



DEPARTING FROM COVID-19

Flight path to recovery
and reform of the
Australian aviation sector

July 2020



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Cover image: Aurecon International - digital model of a theoretical airport layout to enable the gradual, flexible and incremental reopening of international travel.





INTRODUCTION

It wasn't long ago that airports were diverse and lively businesses. From packed check-in desks, to well-stocked retail concessions and queues at the departure gates. Airports were thriving on people arriving and departing, with every part of the passenger's journey designed to ensure maximum economic efficiency.

The arrival of the COVID-19 pandemic confronted airports with the questions of how to transition through the unprecedented situation and how to plan for the future.

This white paper has been developed for the Australian aviation context, providing insights that may assist airports to plan for the return of international travel and emerge from the other end of COVID-19 in a stronger position.

It is, in part, a speculative paper because as we move through this pandemic together, there are no absolute certainties on the way it will progress. At Aurecon, what we see is many opportunities for airports, airlines and governments to collaborate and reignite international travel as soon as possible.

By leveraging the collective experience and expertise of Aurecon's aviation teams around Australia, New Zealand and Asia, we have collated a series of ideas for airports to transition from pandemic to recovery and reform, minimising the impact on passenger capacity while continuing to improve passenger comfort and confidence.



Clearly, airports are being severely hit by COVID-19, operating on almost no revenue while continuing to provide essential support for airlines, government and passengers, as well as tenants who are suffering catastrophic declines in their businesses.

Airports are examining how to adapt their every aspect to a post-COVID-19 world. It will be no small feat.

Depending on airport specifics, some industry experts have predicted that between 70 and 100 different areas in the passenger journey are expected to either change or be introduced from scratch, to restore confidence in flying.

As countries begin to gradually reopen in the wake of the pandemic, making passengers feel comfortable again is going to be a big part of influencing travel demand.

To encourage passengers out of their homes and onto planes will take unprecedented changes across the end-to-end passenger journey, not just inside the airport terminal. This may include changes to the physical layout of the airport and aircraft, as well as the operational processes of booking and checking in, of navigating through screening and security — all within the boundaries of social distancing.

Although this paper is presented in the Australian aviation context, the insights from Aurecon are applicable to international airports in any country.





OBSERVATIONS

Key Points

The aviation industry's recovery will be the staged reopening of domestic then international travel routes.

Recovery will take unprecedented changes across the end-to-end passenger journey.

Recovery will take collaboration between airports, airlines and governments.

The recovery and reform from COVID-19 will be a transition in stages (see figure 1.1). Subsequent to the borders closing (Stage 1), we're looking at entering Stage 2 with domestic borders starting to reopen and at some point, international safe-zone routes reopening; Stage 3 international travel divided into trusted and less safe routes; Stage 4 the 'new normal'.

Australia is coming out of the 'eye of the storm' and airports and airlines will be asking themselves a lot of questions, such as: Which markets should relaunch first? What do we need to do together to stimulate demand? How do we best serve the passenger to ensure their travel is safe and enjoyable?

Airports will want to encourage people back to flying as soon as possible and it's important they work with airlines, industry and government to do this.

At each stage, airports will need to be adaptable and flexible, to anticipate and respond quickly to public health advice, passenger needs and available country routes.



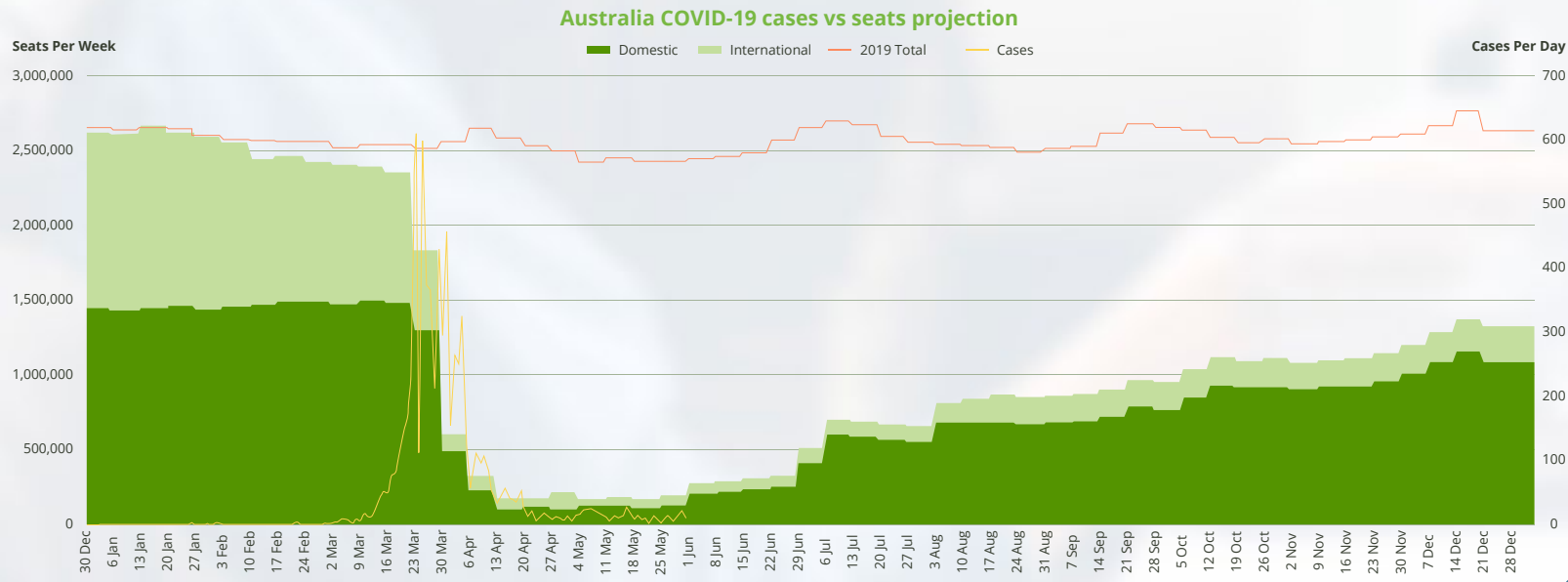
Operational considerations are important for passenger behaviour. Significant changes will have to take place for entering the airport, passenger flows, floor markings, baggage processing, COVID-19 screening pathways, the use of contactless technology and the additional operational staff that may be required.

