to:

- The safety management regime that is in place at the venue;
- The state and currency of the Safety Risk Assessment and Safety Plan;
- The degree of adherence to guidance provided from publications such as the "Green Guide".

A "P" or "S" factor of 1.0 assumes that there are no issues with either the Physical Infrastructure or the Safety Management regime. A factor of anything less than 1.0, assumes that there may be some deficiencies (a factor of 0.9 would mean that deficiencies are minor in nature where a factor of 0.1 indicates there are significant issues that need to be addressed).

The safe seating capacity is calculated as follows:

Safe Capacity = Actual Capacity x (the lowest of either P or S factors).

Based on discussions with ACS Staff and Definitive Events Staff, a P and S factor of 1.0 has been used for all sites. This in effect means there is no reduction from actual seating capacity. The factor of 1.0 has been applied on the basis of the significant engineering and inspection regime that is in place for the infrastructure, the infrastructure design exceeds the requirements of the Green Guide (in most cases) and the safety regime that is in place is comprehensive and well documented.

1. **Recommend that a P and S Factor of 1.0 be applied to the temporary seating infrastructure dictating that actual seating capacity is the safe seating capacity.**

Design Considerations for Temporary Seating

The Green Guide stipulates the design considerations for seating in terraced stands (permanent or temporary): (Section 8.4 and 8.5)

- Flights of stairways should not provide long, uncontrolled paths down which crowd pressures and surges can be created;
- Individual flights should consist of no more than 12 risers. Where the stairway is a secondary stairway for escape only, this may be increased to 16 risers.
- If there are more than 36 risers in consecutive flights, the path of the stairway should change direction of travel by at least 30°.
- The design of stairways (and stairway channels) at sports grounds should comply with the following dimensions:
    - Recommended minimum width: 1.2m Maximum width: 1.8m
    - For existing construction: Minimum width: 1.1m Maximum width: 1.8m

- Existing stairways and stairway channels of between 1.8m and 2.2m wide should,
  wherever possible, be narrowed to no more than 1.8m by the installation or relocation of suitable barriers.
- Existing stairways and stairway channels wider than 2.2m should be divided into channels in order to meet the width requirements above.

Open Area Seating/Standing Areas

The Green Guide, Chapter 9 deals with the management of crowds on concourses and open areas. Some factors to be considered in calculating the safe capacity of an area are:

- The concourse width should take into account the entry and exit areas and thoroughfares as well as emergency evacuation requirements;
- Positioning of visitor facilities (catering/merchandising/toilets) should not allow queues to impede circulation of patrons;
- Concourses need to accommodate visitors moving in a random fashion, not just linear movement.
- Recommended density for standing areas (Green Guide) is 47 pax/10sqm. This is figure is used for standing room at sporting venues and is not necessarily suitable or appropriate for the ACS Dawn Service.

Calculating the Standing area requires an assessment of the recommended density for the allocated space. The Safety Risk Assessment that is conducted by DVA will determine the density to be used. The Green Guide uses a study conducted by Fruin (1981) as the principle guidance on crowd densities.

2. Recommend that DVA conduct a Risk Assessment to ascertain their own tolerance for crowd density given factors such as duration of time patrons are in place.

Critical Crowd Densities

Critical crowd densities are approached when the floor space per person is reduced to about 0.5 sqm/pers. Considering the various movements or positions that patrons will occupy, approximate minimal mobility requirements have been defined by Fruin (1981) as follows:

- Pedestrians moving in a stream require average areas of 2.3 sqm per person to attain normal walking speed, and to pass and avoid others.
- At 0.93 sqm per person, walking becomes significantly restricted, and speeds noticeably reduced.
- At 0.46 sqm per person, the maximum capacity of a corridor or walkway is attained with movement at a shuffling gait and movement possible only as a group. This would be characteristic of a group exiting a stadium or theatre.
- At less than 0.46 sqm per person average, individual pedestrian mobility becomes increasingly restricted.
- At approximately 0.28 sqm per person, involuntary contact and brushing against others occurs. This is a behavioural threshold generally avoided by the public, except in crowded elevators and buses.

- Below 0.19 sqm per person, potentially dangerous crowd forces and psychological pressures begin to develop.

