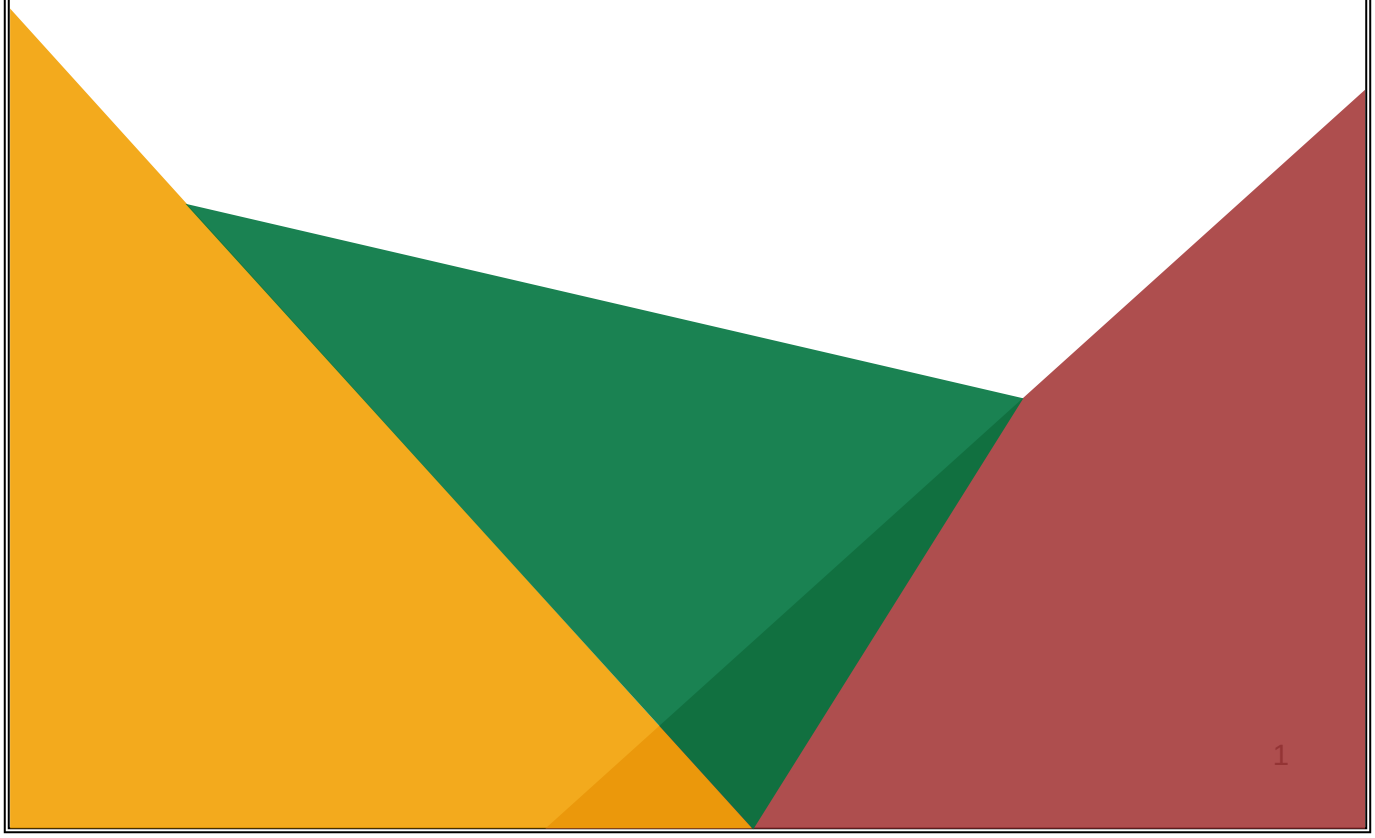
Review of Western Australia's Hotel Quarantine Arrangements

Final Advice

Tarun Weeramanthri, 12 March 2021



Scope of this Advice

The Review of Western Australia's Hotel Quarantine (HQ) arrangements was announced on 1 February 2021, and commenced on 2 February 2021. It was commissioned by the Western Australian Government in light of the international COVID-19 situation, and the infection of a HQ worker, who was diagnosed with COVID-19 on 30 January 2021.

This new case led to a 5-day lockdown (31 January – 5 February 2021) in the Perth metropolitan, Peel and South West regions of WA. Intensive contact tracing and testing was undertaken in the community, and revealed no further cases.

The review was commissioned to 'identify opportunities for strengthening current processes and practices, and ensure the system is as robust as possible' (see Terms of Reference at Appendix 1).

The review is complementary to a parallel investigation (Case #903), not formed on the basis of a criminal investigation, undertaken by WA Police Force, to examine how the case contracted COVID-19, and to confirm the further movements and contacts of the case. A Briefing Note to the State Emergency Coordinator on this investigation was published on the WA Police Force website on 26 February 2021,[1] and is referred to later in this advice.

My first interim advice was provided on 4 February 2021, and recommended re-assessment and mitigation of the risk posed by ventilation in HQ sites, as well as other measures to strengthen infection prevention and control (IPC), as key means of controlling immediate public health risk. All recommendations were supported by the WA Department of Health and WA Police Force, and are in the process of being implemented.

The second interim advice (11 March 2021) covered the overarching governance, accountability, organisational and risk management structures, that direct and determine the operational systems and protocols in place across all HQ sites over the medium-long term. That advice contains a full description of review methods, which will not be repeated here.

This final advice is divided into two sections.

The first section provides a picture of quarantine arrangements in WA through a range of quantitative and qualitative data. An additional two recommendations are made covering data systems, gaps and quality, and information sharing.

The second section provides a consolidation of all findings and recommendations from the review as a whole, and explores ways to think about and design a fit for purpose quarantine system for the future.

I would like to thank the many people who have participated in this review process, and acknowledge their work in creating the HQ arrangements that have helped keep WA largely free from COVID-19 transmission over the last year.

I would also like to thank each member of the Review Secretariat drawn from three government departments: Angela Elder (DPC) for her leadership of the team, and coordination of efforts; Ed Raby (Health) for his scientific and IPC expertise, and for identifying the ventilation issue early on in the review; Lauren Tait (DPC) for governance and cross-jurisdictional analysis; Sarah Joyce (Health) for analysis of public health options; Pauline Grant (Police) for her detailed end-to-end process mapping and contributing to legislative and data analysis; and Rudyard Connery (DPC) for executive support and report

[1] WA Police Force, February 2021. WA Hotel Quarantine Review - COVID-19 - Case #903.

development. All members of the team participated in site visits and interviews, and robust group discussions. Each member contributed unique and valuable policy insights, and material for the written advice. Whilst we tested and formed our views collectively, I am responsible for the pitch of the findings and recommendations, including any shortcomings.