There are likely to be differences of view between governments and the aviation sector on when domestic or international borders should reopen, and under what conditions. This will have an impact on airport operations.

There will likely be an increase in passenger journey time through the terminal due to passenger health screening and social distancing requirements.

We assume there will be a new set of regulations that airports will be required to follow to conduct COVID-19 passenger testing and screening.

This [Centre for Aviation graph](#) provides a granular build of data, showing the slow, phased recovery in international airline travel in 2020.



Source: CAPA Australia Air Capacity Model, June 2020.



WHAT THE INDUSTRY IS SAYING

“Airports, airlines and government need to co-operate on a staged recovery of flights”

Brisbane Airport’s Chief Executive Officer, Gert-Jan de Graaff.

Source: [AFR, 16 April, 2020](#)

“Contactless processing of people through check-in, immigration and security would give travellers confidence when airports returned to normal operations”

Simon Bourke, acting CEO of the Australian Airports Association

Source: [AFR, 16 April, 2020](#)

“Some airports are using technologies such as biometrics, automated e-gates, robotics, and AI [artificial intelligence] which can facilitate the opportunity to deliver a ‘touchless’ journey”

Antoine Rostworowski, Deputy Director General of Airports Council International

Source: [Escape Travel](#)

“To get people travelling again, we’re looking at very low airfares to encourage people to take those trips”

Alan Joyce, CEO Qantas

Source: [ABC News, 20 May, 2020](#)

“There is currently no single measure that could mitigate all the risks of restarting air travel, but we believe a globally-consistent, outcome-based approach represents the most effective way of balancing risk mitigation with the need to unlock economies and to enable travel”

Angela Gittens, ACI World Director General

Source: [iata.org](#)

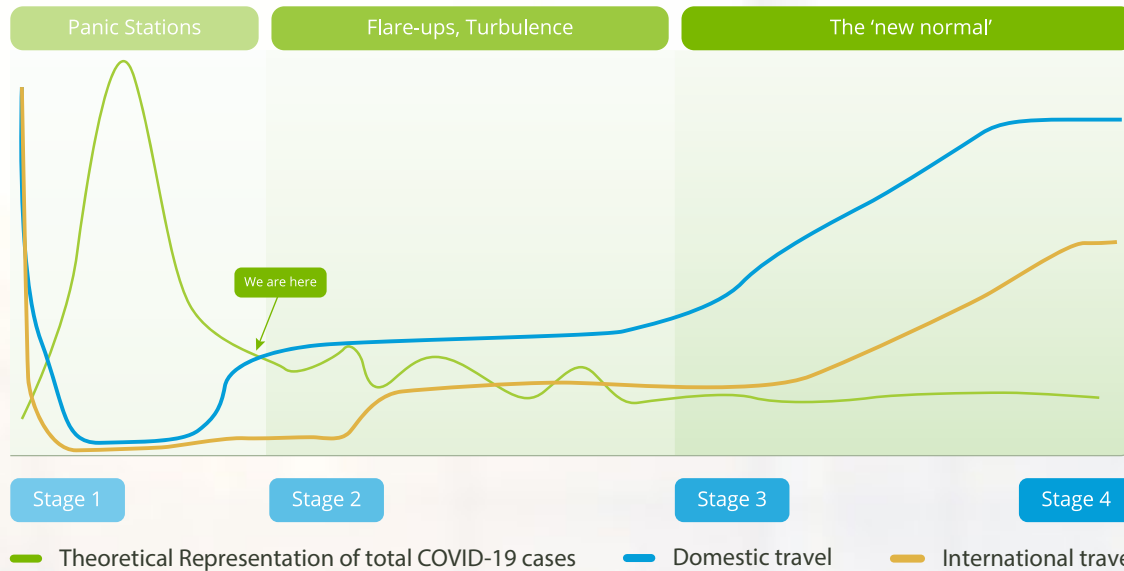


SECTION 1: PATHWAY TO 'NEW NORMAL'

1.1 Transition pathway

The progression and recovery for airports from COVID-19 will occur in stages. This white paper is focused on Stages 2, 3 and 4.

figure 1.1 The stages of transition through and out of COVID-19



- Stage 0** Pre COVID-19.
- Stage 1** Borders close, except for repatriation. Passengers subject to managed isolation adhering to government requirements.
- Stage 2** Domestic borders reopen and at some point, international travel safe zones reopen between countries with trusted routes.
- Stage 3** International travel divided into trusted and less safe routes. Trusted routes – high level health checks and social distancing. Less secure routes – more in-depth testing and areas for passenger segregation.
- Stage 4** 'New normal' in a world after COVID-19. Airports have comfortably introduced new measures (if needed). Passengers have a confirmed level of comfort, process and safety. Australia has full comfort that inbound passengers can be detected and traced, and that the health and control systems can cope.

"International travel will lag domestic travel by up to two years due to the more gradual reopening of countries' borders as safe destinations to travel. This will also depend on the industry's ability to quickly accommodate safe facilitation of travellers through airports and on aircraft"