Considering the above recommendations, for the purpose of these calculations, Providence Consulting recommends the application of a density of 0.75sqm/pers. (At the ACS site due to the additional space allocation required as a result of the time spent in location). Due to the variable nature of terrain and existing graves and memorial infrastructure, Providence recommends that the application of densities at Chunuk Bair and Lone Pine, be applied on a Zone basis. It is recommended the following zoned densities be applied:

- Lone Pine:
  - VIP Area - 0.5 pers/sqm;
  - Central Area – 1 pers/sqm; and
  - Rear Area – 1.33 pers/sqm.
- Chunuk Bair:
  - Zone 1 – 0.5 pers/sqm;
  - Zone 2 – 0.57 pers/sqm.
  - Zone 3 – 0.5 pers/sqm; and
  - Media Area – 0.5 pers/sqm.

3. Providence conservatively recommends a crowd density of 0.75 sqm/pers for ACS and not greater than 0.5 sqm/pers at Lone Pine and Chunuk Bair.

To calculate the safe capacity of the area:

Holding Area Capacity = (Area x Density) x (lowest of P or S factor).

Using the above calculation and indicative crowd densities, for the **ANZAC Cove Site**, the recommended safe capacities for each of the four grassed areas are:

- Area 1 = 552sqm = **734** pers
- Area 2 = 707sqm = **940** pers
- Area 3 = 759 sqm = **1009** pers
- Area 4 = 822 sqm = **1093** pers

The recommended safe capacity for the non-seating area at ACS is **3776**.

For the **Lone Pine Site**, the recommended safe capacity for each area is:

- VIP Adjacent area – 274sqm = **548** pers
- Central Area – 452 sqm = **452** pers
- Rear Area – 1122 sqm = **842** pers.

The recommended safe capacity for the non-seating area at Lone Pine is **1842**.

For the **Chunuk Bair Memorial Site**, the recommended safe capacity for each area is:

- Zone 2 lower area – 808sqm = **1414** pers
- Zone 1 grass area – 170sqm = **340** pers
- Media area – 32sqm = **64** pers

- Zone 3 area – 272sqm = **544** pers.

The recommended safe capacity for the non-seating area at Chunuk Bair is **2362**.

These estimates are deliberately conservative as the Green Guide does not take account for the duration that patrons at ANZAC Commemoration Services will be in situ. Patrons in these circumstances could be in location for over 12 hours and need space for sleeping, stretching etc.

4. Recommend the safe crowd capacity (non seating areas) at the three sites as follows:

- **ANZAC Cove – 3776**
- **Lone Pine – 1842**
- **Chunuk Bair - 2362**

In examining options for increasing the capacity at ACS (where the main Dawn Service Ceremony is held), consideration maybe given to increasing the crowd density at ACS, ***but only for a limited period of time.***

If the density at ACS were to be increased to 0.5pers/sqm, from 0400hrs on the morning of the Dawn Service, an additional 1894 patrons could potentially be accommodated, increasing the overall capacity at ACS to **10,570.** If DVA were to adopt this approach the following points need to be considered:

- Capacity at the entrance to process 1900 visitors through screening in approx 1 hr;
- Implications of patrons having to walk from vehicle disembarkation point, to ACS site in the dark;
- Issues with transportation travelling through the night to reach the Gallipoli Peninsula;
- Impact on patrons already in situ with the arrival of additional patrons in the early hours of the morning.

A Excel Spreadsheet with the requisites formula embedded has been provided separate to this report.

5. Consideration be given to staging the arrival of patrons at ACS to maximize the safe capacity without compromising the comfort of patrons;

Crowd Movements

In determining the capacity of the site to deal with crowd movement, again, a number of factors need to be considered. Aside from routine movement, the site must be capable of safely managing the movement of people during normal ingress and egress and emergency evacuation. Factors to consider include:

- Smooth unimpeded flow through an exit route is best achieved by ensuring that the exit system does not narrow along the length;
- Exit width minimum of 1.2m;
- Recommended movement flow from seating areas 73 pers/min;
- Recommended movement flow from other areas 109 pers/min;
- Egress time to leave seating areas into free flowing areas is maximum 8 minutes;
- Emergency evacuation time, from seating area to place of safety is 2.5 to 8 minutes (depending on the fire risk level).

This type of event there is unlikely to be hysterical or spontaneous crowd movement unless there is an external event/force. A thorough safety/risk assessment will determine the degree of exposure to a range of events including the fire risk as this will provide the guidance (mitigation/response times) for evacuation.