Data

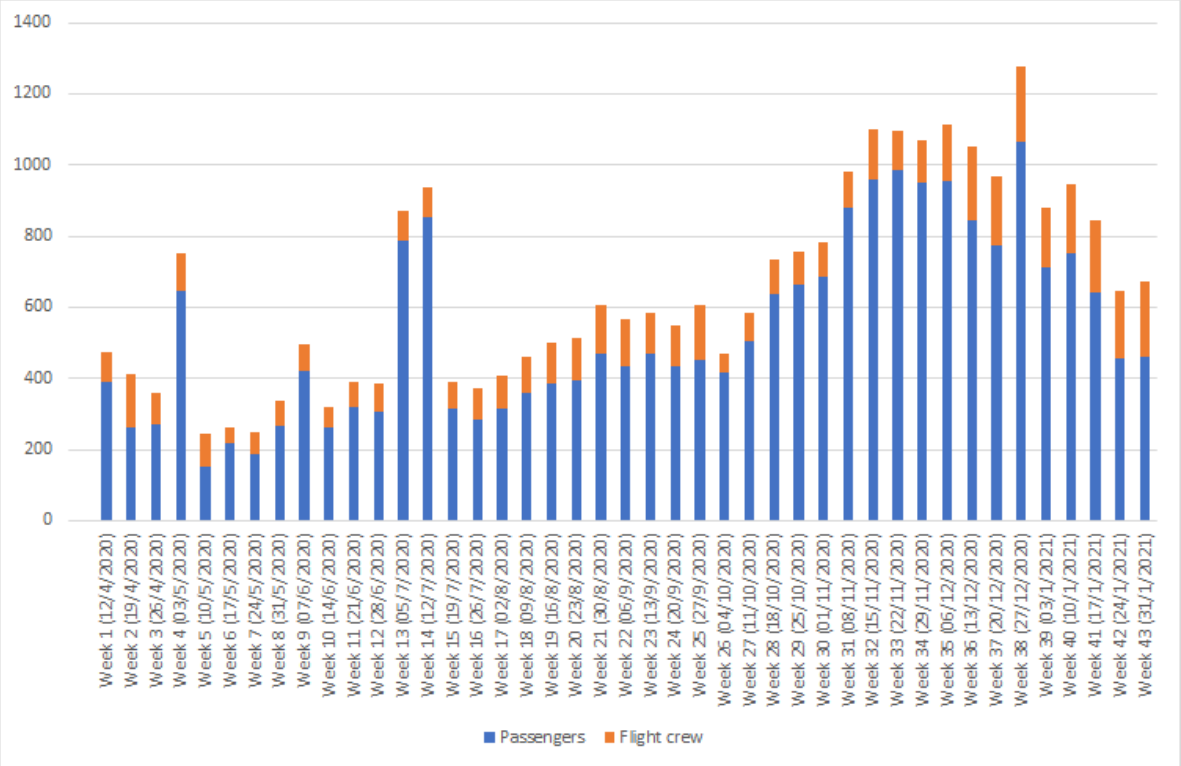
Quarantine statistics

Information on people arriving into Western Australia is critical to understanding the needs of people entering quarantine, whether this is changing, and how this might impact on-the-ground operations.

Throughput

Data on international arrivals by air into WA is collated by the WA Police Force through the Border Control Application (BCA). Since April 2020, just under 23,000 passengers, arriving by air from overseas, have been placed in HQ.[2] International flight crews, who are issued with directions to quarantine at a specified crew hotel until their departure flight, comprise approximately 17 per cent of all international arrivals by air. Trends in the number of international passenger and flight crew arrivals are illustrated in Figure 1.

Figure 1: Number of International Arrivals by Air Placed in HQ, April 2020 to 31 January 2021

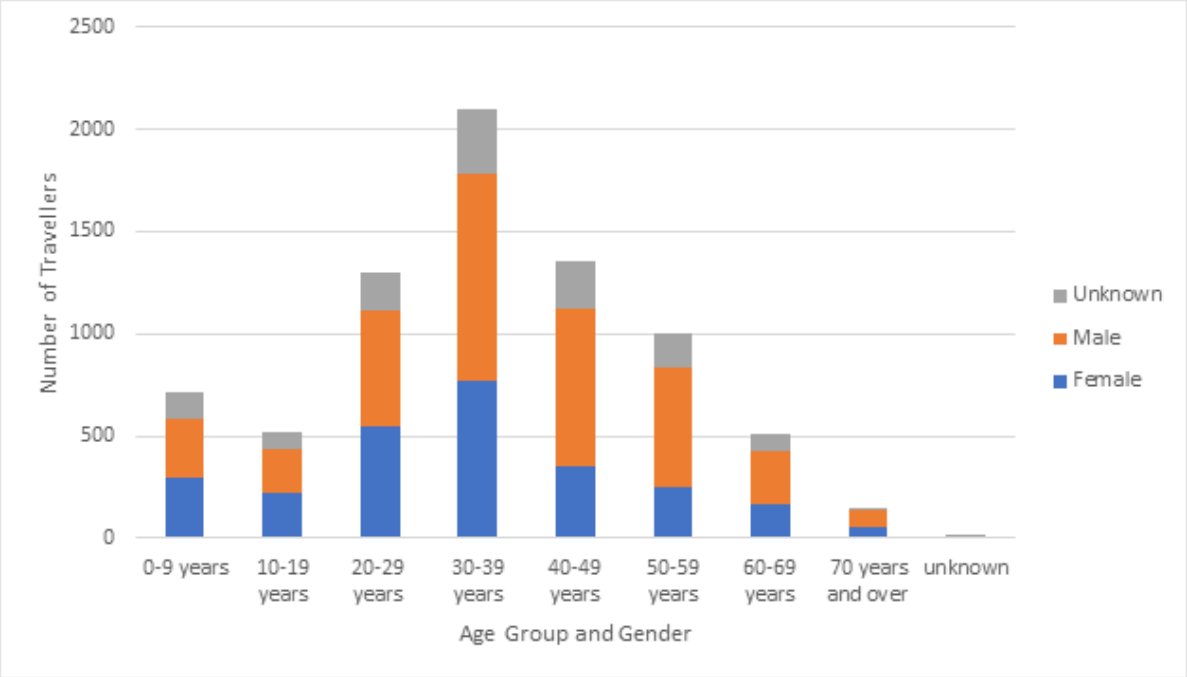


The BCA also collects self-reported demographic information, although this is unverified and some fields are not mandatory. Regardless, it provides some insight on the demographics of international arrivals to WA. Data for international travellers arriving by air between

[2] Over 37,000 people have been placed in hotel quarantine once we include arrivals from interstate and by sea.

14 November 2020 and 31 January 2021 indicates the largest cohort of passengers were recorded as male (49.2%), and remaining passengers were recorded as female (34.8%), or unknown (15.9%). Figure 2 indicates the gender and age bracket for these travellers.

Figure 2: Age and Gender of International Arrivals by Air, 14 November 2020 to 31 January 2021



Further review of younger travellers indicated that children (under 18 years) made up 11.7 per cent of the passenger arrivals. Although family status and travelling groups are not reported in the BCA, the data suggested that most children travelled with a parent, guardian or sibling and only six in the past fortnight were noted as unaccompanied.

The BCA records the point of embarkation for the last leg of a traveller's journey, which generally correlates to the flight number. The WA Police Force advise that the information on point of origin is captured through manual entry and unverified. Analysis of the available data, noting these limitations, indicates that a significant proportion of travellers' point of origin is the United Kingdom, Singapore, India, South Africa, Indonesia, USA and Hong Kong.