Brett Reiss, Aviation Industry Leader, Australia & New Zealand



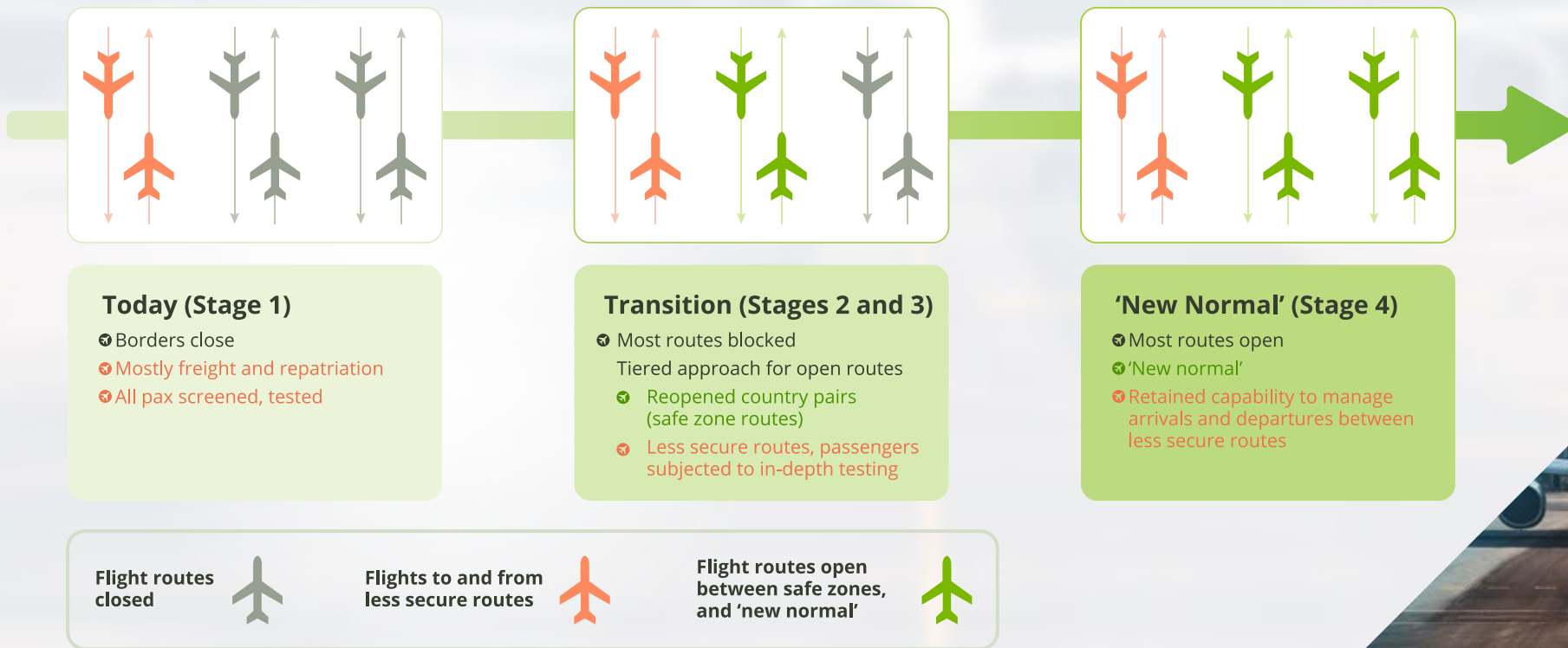
SECTION 1: PATHWAY TO 'NEW NORMAL'

International air traffic is unlikely to significantly return without demonstration that passengers are safely facilitated and tested, and that communities are protected from international travellers. It means that the industry will continue its screening and testing measures. The aviation industry will become much more cautious on how it goes about processing passenger departures and arrivals.

This is how Aurecon sees the gradual, flexible and incremental evolution of opening international travel routes and facilities.

figure 1.2

This is how we see the travel route evolution that would help airports reactivate assets in a modulated and staged manner



SECTION 1: **PATHWAY TO 'NEW NORMAL'**

1.2 What matters most

There are many unknowns and questions about how COVID-19 will impact international travel and the systems of airports. The focus will be on easing domestic restrictions first but beyond that, airports need strategies for the staged restoration of international travel. There are three key principles that will matter most as international travel reopens:

Principle I: Systems

Setting up systems and processes to keep passengers and staff safe. This will require modifications to physical infrastructure and operating procedures, the addition of testing stations, installation of routes to segregate passengers and more wayfinding signage in and outside terminal buildings.

In Stages 3 and 4, a priority for airports is how to deal with capacity. To begin with, passenger numbers will be low but, as people become more confident with flying, and the safe zone international routes reopen, demand will increase. What we don't know is if social distancing will still be required when those stages are reached, or how extensive the COVID-19 screening will need to be.

As safety measures become embedded in airport operations and passenger confidence is restored, airports will need a system for reigniting the commercial potential of its terminals for the benefit of retail businesses and passengers.

Principle II: Contactless processing

While the Australian government was already on a pathway to a partial contactless traveller clearance process at its international terminals, the COVID-19 pandemic has accelerated the consideration set for contactless end-to-end traveller journeys. This includes check-in, bag drop, security, customs, bathroom facilities, and boarding.

Principle III: Human behaviour

We will all have to learn how to travel again in the post COVID-19 world, so it's critical that people feel safe to return to international travel. Our current thinking is that the bulk of the health approvals could be obtained by passengers prior to travel, and possibly entrenched through bilateral health agreements between countries.

Airports and airlines will have to work together to reassure travellers that the risk of coronavirus infection is low because of improved cleaning efforts, a change in aircraft seating and procedures, and adequate airport screening.





SECTION 2: MODIFICATIONS TO SERVICE

2.1 Modifications to physical infrastructure

Planning is the key

We're only just starting to see the transition out of Stage 1, and the industry is anticipating that it will bring about the same kind of paradigm shift in international air travel to that experienced after 9/11.

In this section, we focus on insights for airports and airlines to work together to facilitate the return of international travel through modifications to the physical infrastructure of terminal buildings.

If airports and airlines can present a united front and propose practical and operational solutions at airports, we could see a quicker response from government around the medium- and long-term governing regulations and bilateral agreements that must be adhered to.

We need to plot a robust recovery and reform pathway to reignite international travel. From an airport asset perspective, planning these changes needs to start now, to be able to bring this new travel experience to the passenger when international routes reopen.

It's a delicate balance until COVID-19 is eradicated or can be managed in the same way as other regularly reoccurring viruses. Airports and airlines need to provide passengers and governments with the confidence that international travel can operate safely and effectively.