The review of plans provided and operational diagrams provided by Definitive Events and DVA indicates that movement corridors in most cases, exceed the stated safety requirements. The Post Activity Report for 2010, indicates that some additional work needs to be done to improve the egress from the Lone Pine Cemetery Site.

Discussions between key stakeholders during the recent Bilateral Meeting, indicate that there is concern with the movement of pedestrians from the ACS Ceremony to the Chunuk Bair and Lone Pine Ceremonies as well as pedestrian movement following the latter two ceremonies. The issue is that the narrow road is shared by both pedestrians and vehicles with little ability to effectively separate the two groups. Presently, local Turkish authorities attempt to provide a degree of control over the movement however it appears that this is inadequate. Although the movement corridor does not present an issue for pedestrian movement alone and has capacity for movement without fear of crowd crush etc, it is the inability to keep patrons away from traffic that presents the greatest risk to organisers. An increase in visitor numbers for 2015 will exacerbate this problem.

6. Recommend as a priority, greater degree of traffic control over the access road between the sites to minimise interaction between pedestrians and traffic.

Spontaneous Movement

Although unlikely due to the nature of the event, spontaneous crowd movements may occur in response to an unplanned event (i.e. safety or security incident). An example of this may be that a Seating Stand has collapsed, causing a degree of panic in the immediate and neighbouring areas.

The diagram at Annex C, depicts the likely movement of people during such an event. In this scenario, the movement of personnel is likely to be in towards the grassed general area. This movement is logical as it is away from the stands where the danger is, it is towards a well-lit area (assuming it is dark) and it is towards the main movement corridors of the North/South road.

DVA have developed a contingency plan for the movement/evacuation of personnel from ACS in the event of deteriorating weather conditions. This movement is unlikely to be sudden and can be staged over several hours if need be. The success of the Adverse Weather Plan will not be contingent on the capacity of the available movement corridors at ACS.

One of the additional considerations that Providence has made in determining the safe capacity at each of the sites, is the ability to provide temporary emergency shelter and other infrastructure in the event of poor weather conditions or other emergency situations. While ACS is equipped to deal with these contingencies, Lone Pine and Chunuk Bair are not. On this basis, it is assessed that increasing the capacities at Chunuk Bair and Lone Pine, beyond what is recommended, will come with increased acceptance of risk.

7. Recommend specific briefing to patrons on response to safety incidents in seated areas, such as fire, mechanical failure etc.

Future Planning

Section 5 of the Bernstein Report outlines an approach for developing a Master Plan and proposes a methodology for doing so. It is unclear whether this is a "Bernstein Proprietary Methodology" or whether it generic and tailored from another design standard. The methodology proposed has merit and if used will ensure that the design and manufacture of the future site infrastructure takes into consideration all operational and safety factors.

Providence Consulting Group recommends that DVA undertake this process, particularly if it is deemed that visitor interest should be significantly increased for 2015.

Factors to be considered in the developing this Master Plan include:

- Area of available real estate to accommodate visitors. Is there any scope for an increase on the existing available space?
- Review of transport networks for general visitors, VIPs and service vehicles,
- Review of emergency and evacuation plans,
- Review of site access for both pedestrians and vehicles,
- Construction access,
- Site ownership and land use,
- Master Plan for the Gallipoli Peninsula,
- Infrastructure approval process by relevant authorities,
- Site contours, drainage, orientation, services, vegetation,
- Environmental considerations,
- Availability of site for pre-event construction,
- Turkish Government Plans for ceremony for 100th anniversary,
- Budget.

8. Recommend that DVA adopt the Bernstein Master Planning methodology in lead up to 2015.

A copy of this Master Planning Process is included at Annex C.

GOVERNANCE, SECURITY AND RISK ASSESSMENTS

The Gallipoli commemorative services are managed through a Management Committee. Membership of the Management Committee is limited to the senior available officials of the Australian Department of Veterans Affairs and the Australian Department of Foreign Affairs and Trade (representing the Australian HOM) and Veterans Affairs New Zealand and the New Zealand Ministry of Foreign Affairs and Trade (representing the New Zealand HOM). The group of 4 members of the Management Committee meets as often as required, to discuss tasks and emerging issues.