Exemptions from Hotel Quarantine

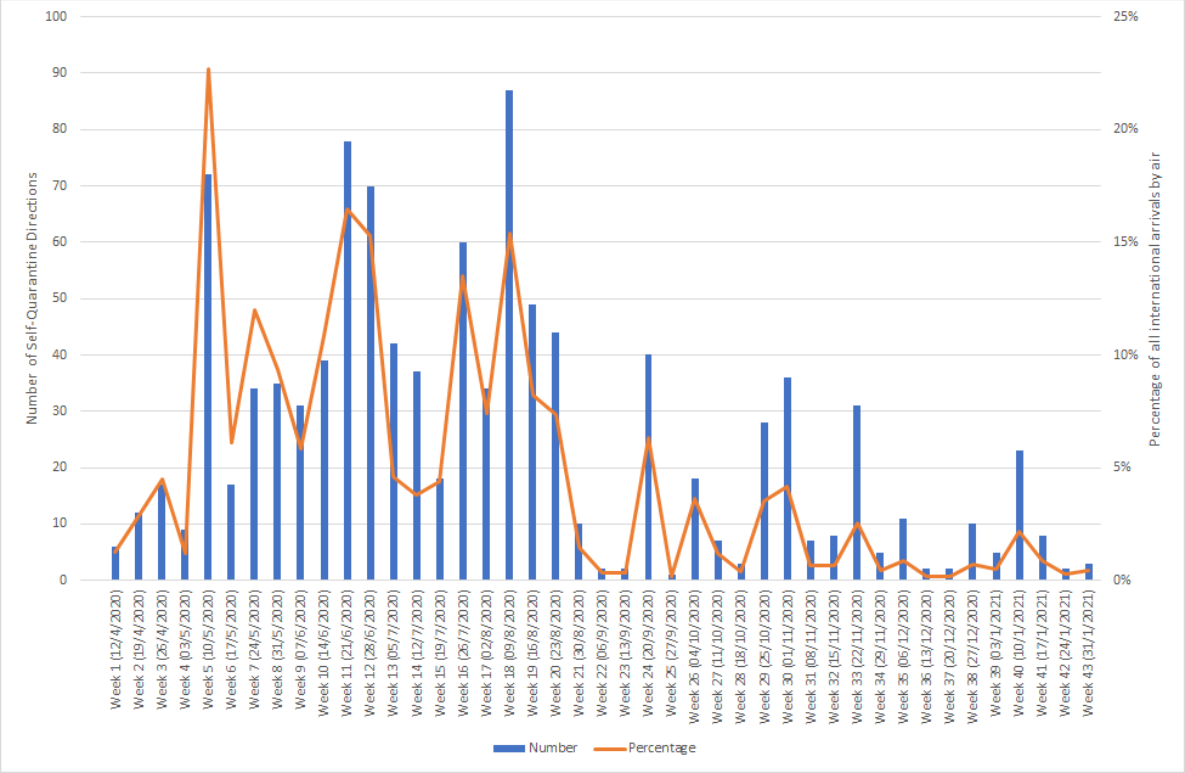
Whilst the majority of international travellers are subject to HQ, some travellers may quarantine at another hotel or suitable premises (self-quarantine), and have different transport, IPC and testing protocols. The main categories that are likely to be exempt from HQ are diplomatic passport holders, international flight crew who ordinarily reside in WA, and travellers who are exempt because of their employment (e.g. Australian Defence Force member and Commonwealth officials). Unaccompanied children may be allowed to quarantine at another location, but most will have a parent or guardian enter HQ with them. In exceptional circumstances, a person may be granted permission to leave HQ and quarantine at another location. A list of the criteria for these travellers and associated transport considerations is contained in Appendix 2.

Data on exemptions is captured by the BCA and figure 3 illustrates the trend of directions to self-quarantine issued to international arrivals by air since 12 April 2020, expressed as a count and percentage of all international arrivals.

Only 3.4 per cent of international arrivals by air have been directed to self-quarantine, and this has steadily decreased over time.

In the first three months of HQ arrangements being established, 8.2 per cent of international arrivals by air received a direction to self-quarantine. However, this has decreased to only 1.1 per cent since 1 November 2020.

Figure 3: Directions to Self-Quarantine for International Arrivals by Air, 12 April 2020 to 31 January 2021



COVID-19 Test Positivity

Pathology data is collected by the Department of Health and is updated live in PHOCUS, the data management system for cases and close contacts, with positive cases also being recorded in the WA Notifiable Infectious Diseases Database. A COVID-19 dashboard is also managed by the Department of Health and includes all pathology results, with data linkage used to verify and improve demographic data captured on the pathology forms.

Laboratories immediately email positive results for hotel guests to the Public Health Emergency Operations Centre (PHEOC) Surveillance team to commence contact tracing.

Of the 37,408 guests who have entered HQ since March 2020, 409 (1.1%) guests have become positive cases whilst in HQ.[3]

Guest experience of hotel quarantine

There is limited quantitative data available to describe the experiences of HQ guests. Several agencies receive complaints and feedback from guests but not all have formal

[3] Figure provided by Department of Health, 4 March 2021. This does not include flight crew but does include interstate arrivals who quarantined in a hotel.

recording systems in place. Some categorise and track the complaints, whilst others provide a thematic assessment.

The National Review of Hotel Quarantine proposed that guest experience should be considered a measure of quarantine system performance and improving the overall experience of HQ would likely lead to fewer complaints and mental health episodes.[4] Taking this a step further, a better guest experience with early identification of stressors could also lead to fewer incidents and breaches and thus should be considered as part of risk assessment and mitigation.

Health and Welfare Services

Health and wellbeing support services are primarily provided to HQ guests through phone screening, assessment and counselling.

Upon arrival at the hotel, all guests receive a set of Frequently Asked Questions, which provides a contact number for the on-duty triage nurse who can assist with:

- alcohol and tobacco withdrawal
- mental health support services and
- obtaining prescription medication

On-site medical staff at the hotel will contact all guests within the first couple of days to conduct a health check and assess the need for ongoing medical support,[5] including referral to the Health and Wellbeing Team.[6]

The Health and Wellbeing Team is a multi-disciplinary and culturally diverse team of allied health professionals who provide mental health and psychosocial support. Clinicians are trained in the areas of acute mental health care, aged care and drug and alcohol counselling. Telephone interpreting services are utilised for all calls to non-English speaking guests. If not already referred by the on-site medical staff, the team will contact all guests within the first week of their stay.[7]

A Mental Health Assessment and Brief Intervention Team is available to provide telehealth psychiatry services if required.

The Department of Communities contact the guest at some time during their stay to provide a welfare support function and can also be reached via the 13 COVID line.

Data is collected by each service on their contacts with guests. However, there is no single integrated database that captures inputs from all health services for every guest.

Feedback from Guests

This review recognises the commitment from all hotel providers to deliver the best possible experience for guests. Examples included organised entertainment, menus to allow guests some choice and autonomy in an otherwise structured environment, recognition of special events and commemoration of quarantine completion.

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[4] Halton J. 2020. National Review of Hotel Quarantine.
[5] Guests contact on-site medical staff via phone with face-to-face visits initiated based on clinical need.
[6] Department of Health, 2021. Frequently Asked Questions for Hotel Guests.
[7] Department of Health, January 2021. COVID-19 Public Health Operations Standard Operating Procedures. Version 9.