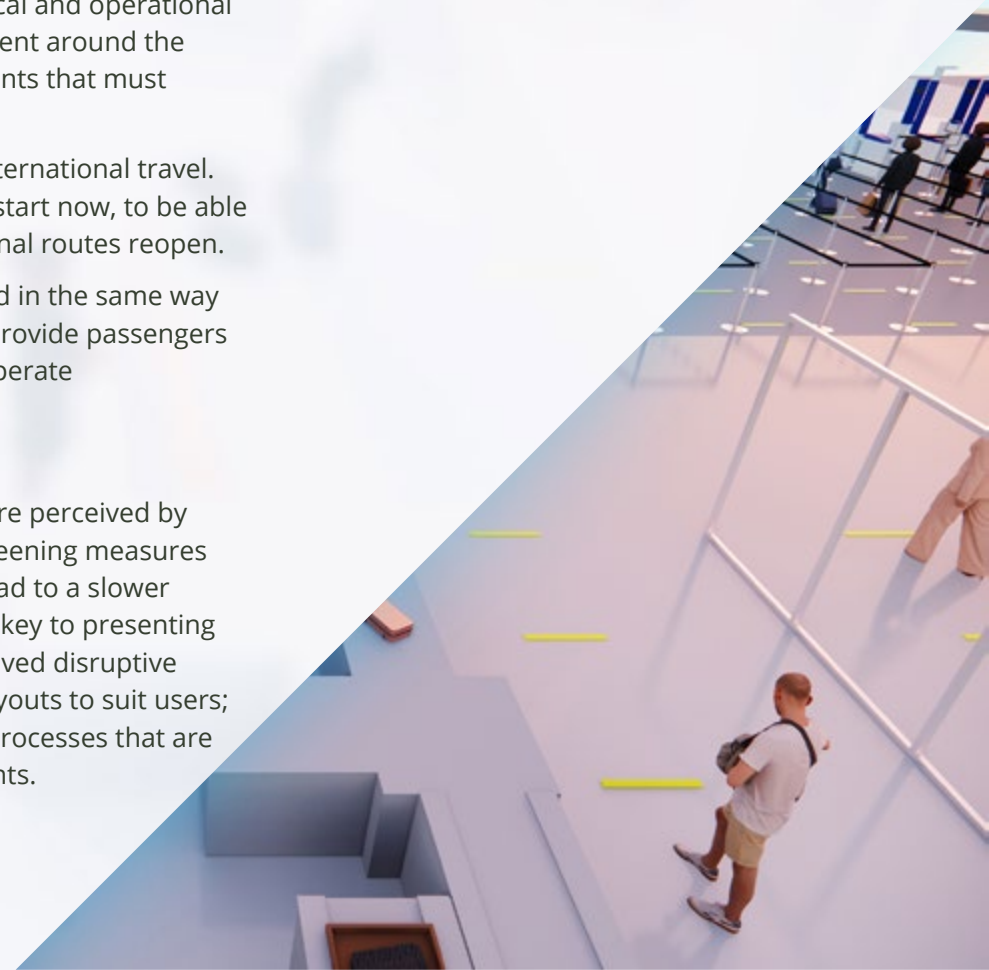
Making the passenger experience non-disruptive

There are aspects to transitioning through an airport that we know are perceived by some passengers as burdensome or anxiety-inducing. Additional screening measures have the potential to create negative airport experiences that may lead to a slower return to travel or an unpleasant perception of the airport itself. The key to presenting the physical infrastructure changes at airports is to reduce the perceived disruptive experience. This can be achieved by empathetically designing new layouts to suit users; including physical infrastructure, wayfinding signage and screening processes that are perceived as traveller-friendly, while satisfying regulatory requirements.

We go into more depth around the insights to human behavioural changes in Section 3.3.

"As passenger confidence grows, we expect that international travel will eventually return to pre-COVID-19 levels as people's desire to make up for lost time overtakes initial travel anxiety"

**Erik Kriel, Aviation Capability Leader,
Aurecon**



SECTION 2: MODIFICATIONS TO SERVICE

Spatial planning of airport spaces and assets

There is an embedded opportunity in the initial lack of foot traffic through an airport – it provides floor space and capacity headroom to temporarily use some airport areas for reactivation steps. Spatial planning will produce layouts that protect passengers, adequately provide health checks and refrain from making airports resemble a clinical hospital.

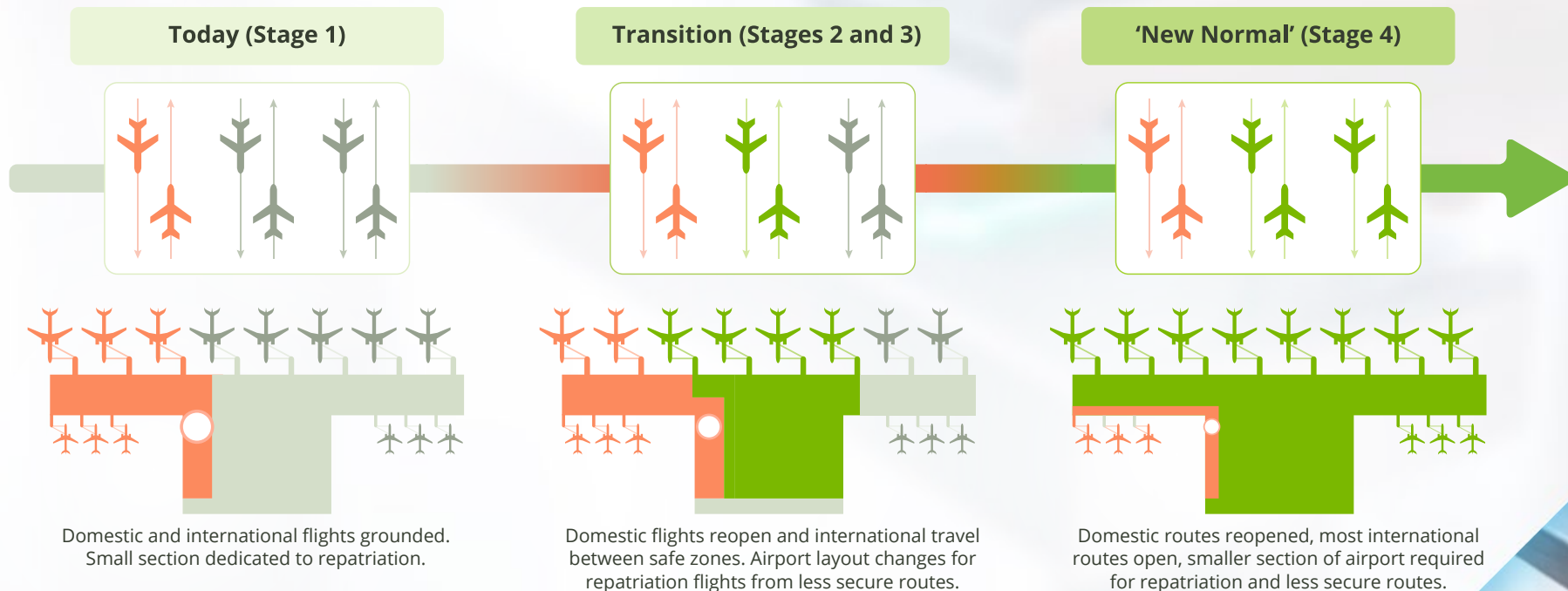
Aurecon believes that many airports already have the space and assets available to set up physical infrastructure to conduct passenger health and administrative checks, as well as practice social distancing. Temporary barriers will need to be set up in areas such as security screening to reduce passenger contact.

