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Airport Operations:

*Terminal Duty Manager Reaction Plan to B777-
236ER short landing in Heathrow Airport as in
17th January 2008*

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1 INTRODUCTION

This paper is based in the scenario occurred as in 17th January 2008, London Heathrow Airport, when a B777-236ER short landed and crashed right upon the threshold of RWY027L. An efficient and though reaction by the TDM (and all the T2 staff) to the situation is required, in order to minimize the consequences of the event. Due to capacity constraint, a 20% of the remaining scheduled flights of the day departing from T2 must be cancelled, and this is most likely to cause confusion, passenger accumulation in ground levels landside and forecourts and a lot of tension between the costumers and the airport staff. Keeping passengers well informed on the situation of their flights and re-routing options will be key to reducing overall stress levels. Communicating with airlines in order to obtain information on delayed and/or cancelled flights is a key aspect to consider to planning accordingly and containing the extent of the crisis. Therefore, the initial cancellation plan is the base on which the action plan of the TDM ¹ will be executed. The final aim is to deliver good service quality, considering the nature of the events by achieving a maximum of passengers to final destination as possible by the end of the day.

¹ Terminal Duty Manager

2 CANCELLATION PLAN

The criteria under which the cancellation plan has been designed responds to the following set of criteria:

- To ensure a safe operation throughout the terminal for the remaining of the crisis.
- To minimize the number of affected passengers and if possible to allow airlines to re-route them in non-cancelled flights (
- To be able to deliver the maximum customer service level by efficiently communicating to the passengers the re-routing options they hold to arrive at their final destinations.

In accordance to the previous considerations, the following table summarizes the cancelled flights for the remaining of the day:

| GMT | Carrier | Dest. |
|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|
| 12:30 | RO | OTP | 15:25 | IB | MAD | 17:15 | LH | MUC | 19:20 | LH | CGN |
| 12:55 | OS | VIE | 15:25 | LH | MUC | 17:30 | LH | DUS | 19:25 | LH | DUS |
| 13:05 | AF | CDG | 16:00 | AF | CDG | 17:35 | IB | MAD | 19:30 | OS | VIE |
| 13:15 | LH | MUC | 16:05 | OS | VIE | 17:40 | IB | BCN | 19:35 | LH | HAM |
| 13:30 | JU | BEG | 16:25 | AZ | MXP | 17:40 | XM | LIN | 19:45 | TP | LIS |
| 13:30 | SU | SVO | 16:30 | IB | BCN | 17:45 | LH | FRA | 19:50 | LX | ZRH |
| 13:35 | TP | LIS | 16:35 | OA | ATH | 17:50 | LH | STR | 20:00 | LH | FRA |
| 13:40 | LG | LUX | 16:35 | TP | FNC | 18:00 | AF | CDG | 20:05 | AZ | FCO |
| 13:50 | LX | ZRH | 16:40 | AZ | FCO | 18:20 | TP | LIS | 20:05 | AZ | LIN |
| 13:55 | LH | FRA | 16:45 | IB | MAD | 18:35 | LX | ZRH | 20:10 | LH | MUC |
| 14:00 | AF | CDG | 17:00 | AF | CDG | 18:50 | AZ | LIN | 20:15 | AF | CDG |
| 14:40 | OK | PRG | 17:05 | LH | FRA | 18:50 | IB | MAD | 21:00 | -- | -- |
| 14:45 | LH | STR | 17:10 | AT | CMN | 19:05 | LH | FRA | 21:05 | MU | PVG |
| 15:00 | LH | HAM | 17:10 | LX | ZRH | 19:15 | AF | CDG | 21:15 | OK | PRG |
| 15:15 | LH | CGN | 17:15 | IB | BIO | 19:15 | IB | BCN | 22:00 | B3 | LOS |
| | | | | | | | | | 22:15 | OA | ATH |
| | | | | | | | | | 22:30 | SU | SVO |

 Cancelled Flight
 Flights in Taxi or departing from stand
 Flights with capacity for re-routing passengers

Figure 1 - Cancellation Plan of 20% of the remaining scheduled departed flights for 17th January 2013 after BAs B777-236ER short-land crash at runway 027L in Heathrow Airport.