However, the quarantine experience is still onerous for guests. A recent paper observed that when individuals do not have access to coping mechanisms, it can be much easier for stress levels to accumulate. In this situation, relatively minor stressors (e.g. quality of food) can become major sources of distress for the individual.[8]

Guest feedback on their experience is not actively sought but there are several avenues by which guests may provide feedback and complaints. This review requested information captured by the 13 COVID line as well as direct contacts made with the Human Rights Commission, Ombudsman WA, WA Police Force, Chief Medical Officer of the Mental Health Commission and the Chief Psychiatrist. The quality and representativeness of each data source varies but a preliminary analysis uncovered several common themes to guest feedback:

- Unhappiness with requirement to be placed in HQ
- Suitability of accommodation (lack of fresh air, size of room for families and those with special requirements)
- Quality of accommodation services (food, cleaning and linen)
- Cost of quarantine and payment options particularly as it related to standard of service
- Issues around access to health services (both clinical and mental health)
- Communication and lack of clear information regarding quarantine stay
- Concern about isolation and one's own or other's mental health

There is no formal process currently in place to elicit feedback from guests and information that is captured is not routinely shared between agencies. In the time available, this review was unable to adequately explore many of the issues identified in the thematic analysis and did not speak with guests. However, understanding the guest experience will help identify opportunities for further improvement.

Incidents

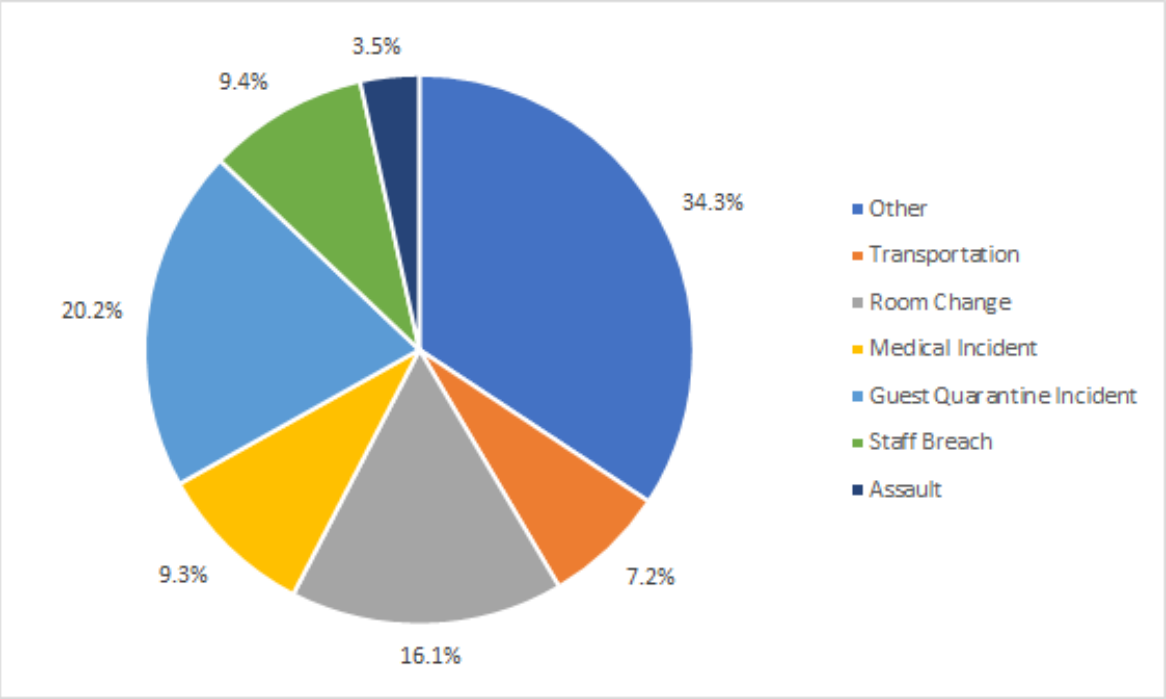
The State Health Incident Coordination Centre (SHICC) maintains a log of all incidents and issues observed and reported by hotel staff, security, SHICC, PHEOC, and WA Police Force. A standardised form to capture information provides a consistent and reliable dataset to help inform continuous quality improvement across the system.

Since April 2020 there have been 2,360 incidents and issues logged across HQ sites.[9] These can range from severe (e.g. attempted escape or assault of staff) to more minor (e.g. room change). Figure 4 illustrates the frequency of different types of incidents captured in this system.

Approximately one in three incidents were classified as Other (e.g. items being left outside of quarantine room or contraband intercepted during delivery). One in five incidents related to a guest quarantine incident which was defined as the guest not being compliant with the regulations (e.g. opening the door or coming out of their room) and one in six incidents related to a room change or hotel move.

[8] Jurblum M, Ng CH, Castle DJ. 2020. Psychological consequences of social isolation and quarantine: Issues related to COVID-19 restrictions. AJGP. 49(12). doi: 10.31128/AJGP-06-20-5481.
[9] Data provided by Department of Health.

Figure 4: Incidents Logged in Hotel Quarantine, by Incident Type, April 2020 to January 2021



A strong culture of reporting was evident,[10] and incidents are discussed in regular weekly briefings with HQ staff and security. It was not clear if all providers including on-site medical teams attend these briefings.

After a recent review of the data, amendments to the form were made to provide further detail on each incident. This will facilitate more in-depth analysis in the future.

Breaches

A quarantine breach refers to an arrest, summons, infringement or caution relative to not complying with a direction issued under the *Emergency Management Act 2005*. They represent the most serious attempts to evade HQ and may, in some cases, reflect underlying mental health conditions and/or responses to extreme stress.

WA Police Force monitor data on all quarantine breaches. Data indicates that very few quarantine breaches relate to people diagnosed with COVID-19 or isolating due to close contact or pending test results.

Only 6.7 per cent of quarantine breaches are related to people in HQ.[11] The average number of breaches from HQ is less than one per week[12] and there has been no significant changes over time. In most weeks, there are no breaches recorded.[13]

[10] Security officers are lawfully obliged to complete an incident report for each matter under s.78 of the *Security and Related Activities Control Act 1996.*
[11] Of the 507 breaches up until 31 January 2021, only 34 relate to hotel quarantine.
[12] Note that this reflects number of breaches as opposed to number of individuals. One individual may result in multiple breaches recorded.
[13] No breaches recorded in 22 weeks (of 43).

Hotel Quarantine Workforce

At a systems level, there is a range of non-workforce data available within SHICC, including risk registers, PPE supplies and data from internal audits and inspections.

However, there is very little integrated information available centrally that can identify the current workforce and monitor staff compliance with training, testing, contractual obligations or legal directions.

Multiple service providers, sub-contractors and agencies are involved in the delivery of HQ arrangements and each employer group holds information on their own employees.

This limits the capacity of SHICC to 'close the loop' on assurance.

System Performance

Reliable, timely and complete data is critical to good planning, preparedness, assessment of risk, end-to-end assurance, and monitoring of system performance. Agencies rely on quality data in order to be agile and responsive. Furthermore, a culture of data sharing stimulates crucial conversations to develop a mutual understanding of risk.

This review observed that information on guests, from arrival at the airport to departure from the hotel, is captured through multiple datasets, and held by different agencies, at various points in the quarantine journey. Quality of the data collected varied considerably.

There was a notable gap in data on family size and port of origin for incoming arrivals. Port of origin data could inform risk assessments of incoming travellers both in terms of current infection rates and future vaccination rates, as well as indicate potential language and cultural needs.