The Management Committee will maintain Liaison with the Turkish Government authorities at senior level and provide situational awareness to all levels of the Australian and New Zealand delegation. The Management Committee effectively manages routine operations.

The Turkish authorities provide extensive support for the Anzac Day commemorations, and are ultimately responsible for managing all activities on the Gallipoli Peninsula, including any emergency or evacuation of specific sites or areas. The Australian and New Zealand Governments recognise the authority of the Turkish Government. Where there appears to be a deficiency in the Australian Government Risk Plans is the lack of specific knowledge on what the response will be from Turkish authorities (accepting that there will be a response of some form). This presents an exposure to some extent for the Australian Government as they are unable to determine whether the range of security and other emergency risks are effectively mitigated. Further to this, it is difficult to effectively brief Australian Visitors in relation to "actions on" a range of activities as there is no clear visibility on how the Turkish Authorities are likely to respond.

9. Recommend further liaison with Turkish Authorities with a view to gaining greater visibility on Emergency Response Plans.

RECOMMENDATIONS

As a consequence of this review, Providence Consulting Group makes the following recommendations:

- Recommend that a P and S Factor of 1.0 be applied to the temporary seating infrastructure dictating that actual seating capacity is the safe seating capacity.
- Recommend that DVA conduct a Risk Assessment to ascertain their own tolerance for crowd density given factors such as duration of time patrons are in place.
- Providence conservatively recommends a crowd density of 0.75 sqm/pers for ACS and not exceeding 0.5/sqm/pers at Lone Pine and Chunuk Bair.
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Annexes:

A. Statement of Work
B. Site Capacities
C. Example Crowd Movement
D. Master Planning Process

ANNEX A - STATEMENT OF WORK FOR PROVIDENCE CONSULTING GROUP

The Contractor (Providence Consulting Group) shall provide, or arrange to provide:

- Analyse the Anzac Commemorative Site, Lone Pine and Chunuk Bair to determine the safe site capacity at each location given the present infrastructure set-up and design.
- Review existing Risk Assessments relating to security, infrastructure failure, and transport and provide comment and guidance on their adequacy and currency. The focus should be on measures to improve existing mitigation strategies and the cost implications of addressing mitigation strategies.
- Undertake crowd modelling of movements and areas of risk in the event of managed evacuation or spontaneous crowd movement.
- The analysis will be done through consultation with DVA, AGDs and other agencies as required, and with the contracted services provider Definitive Events. It will build on the existing corporate knowledge and site plans that are available rather than by conducting a 'green fields' analysis of the site.

ANZAC COVE

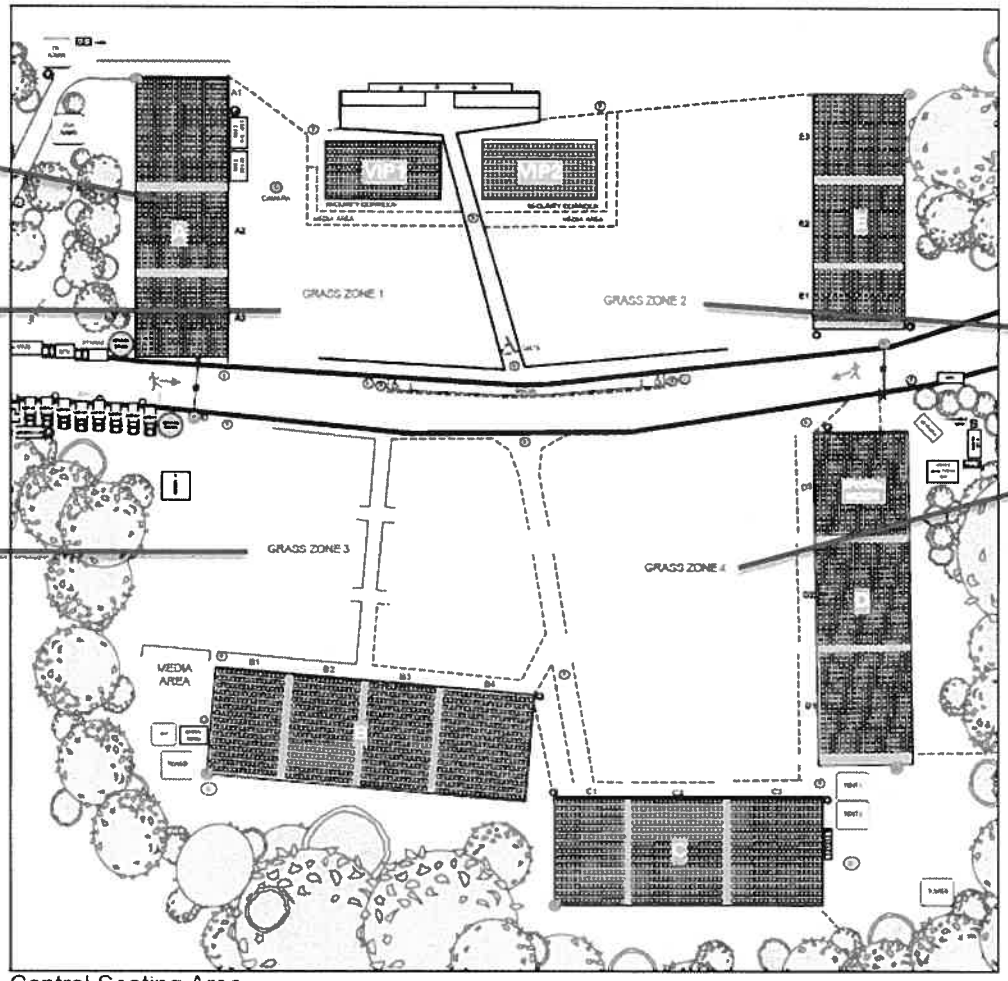
Combined Total Seating Capacity of Stands 4900