Considering the predictions around the gradual build up in demand for international travel, airports could possibly plan the reorganisation of their spaces and assets to transition through the recovery period without needing to significantly expand their building envelope.

During Stage 3, the use of airport spaces will most likely be overtaken with a COVID-19 response layout. However, over time, when we see a vaccine or the disease at a manageable level, the spaces will revert to hosting the 'new normal' capacity (Stage 4).

figure 2.1

Theoretical visualisation of the division of airport spaces from today to 'new normal'. May take more steps depending on airport specifics.



SECTION 2: MODIFICATIONS TO SERVICE

To accommodate the increase in health screening

Increased queuing areas and processing times will need an intervention of the existing layout of terminal buildings (cause and effect). While it is difficult to predict passenger trends at the moment, we can imagine that many people will want to avoid touching surfaces and interacting with staff as little as possible. In this scenario, automating as many passenger processes as possible will be favoured by most airports. London's Heathrow Airport is among the airports already exploring the [installation of protective screens](#) at check-in desks and there are images appearing online of prototypes being considered.

figure 2.2

Airport considerations to handle increased health screening



By all accounts, airports may need to assign additional space for the same number of occupants to be able to process all international passengers.

Depending on airport space and assets, some industry experts predict that between 70 and 100 different areas in the passenger journey are expected to either change or be introduced from scratch to restore confidence in flying after COVID-19.

There's always a risk that airports may have to maintain some level of health screening, disinfecting facilities or social distancing forever. This is the great unknown that airports currently face.

SECTION 2: MODIFICATIONS TO SERVICE

2.2 Modifications to operational processes

Operational efficiency has always been an airport priority. But now, COVID-19 opens the portal to a new dimension that requires the adaptation of airport strategies with greater emphasis on the concept of operations.

Concept of operations in a time of coronavirus

Today, more than ever, an airport's concept of operations (ConOps) is vital to help an airport gain a better understanding and overview of how it needs to operate in a coronavirus-constrained world and avoid inefficiencies caused by silo-effects. Aurecon believes that there are solutions to be found by integrating systems and infrastructure that already exist:

- ✈ Operationalise new concepts with airport stakeholders, particularly terminal and airside staff. Potentially separate segments of staff to prevent cross-contamination. For example, separate ground handling staff working on less secure flights from those working on safe zone routes.
- ✈ Strategies required for reorganising and prioritising infrastructure through Stages 2 and 3, and into an airport's 'new normal' (Stage 4)
- ✈ Gate planning to minimise impact to gates that are set up for passenger screening and security
- ✈ Passenger and baggage process separation, quarantine and health screening
- ✈ General decreased space utilisation to maintain requisite social distancing, which may induce specific needs around flow control and separation
- ✈ Detail facility impacts; manage reticulated air with separate air ventilation systems, dedicated staff routes away from passengers, potential separation of water and sanitation systems
- ✈ A window of opportunity to program long-term sustaining capital works (more in Section 3)
- ✈ Understand what passengers want and expect (user-centred responses) to humanise a highly controlled environment (more in Section 3)
- ✈ Continue to operate retail and commercial operations

Although the health screening and social distancing scenarios may mean that airports are initially operating at a fraction of their full capacity, restoring air connectivity is vital to restarting the global economy and reconnecting people.

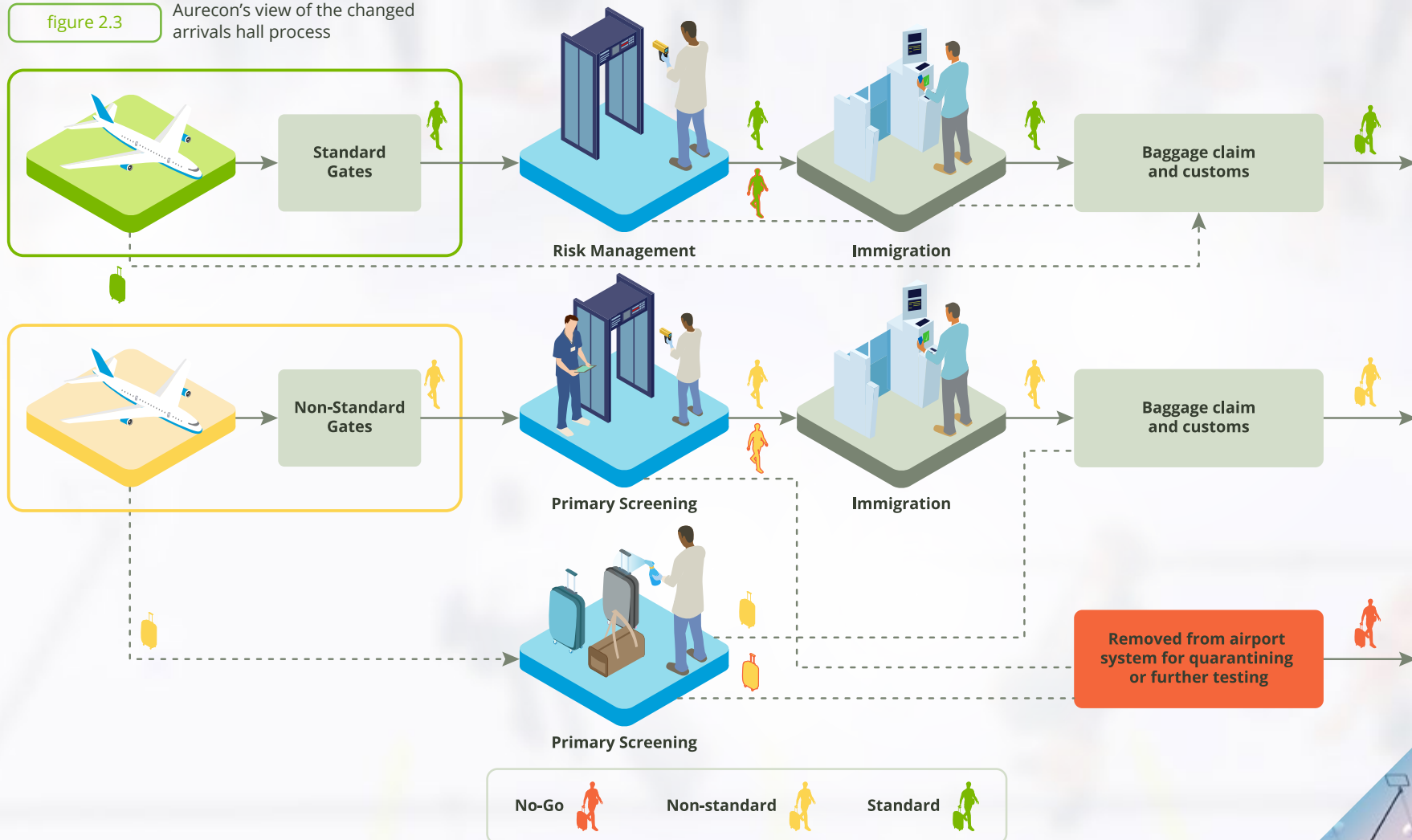
AURECON INTERNATIONAL ARRIVALS

Aurecon has consolidated its experience to explore a range of plausible scenarios for how passengers could be screened and processed in Stages 2, 3, and possibly 4.