Information on guest contacts with on-site medical teams and other support services was fragmented except for cases and close contacts. Daily briefings occur between SHICC and PHEOC to discuss current guests and those with additional health or wellbeing needs are often flagged here, but there is no centralised database to capture inputs from all providers nor to share this information quickly and effectively.

A strong patient or customer focus is a key feature of good clinical governance and should be the foundation for any quarantine program. In a clinical setting, the patient experience is actively sought and informs continuous improvement practices and overall system performance. With no systematic invitation for guest feedback, there is limited data available. Information captured is spread across multiple agencies making it difficult to have clear visibility of the overall guest experience.

SHICC have established clear processes to report incidents and use this data to inform continuous improvement. This approach now needs to be applied across all aspects of guest experience.

While data on breaches demonstrated that the number was low, the nature and scale of breaches was recognised in the National Review of Hotel Quarantine as an important measure of system performance, and this information should continue to be monitored for this purpose.

There is currently no centralised source of information on HQ staff and therefore limited measurement, or at least limited visibility, of compliance with training, IPC protocols and testing requirements. NSW has a single integrated data system on HQ staff, linked to their

usual clinical information systems. This has recently been expanded to track and provide assurance around HQ worker mandatory testing and vaccination.

Current fragmentation and, in some cases, the lack of data, reflects the urgency with which HQ arrangements were initially set up and the involvement of multiple agencies with different existing platforms or software. However, an opportunity now exists to streamline the data processes and inputs. NSW and Victoria have recently both moved to establish integrated, centralised data systems which will give them better oversight of HQ guests and workers. Significant data expertise exists across the Department of Health, WA Police Force and other government agencies which could guide the development of such a system.

Data Recommendations

1. HMA/SHICC to create an integrated data system to cover quarantine guests and all quarantine workers.

   This includes, but is not limited to:

   a. defining key compliance metrics, particularly around training, testing, contractual obligations, legal directions and offering of COVID-19 vaccinations to workers, as well as metrics on guest experience
   b. developing centralised registers of HQ guests and workers
   c. regular and consistent reporting of metrics across all HQ sites

2. HMA/SHICC to identify data gaps, address data quality concerns and commit to data sharing arrangements with relevant partner agencies.

   As data gaps and/or concerns with data quality are identified, solutions should be sought as a matter of priority.

   Data privacy concerns can be addressed in the establishment of formal data sharing agreements.

Consolidation of Review Advice

Advice on Ventilation

I will begin by revisiting the interim advice provided on 4 February 2021, in light of subsequent work done by this review and others.

That advice provided three recommendations relating to ventilation risk in the HQ environment: the instigation of an expert review of airflow and ventilation in all WA quarantine hotels; a higher level of protection for all workers at sites where ventilation may be problematic or not adequately assessed; and consideration of ventilation adequacy when requisitioning quarantine hotels.

The WA Department of Health has commissioned an independent team to conduct ventilation assessments on all SHICC quarantine hotels. These assessments have not been released publicly but the review team has been briefed on the first such assessment, and I have no reason to resile from any of the recommendations made on 4 February 2021.

It should also be noted that this review was commissioned in parallel to an investigation conducted by WA Police Force (Case #903). A Briefing Note to the State Emergency Coordinator on this investigation, published on the WA Police Force website on 26 February 2021, confirmed the feasibility of airflow from a guest's room to the corridor contributing to how Case #903 contracted COVID-19, and did not identify any more plausible explanation. The Briefing Note included consideration of greater use of CCTV on all floors of HQ facilities, and the merits of changing the seating position of security guards away from COVID-positive guest rooms, taking into account airflow direction.

In the written advice of 4 February 2021, I stated that airborne transmission from a hotel guest to Case #903 is considered 'likely', and I have no reason to change that assessment.

In early March 2021, the World Health Organization (WHO) published a 'Roadmap to improve and ensure good indoor ventilation in the context of COVID-19', which includes all quarantine facilities as part of a higher category of 'healthcare' facilities, and stresses the importance of ensuring air flows from clean to non-clean areas, not the other way round.[14]

The WHO ventilation requirements for quarantine facilities are also consistent with Victorian Health Technical Advice for ventilation for airborne infectious diseases, recently updated in light of COVID-19.[15]

Therefore, WA should use the expertise and learnings from its ventilation assessments of HQ sites to immediately establish ventilation criteria, assess existing and future sites as either compliant or not compliant with such criteria, and choose sites or introduce modifications accordingly. This is essentially an expansion of the third recommendation in the interim advice of 4 February 2021, so will not be separately made. It is consistent with the AHPPC statement on National Hotel Quarantine Principles (December 2020), which includes a principle that facilities for HQ must be selected against specific criteria which reduce the risk of transmission of COVID-19. This includes consideration of the hotel environment and its suitability for IPC.[16]

[14] World Health Organization, 2021. Roadmap to improve and ensure good indoor ventilation in the context of COVID-19.
[15] Victorian Health and Human Services Building Authority, November 2020. HVAC System Strategies to Airborne Infectious Outbreaks, Health Technical Advice, HTA-2020-001-Rev B.
[16] Australian Health Protection Principal Committee (AHPPC), December 2020. Statement on Australia's National Hotel Quarantine Principles.

Thematic Findings

As required by the Terms of Reference of this review, ongoing advice, both verbal and written, has been provided over a six-week period to inform HQ arrangements, identify opportunities for improvement, and allow for quick adjustments as needed.

For example, most recommendations from Interim Advice provided on 4 February 2021 have already been substantially implemented (see responses from WA Health and WA Police Force), and most recommendations in Interim Advice #2 and this Final Advice have been canvassed widely, and some have been agreed to already.

The methodology of this review was constructed with an underlying continuous improvement philosophy, and allowed for frank and open discussions throughout, for which we thank all participants. Compared to a traditional review process, where recommendations are made only at the end, and are contained in a final report, this review process has contributed to an ongoing change process, and the final output will be a compilation of the sequential pieces of written advice.

As a group, the review team have identified a number of thematic findings that apply across the current HQ arrangements.

1. Quarantine is a public health function, where the assumption must be that everyone is COVID-positive from arrival in Australia to departure from quarantine; hotels are simply convenient sites for that function and IPC practices within hotels must meet health care standards for COVID-positive patients.
2. There is a high and unwarranted level of variability in practice and protocols for PPE use, training and COVID-19 testing, and a need for greater consistency based on assessment of public health risk, rather than employment arrangements (see Appendix 3).
3. The same risk controls need to apply to all workers across the HQ arrangements with the same risk exposure.
4. Roles and responsibilities need to be clarified and documented.
5. There is a need for strategic thinking in a changing environment, where multiple risks (health, social and economic) are shared and joined across government.
6. The lack of an integrated data system is hindering identification and management of risk, and monitoring of compliance with training, testing and directions.
7. Greater on-site HMA/SHICC presence is necessary to provide assurance that practice on the ground matches program design.
8. A culture of collaboration is needed across the whole of the HQ system, to support a workplace culture of safety central to clinical governance.
9. Continuous improvement is only possible with active encouragement of feedback from all stakeholders, periodic involvement of external auditors, and a structured inclusive ‘lessons learnt’ approach.

The overarching finding is that in this protracted emergency, the current set of patchwork arrangements, though sanctioned through legislation, has led to a fragmented end-to-end system in terms of practice and protocols, workforce, workplaces and data.

The overarching recommendation is to transition to a ‘one program, one culture’ model with strengthened corporate and clinical governance, in order to enhance assurance and manage current and future risks.