Capacity 734

Capacity 940

Capacity 1093

Capacity 1009

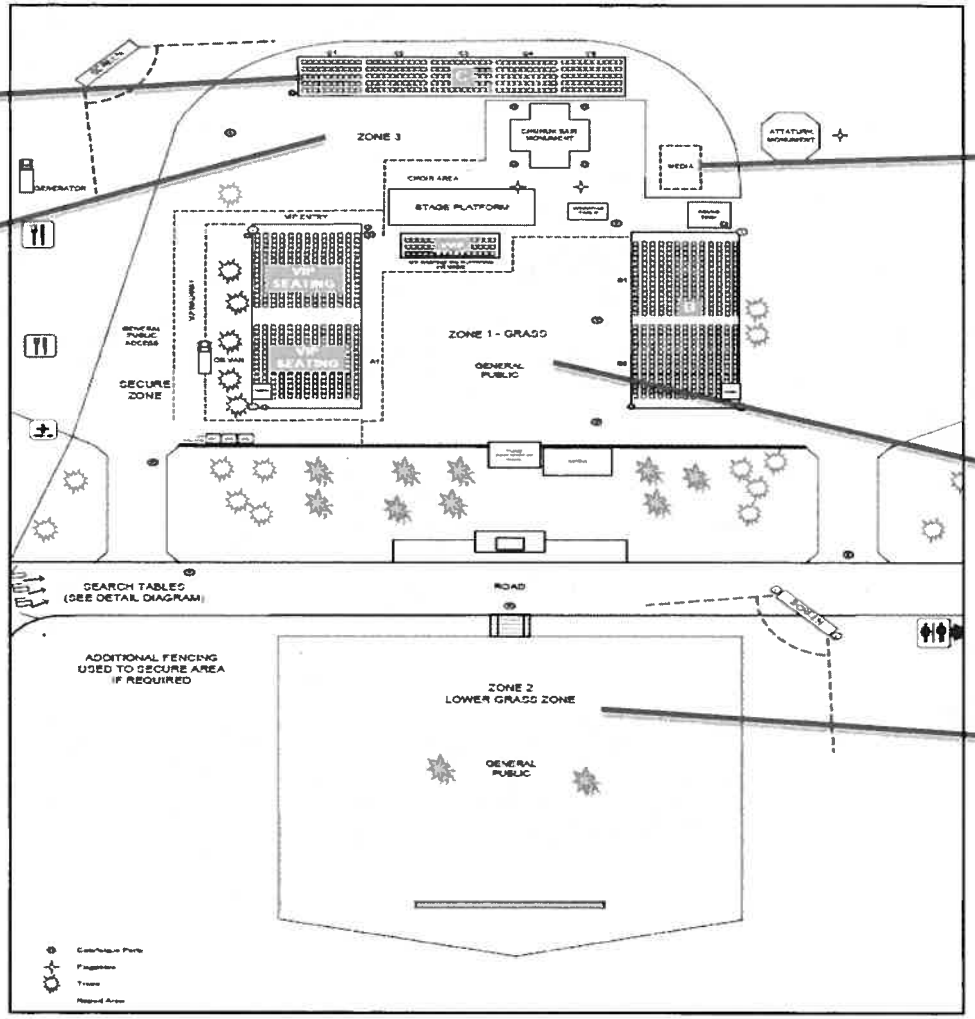


Central Seating Area

CHUNUK BAIR MEMORIAL

Combined Proposed Capacity of Stands 1000 seats