We've termed it Aurecon International, and it allows us to visualise how an airport may look and function when designed to meet COVID-19 protocols in the short and potentially longer term.

figure 2.3

Aurecon's view of the changed arrivals hall process



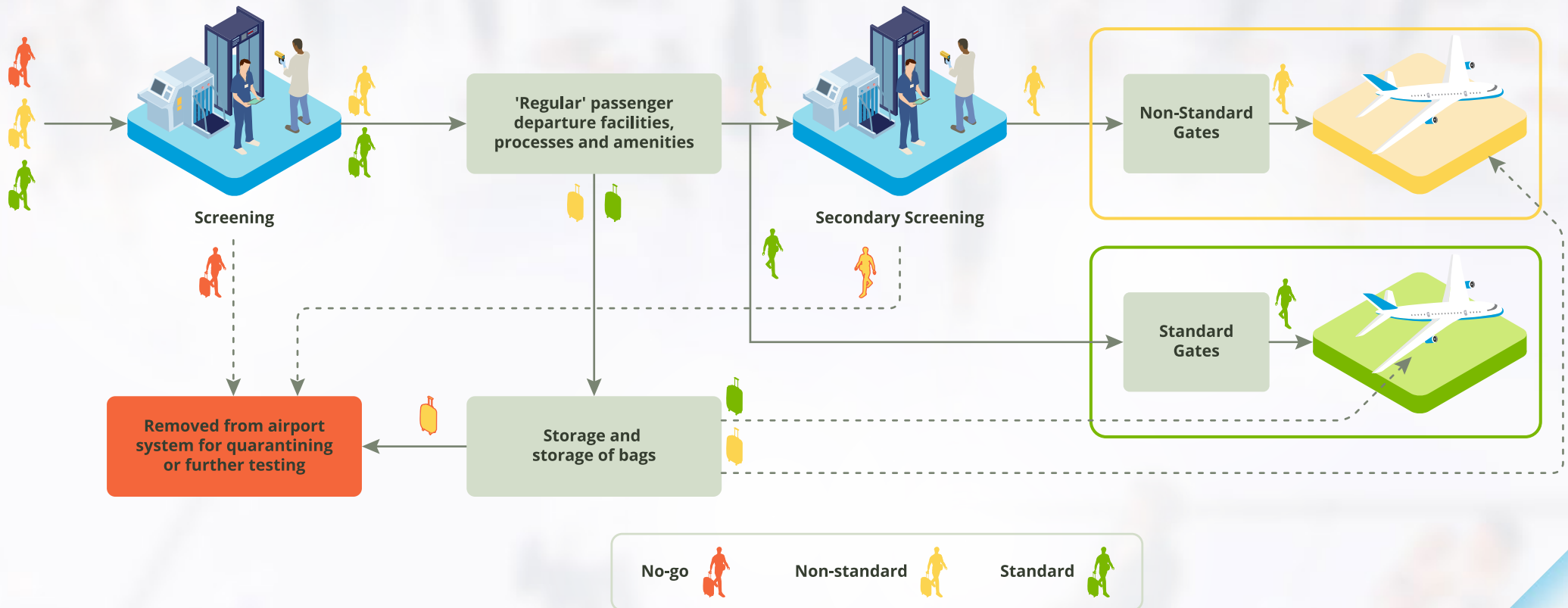
AURECON INTERNATIONAL DEPARTURES



Aurecon International considers which areas in the departures hall might need to be reorganised and changed to accommodate new regulations for health screening, border control and social distancing.

figure 2.4

Aurecon's view of the changed departures hall process





SECTION 3: CONSIDERATIONS FOR RECOVERY

The COVID-19 pandemic has had a profound and deeply saddening impact around the world. It has also presented opportunities to explore radical changes to behaviours and habits, some of which may have long-term positive effects.

Wider considerations around the future of international travel provides for deliberate decisions to ensure it remains fit for purpose. Proactive planning and decision making is required to make airport operations more robust and efficient, and improve passenger comfort.

3.1 Sustaining capital planning

Airports have a unique chance to consider their sustaining capital strategies as they transition through COVID-19. The big question is which assets can be maintained, updated or brought online while areas of the airport are redundant, to make them ready for efficient reactivation in the future?

Most airports are in the process of reviewing their capital works programme. An important factor moving forward is planning which critical and opportunistic projects to proceed with, and which less critical projects to defer.

A question for airport owners to ask themselves is “how do we make the most of the opportunity we’re in to implement asset sustaining works that we might not otherwise have been able to do?”

“The most useful assets in the future will be resilient and able to adapt to changing demands in travel and user behaviour, but still align with an airport’s strategic objectives. Just imagine...having the right data at your fingertips to make informed and proactive decisions”

Matt Aberline, Principal, Asset Management, Aurecon

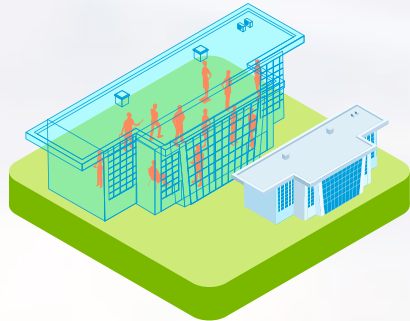


SECTION 3: CONSIDERATIONS FOR RECOVERY



3.2 Contactless processes and digitisation

Most airports and airlines were already planning digital transformation projects before the pandemic hit. What we believe we'll see now is a fast-tracking of digital and contactless approaches and technologies that reimagine and reshape the passenger travel experience. We do acknowledge though, that the long-term cost benefit of spending money on these technologies still needs to stack up before investment is made.