Consolidated Recommendations

Overarching recommendation

HMA/SHICC to transition hotel quarantine to a ‘one program, one culture’ model with strengthened corporate and clinical governance, in order to enhance assurance and manage current and future risks.

Advice #1 Ventilation recommendations

1. WA Government to instigate an immediate independent expert review of airflow and ventilation in all WA quarantine hotels, to inform any risk mitigation strategy for airborne transmission from infected guests to quarantine workers, and determine appropriate ventilation standards.
2. In the meantime, SHICC to require all quarantine centre workers to wear face masks at all times while indoors, and strongly consider a higher level of respiratory protection (e.g. P2/N95 masks and/or eye protection) for all workers at sites where ventilation may be problematic or not adequately assessed.
3. Consider ventilation adequacy when requisitioning quarantine hotels.

Advice #1 Other non-ventilation recommendations

4. Introduction of daily shift salivary PCR testing, in addition to weekly nasopharyngeal swab PCR.
5. Quarantine centre workers to not work at other sites, and not to be financially disadvantaged by such a restriction.
6. SEC to strengthen the Direction, and SHICC to strengthen protocols for testing and medical care of quarantine workers who develop any symptoms or fall ill.
7. SHICC to:
    a. Monitor and provide system assurance that all HQ staff undergo regular face-to-face IPC training.
    b. Introduce periodic external IPC safety audits (as recommended by the Victorian COVID-19 Hotel Quarantine Inquiry) to complement the current weekly internal safety audits at each site.

Advice #2 - Governance

1. SEC to create a new Quarantine Advisory Panel within the existing EM framework.
2. HMA/SHICC to strengthen the existing HQ model by appointing on-site managers to cover all HQ sites and Perth Airport.
3. HMA/SHICC to bolster its end-to-end assurance capacity by drawing further on clinical governance expertise within WA Health to develop a specific clinical governance framework for the entire quarantine process.
4. HMA/SHICC to review roles and responsibilities for hotel management and clarify these arrangements in writing.
5. WA Government to negotiate immediately with the Commonwealth to re-establish the provision of passenger manifests.
6. HMA/SHICC to undertake a comparative risk assessment for Quarantine Centre Drivers to determine appropriate testing protocols.

Final Advice - Data

1. HMA/SHICC to create an integrated data system to cover quarantine guests and all quarantine workers.
2. HMA/SHICC to identify data gaps, address data quality concerns and commit to data sharing arrangements with relevant partner agencies.

Appendix 4 outlines the recommendations as they relate to the scope of this review.

Given the limited time frame for this review, we were unable to do justice to the critical mental health and wellbeing aspects of HQ. Nor were we able to speak directly with, or obtain structured input from HQ guests or staff. These issues are addressed in the next section, as part of the discussion of what might change over the next year, and what might follow this review.

Redesigning the Quarantine Program in WA - from risk to opportunity

The HQ arrangements for international travellers to Australia were stood up with little notice in March 2020, as COVID-19 case numbers rose. Though a Commonwealth responsibility under the Constitution, states and territories agreed to take responsibility for implementation.

WA Government quickly put in place a series of formal and informal arrangements with a range of external providers, and managed the known public health risks in the HQ system, as well as a plethora of other COVID-related issues.

A year later, after successful control of COVID-19, the need for quarantine remains and the risk appetite for any community transmission in WA is close to zero.

This review has looked at the existing model of HQ in WA, and made a series of recommendations to strengthen it, and reduce any residual risks, particularly relating to ventilation.

We have argued strongly for a transition from the current patchwork quarantine arrangements to a ‘one program, one culture’ approach, on the basis of better management of current risks and heightened assurance.

But with vaccination against COVID-19 now rolling out in Australia, it is timely to look forward to the opportunities such a transition creates.

This review, and other reviews of HQ in Australia, have highlighted the importance of an optimal HQ environment that is supportive of the mental as well as physical health and welfare of HQ guests. The inherent isolation, loss of autonomy and uncertainty related to quarantine means that there will be continued demand for support services, and occasional breaches. Indeed, the HQ environment can be seen as a modifiable risk factor, and providing a supportive environment may help reduce the number of quarantine breaches, and hence be an important public health measure in and of itself.

Equally, if we view HQ as healthcare in a hotel environment, our concern should be as much for the staff as for the guests. This is an obvious occupational health and safety issue, but also a critical public health issue, as infection of HQ staff is the most likely route of transfer of COVID-19 from HQ guests into the community, even after all HQ staff are offered vaccination.

Therefore, a follow-up review of the HQ environment from the perspective of guest and staff safety and wellbeing is warranted. It could take 2-3 months to include time for detailed consultation with both guest and staff groups to elicit their experience, feedback and ideas for improvement. Such a review would also explore in detail the social and societal factors underpinning employment and workplace relations in the hotel, security, cleaning and catering professions that are at the frontline of HQ operations.

Over this next period, we are also likely to see a greater focus on continuous improvement across Australia, with learnings shared across jurisdictions, each operating different models, and the formation of an effective ‘community of practice’. Such sharing might occur at strategic, policy and operational levels. This type of learning needs to happen faster. Our review consultations with other jurisdictions were very informative, and a time-efficient way to exchange ideas on best practice. There will also be lessons to be learnt from the handful of other countries that have instigated HQ programs (e.g. New Zealand, Singapore, South Korea and Taiwan in our region).

In a usual short-lived emergency situation, debriefs and lessons learnt exercises are conducted routinely post-emergency. In this protracted emergency, equivalent learning processes need to be established while the emergency continues.

Change and innovation are constant features with COVID-19, as our understanding of the basic science evolves along with our evaluation of 'what works' in control measures. Our review focus was on making the existing HQ model in WA more effective, rather than exploring new models, but there were many issues that came up, such as 'hot hotels', new testing strategies and greater use of CCTV and other technologies, that warrant ongoing examination as possible modifications to the existing WA model. Other more radical changes, such as purpose-built quarantine sites, akin to Howard Springs in the NT, or utilisation of alternate existing sites, could also be examined.

This next six-month period is a window of opportunity to optimise HQ governance for the period that follows, which may include changes to the emergency management arrangements. The Quarantine Advisory Panel will be a critical new strategic element, and its membership and terms of reference should be aligned with any similar body set up to oversee vaccination rollout.

The period from the end of the initial vaccination rollout in Australia to a 'post-COVID' future could last years. In any scenario, quarantine will be required in some form, as it will be impossible to confidently exclude COVID-19 in all international travellers until transmission is reduced across the globe, vaccination is widespread in all countries and highly effective against all variants, and we have accurate tools to verify immunity. Surveillance for new strains will need to continue, and proof of vaccination alone will be insufficient to guarantee unrestricted entry to Australia.

In WA, the best defences against COVID-19 will remain borders, vaccination, quarantine, contact tracing and outbreak management (including lockdowns). And the effectiveness of each defence will determine the need for other measures, and the overall level of community protection.

It may be possible to return to a full state of economic normality with few if any state border restrictions, and an international quarantine system that is optimised to support the return of Australians living abroad, international students, seasonal workers, tourists and business visitors.

Quarantine, seen in this light, is a tool for recovery and an essential pillar of competitiveness and community confidence.