Capacity 544

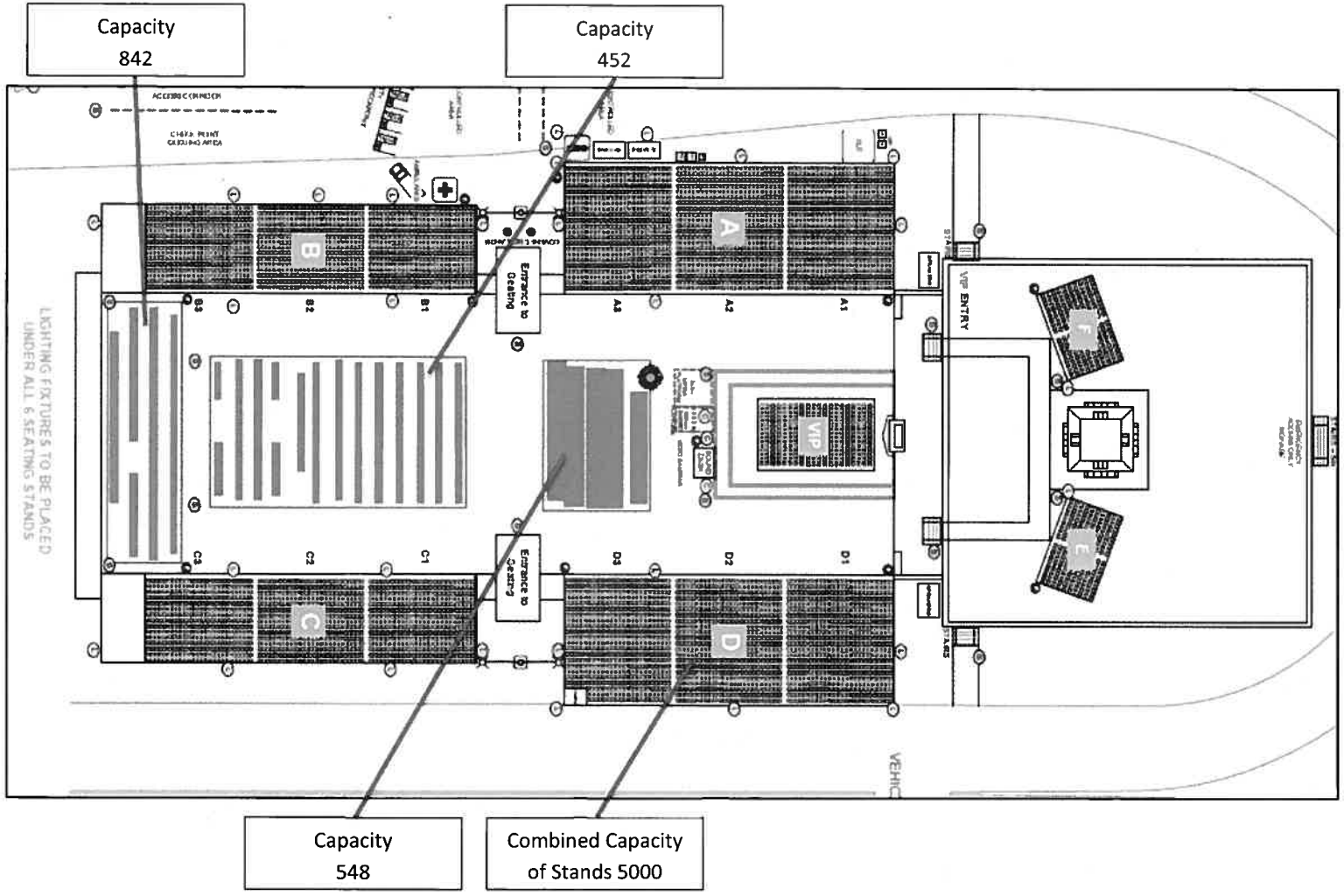


Capacity 64

Capacity 340

Capacity 1414

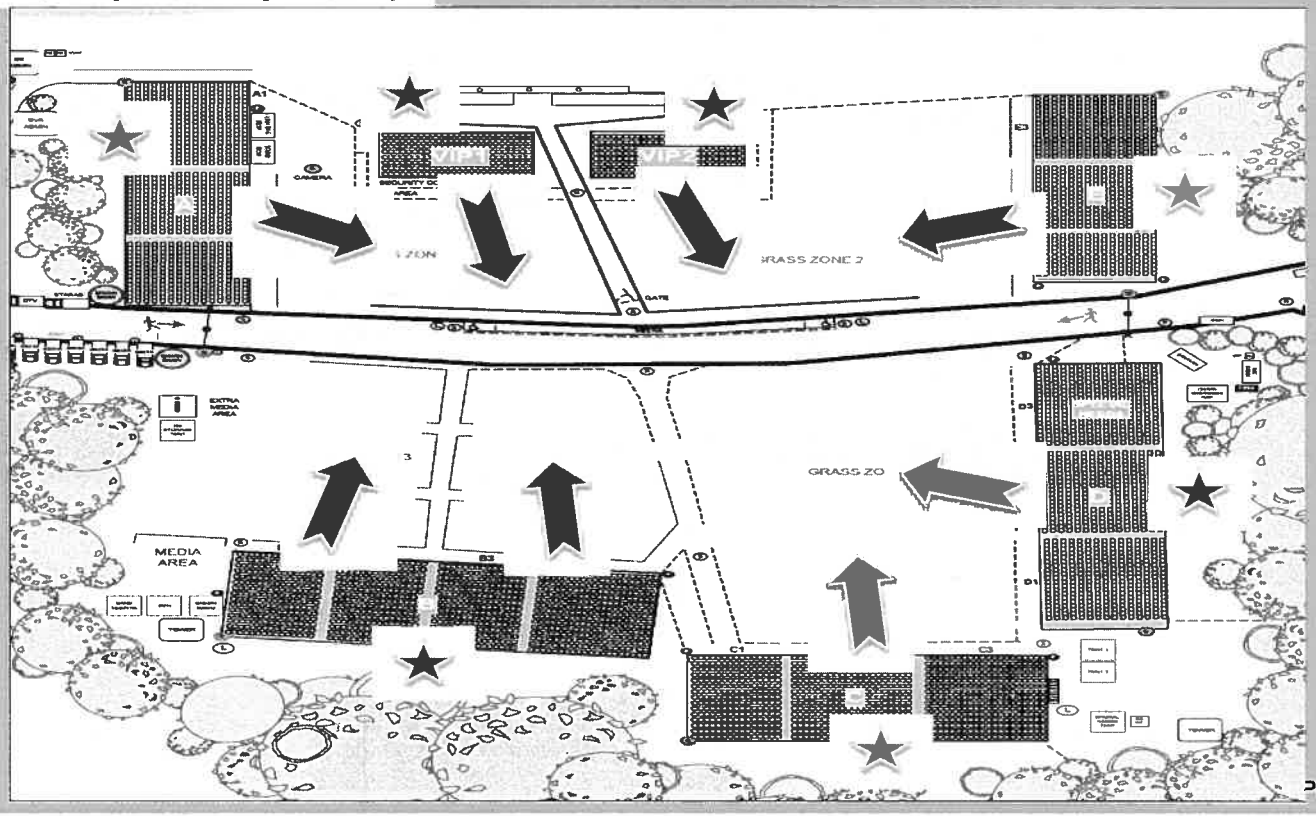
Lone Pine


Capacity
842
Capacity
452
Capacity
548
Combined Capacity
of Stands 5000
A
B
C
D
E
F
VIP
VIP ENTRY
Entrance to Seating
Entrance to Seating
LIGHTING FIXTURES TO BE PLACED UNDER ALL 6 SEATING STANDS