1. Digital modelling

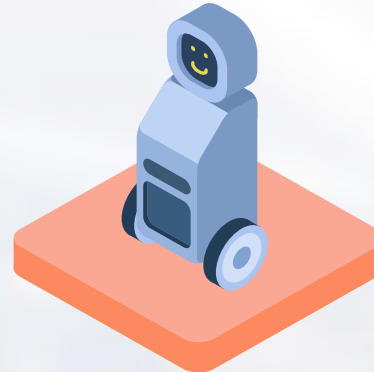
Many airports use dynamic simulation modelling to simulate passenger flows through the terminal in order to predict the potential impact of peak hourly flows on the processing facilities. This approach could help to inform the check-in and security processing rates during Stages 3 and 4 to determine if an airport has enough space to handle passenger numbers.

Digital twin

Airport operators should now consider the creation of a Digital Twin of terminal buildings. This is a responsive system that connects physical infrastructure to a digital environment, and provides enormous benefit to undertake real-time scenario assessments in a replica world, devoid of risk, while being dimensionally accurate.

Digital scenario planning helps to better understand operational constraints, and passenger movements and experiences.

It allows airport owners to save money through extending the life of assets by using predictive and preventative maintenance assessments.



2. Automation technology

Autonomous cleaning robots, which can already be found in Changi, Hong Kong and Pittsburgh airports, are likely to have their day.

Proximity sensors installed throughout an airport and connected to an airline's phone app could board passengers without interacting with the on-ground crew.

Some industry experts have started talking about health passports for passengers to ensure they're virus-free before they travel. A passenger's phone could hold pre-recorded health details that enable them to check-in and pass through border control e-gates without additional screening. No airport or airline alone could implement this – it needs the drive of government and health authorities.

Airports face the challenge of determining which health screening and sanitation requirements are temporary and which are likely to be the 'new normal'. Budgets to implement automation measures are also a consideration. For example, some airports might still ask passengers to touch a check-in screen and employ staff to clean the screen after every use, but invest in biometric tracking of passenger movements because it gives them greater long-term business benefits.

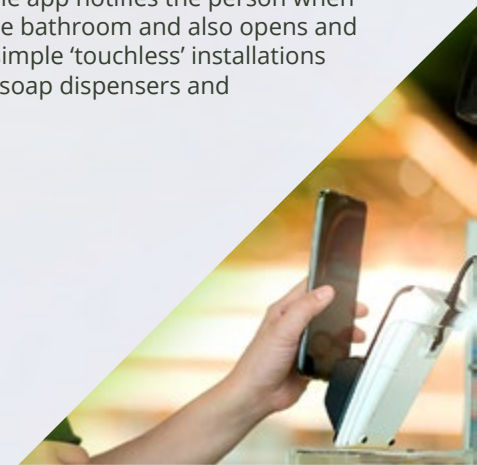


3. Contactless processing

Check-in processes are possible so that passengers have little or no contact with staff; however, their use is not widespread. Some airports may now consider an all-biometric check-in system. Passengers could check in at a kiosk using their face as identification and obtain a bag tag.

Another non-contact processing aspect may be that all luggage enters a fogging tunnel to be disinfected.

Airports might also consider 'touchless' bathrooms. There are different levels to this, with a high-level example being that passengers use a smartphone app that allows them to locate public conveniences, visualise the busyness and enter a virtual queue. The app notifies the person when it's their turn to enter the bathroom and also opens and locks stall doors. More simple 'touchless' installations include automatic taps, soap dispensers and flushing.



SECTION 3: CONSIDERATIONS FOR RECOVERY

3.3 Passenger behaviour

We have an unprecedented opportunity to improve the passenger journey

COVID-19 will have changed many people's attitudes and behaviours towards international travel.

IATA conducted a [passenger survey](#) of confidence which shows that only 14 per cent of passengers said they would fly right away, while 60 per cent said they would fly again within one to two months of containment of COVID-19, and 40 per cent said that they would wait six months or more before they take to the skies again.

Understanding how, where, when and why people will want to fly will be fundamental as we transition through Stages 2 and 3, and into the 'new normal' (Stage 4).

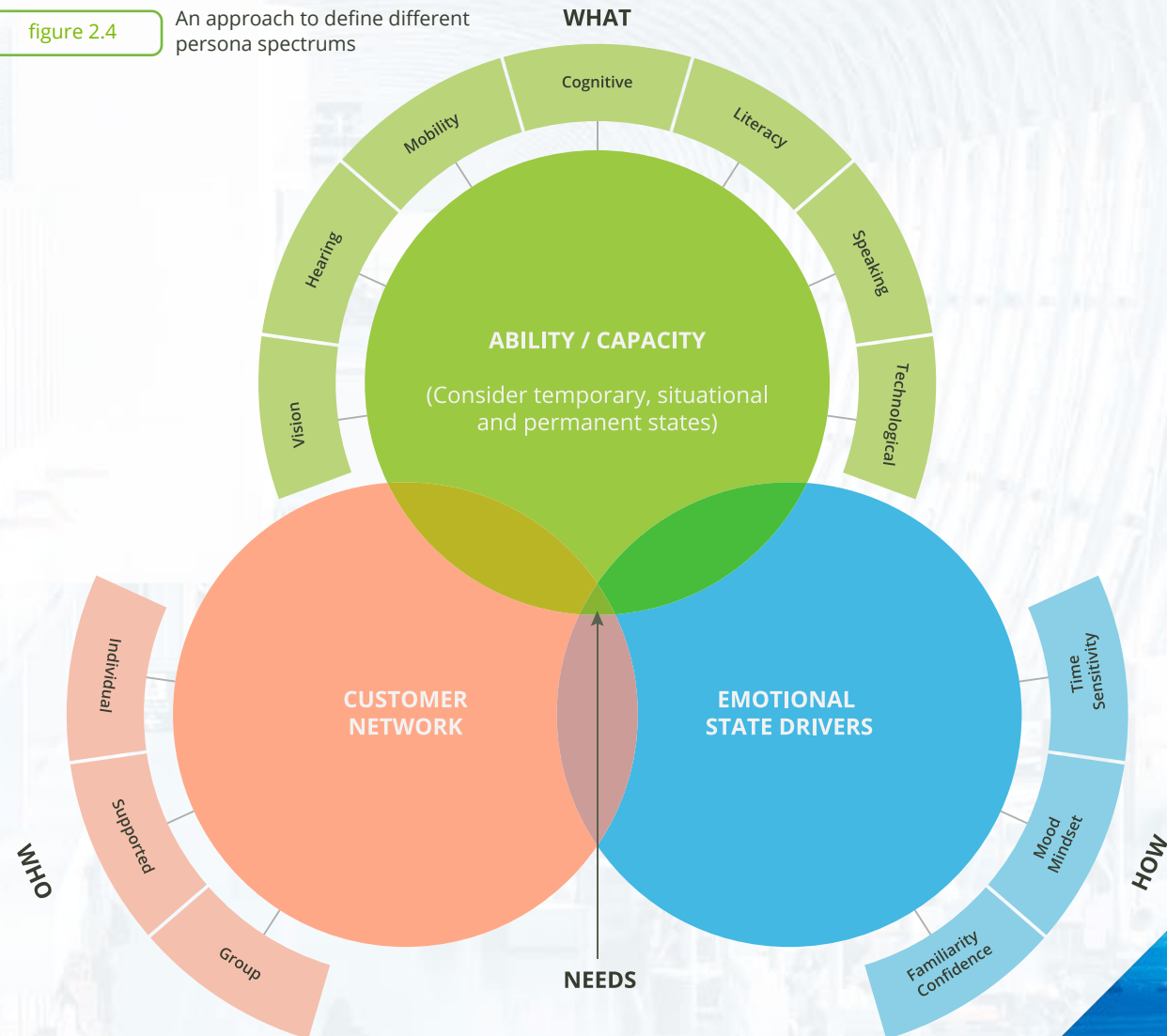
All of us will have to learn how to travel again in the post COVID-19 world, becoming acquainted with new check-in, security and customs processes, and accepting the health and screening requirements. Just as travel was after 9/11, COVID-19 will bring disruption for people along with new security processes. It will take time for people to adjust.