In addition, other considerations and hypothesis have been taken into account:

- Cancellations of medium/long haul flights to be avoided for being more sensitive to a lack of frequency and re-routing options.
- To avoid cancellations of single-flight destinations.
- To avoid cancellations of flights with declared load factors of >90%.
- As a hypothesis, non-declared load factor flights have been considered to be at a value of 80%. This LF may vary when the airlines team speaks with the airlines, but at the moment the conservative assumption must be made.

The following figures show the distribution by carrier and destination of the cancellation plan:

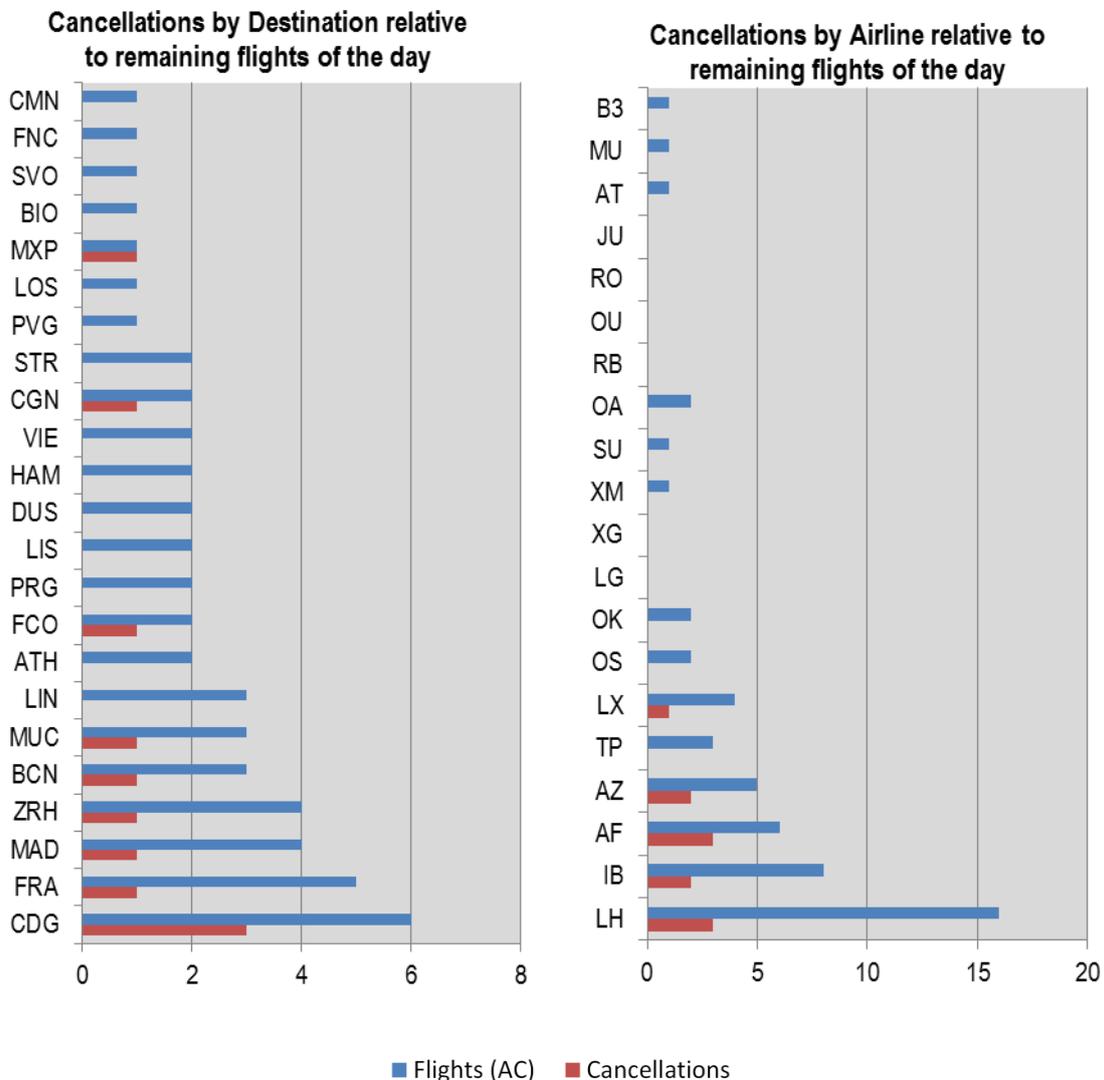


Figure 2 and Figure 3 – Cancellations distribution by destination (Left) and carrier (Right) relative to the remaining scheduled flights (After Crash) of the day from T2 at Heathrow on 17th January 2008. Source: Author.