Quarantine remains a complex public health function, with strong program elements of logistics, security, compliance and risk management. It requires the highest levels of corporate and clinical governance, and continuous attention to fundamental IPC principles throughout the end-to-end process. It is government's responsibility, but requires private sector partnerships. It is mandated by law and restricts freedoms, but works best if supported willingly. Health is the obvious lead government agency but risks are shared across government. It requires planning, budgeting and contracting for workforce, operational and capital expenses. The daily operations focus is unrelenting, but agile strategic thinking, collaboration and communication are critical to evolve the program in a fast changing environment. Underlying it all are the human, social, behavioural and environmental determinants of success and failure.

These are not reasons to be overwhelmed but drivers to step back and design the very best program possible for this and future pandemics.

Appendix 1 Terms of Reference

Review of Western Australia's hotel quarantine arrangements

1 February 2021

Context:

The WA Government continues to review and refine the measures in place to protect Western Australians from the spread of COVID-19, which includes pursuing opportunities to strengthen the State's management of COVID-19.

Western Australia's hotel quarantine system has continuously improved since its inception, adopting lessons learnt from our own, and other jurisdictions', experiences. The system has successfully contained hundreds of COVID-19 cases since March 2020.

With ongoing, uncontrolled community transmission and unknown, highly transmissible variants of COVID-19 emerging outside of Australia, the international border represents the greatest threat to Australia, and hotel quarantine the greatest defense.

Purpose:

In light of the international COVID-19 situation, as well as the recent infection of a WA hotel quarantine worker, it is timely to review WA's hotel quarantine system to identify opportunities for strengthening current processes and practices and ensure the system is as robust as possible.

Professor Tarun Weeramanthri, drawing upon additional expertise as required, will lead an end-to-end review of the operation of WA's hotel quarantine system, from the arrival of passengers at Perth airport through to their departure from hotel quarantine.

Scope:

The Review is to provide a particular focus on:

- end-to-end operational processes, from arrival of passengers at an airport through to departure from hotel quarantine, including assurance processes
- infection control policies and processes including testing
- compliance with infection control policies and processes
- security overlays
- management and oversight of any external providers, including training prior to providing services associated with hotel quarantine
- roles and responsibilities of government agencies and other stakeholders
- information sharing between relevant entities
- health and wellbeing of hotel quarantine workers and guests

The following considerations will guide the Review:

- suitability of protocols to manage and mitigate infection risks, including the risks of emerging COVID-19 variants
- appropriateness and transparency of governance arrangements, including chains of command and decision making processes
- implementation of any relevant existing review recommendations including the National Review of Hotel Quarantine system (also known as 'the Halton review')

- issues that have arisen in other jurisdictions, for example, the COVID-19 Hotel Quarantine Inquiry in Victoria
- consistency of the system with Australia's National Hotel Quarantine Principles.

Approach:

Professor Tarun Weeramanthri will lead the review, drawing upon the appropriate expertise as needed, including in infection prevention and control, public health and risk management.

A secretariat comprising officers from the Department of the Premier and Cabinet, the Department of Health and the WA Police Force will support Professor Weeramanthri undertake the Review.

The Review will engage with all relevant stakeholders to obtain information necessary to assess the above. In doing so, consideration must be given to any impost provided on those staff continuing to work on the COVID-19 response, particularly any staff on the frontline.

In addition to stakeholder engagement, the Review will undertake research and analysis, including of other jurisdictions' experiences and relevant reviews and inquiries.

Reporting:

Commencing the week of 1 February 2021, Professor Weeramanthri will provide ongoing written advice on opportunities for improvement to the Director General of the Department of the Premier and Cabinet, with subsequent reporting to the Premier, the Emergency Management Team and, ultimately, State Disaster Council.

Appendix 2 Categories of International Travellers who are not Subject to Centre Quarantine Requirements

Category of Traveller	Application Process	Transport Requirements	IPC & Testing for Traveller	IPC & Testing for Transport
Diplomatic passports AHPPC agreement[17] allows self-quarantine	Overseen by the WA Police Force - Border and Quarantine Operations Superintendent.	Private vehicle; taxi; rideshare (excludes mass public transport).	Facemask while travelling to premises. 11th Day testing protocol at nearest COVID-19 Clinic	Driver must wear face mask. Nil testing requirement.
International Flight Crew (not ordinarily WA resident)	Processed through G2G Pass to quarantine at crew hotel until departing on outbound flight	Vehicle provided by employer.	Facemask in terminal and crowded areas. Testing on arrival and 7th day if still in WA.	Driver must wear facemask and comply with rolling 7 day testing protocol.
International Flight Crew (ordinarily WA resident)	Processed through G2G Pass to self-quarantine at suitable premises	Private vehicle; taxi; rideshare (excludes mass public transport).	Facemask in terminal and crowded areas. Testing on arrival and 7th day if still in WA.	Driver must wear face mask. Nil testing requirement.
Requests on **compassionate grounds**	Requests must be approved by SHICC before further Direction issued by police	May be specified in further direction	Likely testing at HQ within 48 hrs of arrival and 11th Day testing protocol at nearest COVID-19 Clinic.	Nil requirements unless specified in further direction.
Unaccompanied Children	SHICC may approve an unaccompanied child for self-quarantine with their parents. In most cases, the parent will enter quarantine with the child.	Private vehicle; taxi; rideshare (excludes mass public transport).	Facemask while travelling to premises. 11th Day testing protocol at nearest COVID-19 Clinic	Driver must wear face mask. Nil testing requirement.
Exempt from Quarantine, e.g. ADF member, commonwealth officials	Processed through G2G Pass in consultation with their respective organisations	As agreed with their respective organisations	Facemask while travelling to premises. 11th Day testing protocol at nearest COVID-19 Clinic	Driver must wear face mask. Nil testing requirement.

[17] HPPC agreement Coronavirus (COVID-19) advice for international travellers: Recommended quarantine exemptions for some other travellers.

Appendix 3 Table of PPE Requirements for Service Providers and Agencies Operating within the HQ System as of 8 February 2021

Agency	Surgical Mask	Gloves	Eye Protection	Gown/ Coveralls
Perth Airport (T1 International)				
Australian Border Force (ABF)	✓	✓[a]	✓[b]	×[c]
Dept. Agriculture Water and Environment (DAWE)	✓	✓[a]	✓[b]	×[c]
Airport Cleaning Staff	✓	✓	✓	✓
Clinical Health Screen Staff (incl. co-located DAWE)	✓	✓	✓	✓
Dept. of Communities Welfare Officers	✓	✓	×	×
Ground Crew - airline staff	✓	✓[d]	✓	×
Ground Crew - baggage handlers	✓	✓[d]	✓	×
Ground Crew - support staff	✓	✓[d]	✓	×
Other agencies involved with processing flights	✓	×	✓[e]	×
WA Police Force/AFP	✓	✓[f]	✓	×
Escort to Hotels				
Transperth (Swan Transit)	✓	✓[d]	✓	×
WA Police Force – escorting Transperth	✓	✓[f]	✓	×
Hotel Quarantine[18]				
Hotel Staff - Check in	✓	×	×	×
Hotel Staff - Luggage handling	×	✓	×	×
Hotel Staff - Meal delivery	✓	✓	×	×
Hotel Staff - Waste removal	✓	✓	×	×
Hotel Staff - Laundry collection	✓	✓	×	×
Hotel Staff - Cleaning (vacate)	✓[g]	✓[g]	✓[g]	×
Hotel Staff - Maintenance (urgent)	✓	✓	✓	✓
Hotel Staff - Other facility staff	×	×	×	×
Health Service Providers - Routine care[19]	✓	✓	✓or visor	✓
Health Service Providers - Aerosol generating proc.	P2/N95	✓	✓	✓
Security - Guard in high risk location[20h]	✓	×	✓	×
Security - Guard in other location	×	×	×	×
Security - Crowd controller[21]	✓	✓	✓	×
WA Police Force - Attending non-compliant guest[22]	✓	✓	Visor	✓

(Recommended at a national level; b) If physical distancing cannot be maintained; c) If need to board; d) Contact with pax/belongings expected; e) When pax in vicinity; f) If physical contact with pax/belongings; g) Pertains to chemicals for cleaning.; h) Changed February 2021.