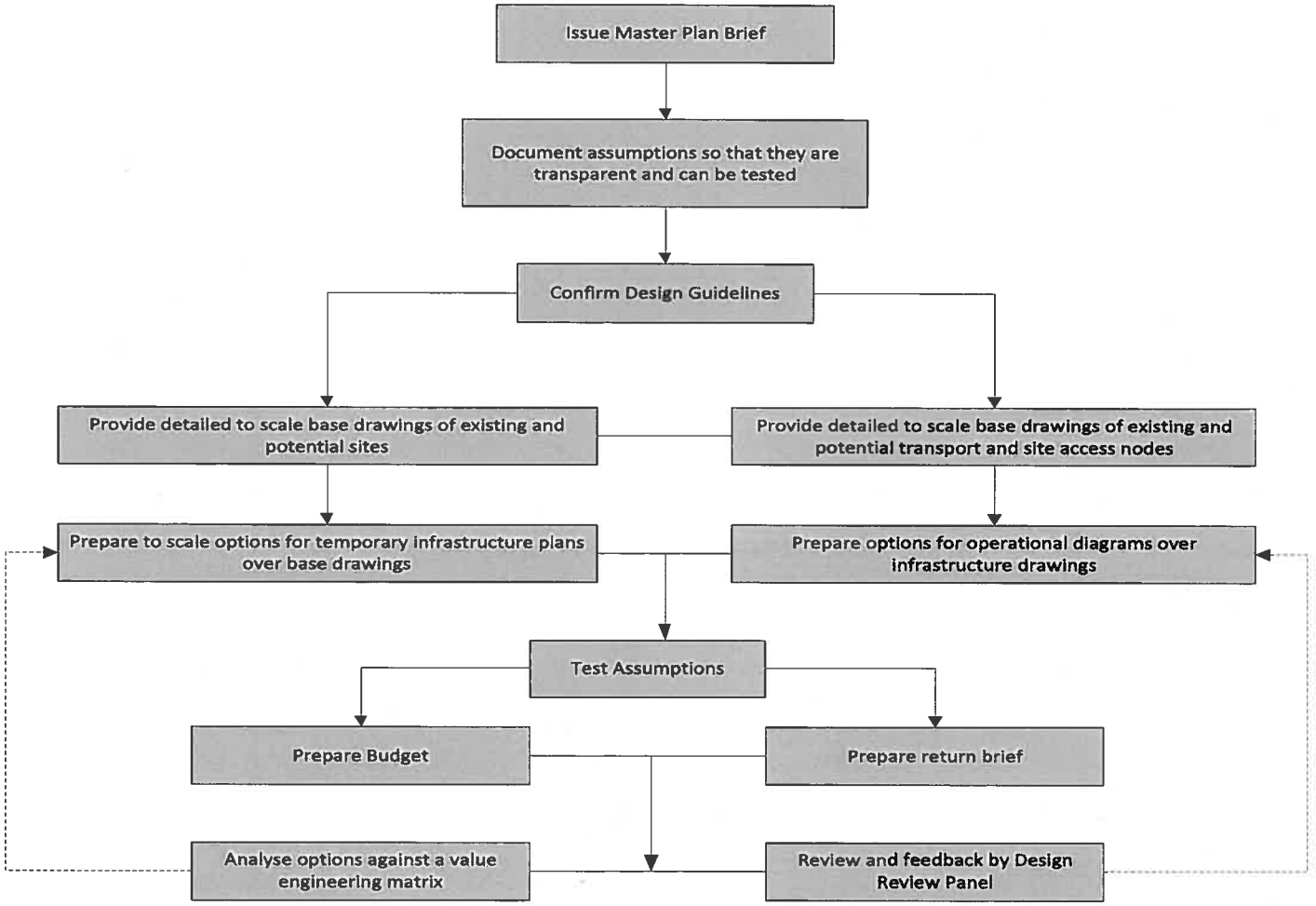
ANNEX C - EXAMPLE EVENT AND POTENTIAL SPONTANEOUS CROWD MOVEMENT

Providence
Consulting Group Pty Ltd
Realising Benefits - Driving Accountability

Potential Movement Caused By an Unforeseen Event



ANNEX D – MASTER PLANNING PROCESS FLOW CHART



Diane Bernstein, Study of 2010 – 2015 ANZAC Day Commemorative Sites, for Department of Veterans Affairs, 31 May 2010