Airports and airlines co-own the passenger journey and therefore, a true end-to-end treatment will go a long way towards removing retained fear and apprehension in a passenger's mind. Collaboration to make the end-to-end passenger journey non-disruptive is one way to bring international passengers back to travel sooner rather than later.

There is an opportunity to bring a completely new experience to the passenger and become an airport that reshapes its post COVID-19 business around the user in the first instance. To do this, airport owners can't assume the behaviour of passengers or guess their responses to physical and operational changes at the airport. A detailed data analysis from user-centred engagement is the preferred approach to develop meaningful insights around passenger behaviour and preferences. If there isn't time to progress through a detailed passenger survey process, airport owners could use previously recorded passenger behaviour data to identify customer values and prioritise their travel and movement preferences.

A spectrum of passenger personas would sort out the types of typical airport passengers and how their motivation could change under 'new normal' (Stage 4). The persona spectrum mapping approach below allows airport owners to recognise the diversity in human abilities and capacities, layering this with the level of familiarity that users have with an airport, how much time they have, what their mood or mindset is, and who they travel with.

figure 2.4 An approach to define different persona spectrums



SECTION 3: CONSIDERATIONS FOR RECOVERY

3.4 Wayfinding

Wayfinding is important because even regular fliers may be confronted by a very different airport layout the next time they fly internationally.

It should also be noted that communicating information to the public is just as important as implementing new guidelines or instructions.

Airports need to provide passengers with:

- ✈ Social distancing voice messages and clear signage.
- ✈ Reconfigured border control queues.
- ✈ Floor stickers when queuing.
- ✈ Social distancing signs displayed in car parks and outside the terminal building.
- ✈ Signage with visual and/or audio reminders for social distancing in bathrooms.
- ✈ Extra staff to inform passengers about social distancing.
- ✈ Extra signage to instruct passengers on how to use automated facilities.

Passengers will need increased information about airport cleaning measures throughout concourses and lounges. Things as simple as having plenty of hand sanitising stations and no public drinking stations are visible elements that airports can incorporate to restore passenger confidence.

Aurecon International shows reconfigured queuing layouts to reduce passenger contact. Clear signage and floor stickers should be used in all areas to encourage social distancing and provide passengers with directions.





CONCLUSION

The COVID-19 pandemic has revealed how interconnected the world is and how susceptible we are to disruption on a global scale. Safety and public health should be a top priority at airports as international travel is reignited. Restoring air connectivity is vital to restarting the global economy and reconnecting people.

Airports and airlines have a joint mission to restore international customer confidence – encouraging them back to travel, and making them feel safe and comfortable.

Insights in our white paper provide a layered approach of ideas for airports and airlines to safeguard public health, while offering a practical approach for a gradual restarting of operations. This is key to restoring passenger confidence so that the benefits of safely re-starting aviation can be realised.

It is hard to predict the exact long-term impacts caused by this global pandemic on the future of airport buildings, operations and processes. However, we can assume that health screening and social distancing in some form will be required in the transition out of COVID-19, and into the stage of ‘new normal’ (Stage 4).

Transmission of infection control may become a much bigger part of designing the built form in the aviation setting in the future. There could be new incentives for automation technologies and contactless operations to avoid future global health disruptions. It is likely that we will see new ICAO regulations and IATA guidelines that address global pandemics, covering traffic forecasting, travel type and change to capacity calculations. All of which will mean that airports must rethink people flow, contactless operations and baggage handling processes.

In this white paper, Aurecon has outlined approaches and operational considerations as airports progress through and beyond the COVID-19 pandemic, and see a relaxing of screening and social distancing requirements. Although this paper is presented in the Australian context, the insights are applicable to international airports in any country.

Deliberate, yet urgent decision making will lock in positive changes, which will take collaboration between airports, airlines, industry and governments to reignite international travel and reopen Australian airports. We hope it will be a long-term trend that benefits the whole industry.

Aviation has been challenged by turbulent conditions many times before. With the sector’s exceptional capacity to recover and adapt, learning from the COVID-19 crisis will help prepare for future global disruptions and help aviation emerge from the pandemic stronger and more resilient.



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The Aurecon International platform has been used to develop a potential future airport environment. This allows us to visualise how an airport might look and function when designed to meet COVID-19 protocols.



DISCLAIMER

Aurecon's white paper provides a series of insights and ideas on how to transition through and out of COVID-19 for the Australian aviation sector. However, it is not intended to provide any specific solution or guidance as this will depend on individual airport specifics around space availability, layout of existing terminals and operational strategies.

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