[18] Department of Health, December 2020. Infection prevention and control guidelines for state quarantine facilities V9.
[19] Department of Health, December 2020. Information for clinical teams attending to guests who are undergoing 14 day quarantine in hotels and other accommodation.
[20] Advice from Department of Health, 8 Feb 2021.
[21] Security Contractor Standard Operating Procedures.
[22] Email direction from Superintendent Border & Quarantine Operations, 7 Jan 2021.

Appendix 4 Terms of Reference against Recommendations

Review Scope	Review Recommendation
End-to-end operational processes, from arrival of passengers at an airport through to departure from hotel quarantine, including assurance processes	**Advice #1 Recommendation 7**: SHICC to: A) monitor and provide system assurance that all HQ staff undergo regular face to face IPC training. B) introduce periodic external IPC safety audits (as recommended by the Victorian COVID-19 Hotel Quarantine Inquiry) to complement the current weekly internal safety audits at each site. **Advice #2 Recommendations 1-4:** 1. SEC to create a new Quarantine Advisory Panel within the existing EM framework. 2. HMA/SHICC to strengthen the existing HQ model by appointing on-site managers to cover all HQ sites and Perth Airport 3. HMA/SHICC to bolster its end-to-end assurance capacity by drawing further on clinical governance expertise within WA Health to develop a specific clinical governance framework for the entire quarantine process. 4. HMA/SHICC to review roles and responsibilities for hotel management and clarify these arrangements in writing. **Final Advice data recommendations**: 1. HMA/SHICC to create an integrated data system to cover quarantine guests and all quarantine workers. 2. HMA/SHICC to identify data gaps, address data quality concerns and commit to data sharing arrangements with relevant partner agencies.
Infection control policies and processes including testing and compliance with infection control policies and processes	**Advice #1 all recommendations:** *Ventilation recommendations* 1. WA Government to instigate an immediate independent expert review of airflow and ventilation in all WA quarantine hotels, to inform any risk mitigation strategy for airborne transmission from infected guests to quarantine workers, and determine appropriate ventilation standards. 2. In the meantime, SHICC to require all quarantine centre workers to wear face masks at all times while indoors, and strongly consider a higher level of respiratory protection (e.g. P2/N95 masks and/or eye protection) for all workers at sites where ventilation may be problematic or not adequately assessed. 3. Consider ventilation adequacy when requisitioning quarantine hotels. *Other non-ventilation recommendations* 4. Introduction of daily shift salivary PCR testing, in addition to weekly nasopharyngeal swab PCR. 5. Quarantine centre workers to not work at other sites, and not to be financially disadvantaged by such a restriction. 6. SEC to strengthen the Direction, and SHICC to strengthen protocols for testing and medical care of quarantine workers who develop any symptoms or fall ill. 7. SHICC to: A) monitor and provide system assurance that all HQ staff undergo regular face to face IPC training. B) introduce periodic external IPC safety audits (as recommended by the Victorian COVID-19 Hotel Quarantine Inquiry) to complement the current weekly internal safety audits at each site.

	Advice #2 Recommendation 3: HMA/SHICC to bolster its end-to-end assurance capacity by drawing further on clinical governance expertise within WA Health to develop a specific clinical governance framework for the entire quarantine process. **Advice #2 Recommendation 6:** HMA/SHICC to undertake a comparative risk assessment for Quarantine Centre Drivers to determine appropriate testing protocols and other risk controls. **Final Advice data recommendations**: 1. HMA/SHICC to create an integrated data system to cover quarantine guests and all quarantine workers. 2. HMA/SHICC to identify data gaps, address data quality concerns and commit to data sharing arrangements with relevant partner agencies
Security overlays	**Advice #1 Recommendation 2:** In the meantime, SHICC to require all quarantine centre workers to wear face masks at all times while indoors, and strongly consider a higher level of respiratory protection (e.g. P2/N95 masks and/or eye protection) for all workers at sites where ventilation may be problematic or not adequately assessed. **Advice #1 Recommendations 4-7:** 4. Introduction of daily shift salivary PCR testing, in addition to weekly nasopharyngeal swab PCR. 5. Quarantine centre workers to not work at other sites, and not to be financially disadvantaged by such a restriction. . SEC to strengthen the Direction, and SHICC to strengthen protocols for testing and medical care of quarantine workers who develop any symptoms or fall ill. 7. SHICC to: A) monitor and provide system assurance that all HQ staff undergo regular face to face IPC training. B) introduce periodic external IPC safety audits (as recommended by the Victorian COVID-19 Hotel Quarantine Inquiry) to complement the current weekly internal safety audits at each site. **Advice #2 Recommendation 2:** HMA/SHICC to strengthen the existing HQ model by appointing on-site managers to cover all HQ sites and Perth Airport.
Management and oversight of any external providers, including training prior to providing services associated with hotel quarantine	**Advice #1 Recommendation 7:** SHICC to: A) monitor and provide system assurance that all HQ staff undergo regular face to face IPC training. B) introduce periodic external IPC safety audits (as recommended by the Victorian COVID-19 Hotel Quarantine Inquiry) to complement the current weekly internal safety audits at each site. **Advice #2 Recommendation 2:** HMA/SHICC to strengthen the existing HQ model by appointing on-site managers to cover all HQ sites and Perth Airport **Final Advice data recommendation 1:** HMA/SHICC to create an integrated data system to cover quarantine guests and all quarantine workers.
Roles and responsibilities of government agencies and other stakeholders	**Advice #2 Recommendation 2:** HMA/SHICC to strengthen the existing HQ model by appointing on-site managers to cover all HQ sites and Perth Airport. **Advice #2 Recommendation 4:** HMA/SHICC to review roles and responsibilities for hotel management and clarify these arrangements in writing.

Information sharing between relevant entities	**Advice #2 Recommendation 5:** WA Government to negotiate immediately with the Commonwealth to re-establish the provision of passenger manifests. **Final Advice data recommendations**: 1. HMA/SHICC to create an integrated data system to cover quarantine guests and all quarantine workers. 2. HMA/SHICC to identify data gaps, address data quality concerns and commit to data sharing arrangements with relevant partner agencies.
Health and wellbeing of hotel quarantine workers and guests	**Advice #2 Recommendation 2:** HMA/SHICC to strengthen the existing HQ model by appointing on-site managers to cover all HQ sites and Perth Airport. **Advice #2 Recommendations 5:** SEC to create a new Quarantine Advisory Panel within the existing EM framework. **Final Advice data recommendation 1**: HMA/SHICC to create an integrated data system to cover quarantine guests and all quarantine workers.