As it can be observed from Figures 2 and 3 and the above Figure1, cancellations have been distributed accordingly to the criteria of ensuring a safe and optimal response of the terminal to the situation by allowing a high degree of re-routing options. Also, the cancellations are coherent with the amount of flight remaining for each carrier. The only case in which all flights to one destination have been cancelled is MXP, but passengers can be re-routed via LIN with the same carrier. This re-routing consideration has also been considered in DUS and CGN, both destination operated by LH. Moreover, CDG presents the highest amount of cancellations. This is justified by the fact that it is the most frequently scheduled route and it is also the easiest destination to cover by alternative means other than air. The following figure shows those routes affected by the cancellation plan.

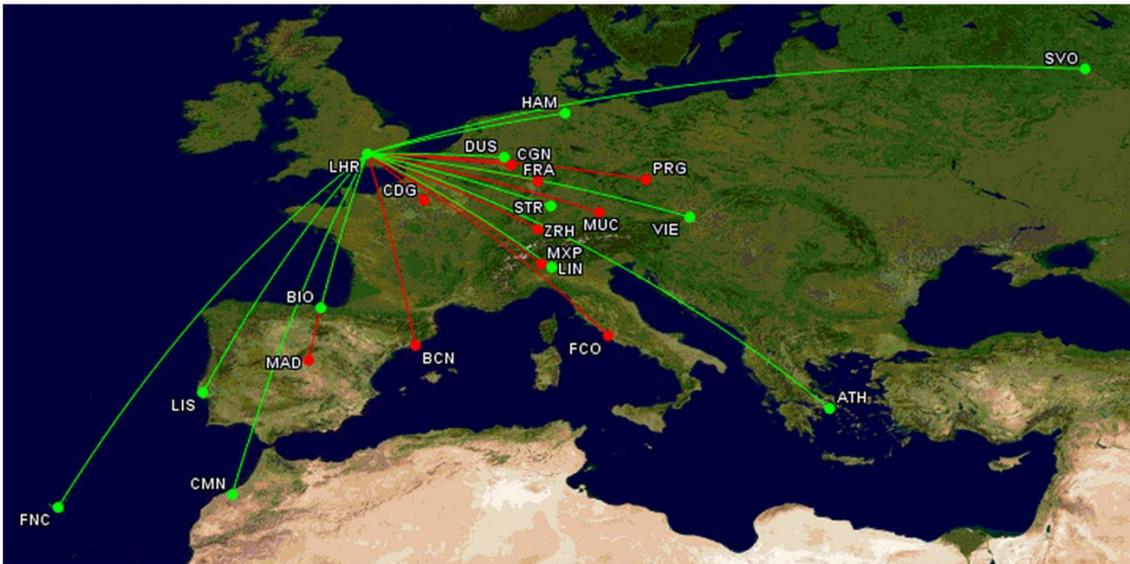


Figure 4 – Plotted routes of scheduled flights departing after 1340 GMT on 17th January 2008 from T2 Heathrow, excluding LOS and PVG. In green, routes unaffected by cancellations, in red, routes affected by cancellations.

Source: Author using <http://www.gcmap.com>

2.1 CONSEQUENCES OF THE CANCELLATION PLAN

Considering the presented set of cancellations, it is clear that the critical time-frame will in the mid-afternoon between 1215UTC to 1700UTC approximately. This estimation has been made considering that most of the passengers for short-haul routes will arrive between two and one hour prior to their flights, and it is presumable to assume that most of the passengers will get to the airport as soon as possible to check the status of their flight since the media coverage on

the event is ensured to be extensive. A graphic representation of the volume of passengers arriving to the Terminal throughout the expected busy cancellation timespan is shown in Figure5 below. Figure6 shows an overview of the expected scenario of accumulated passengers in the terminal with cancelled flights and the capacity of re-routing for these passengers. In the end, it can be expected that if instructions and communication are executed precisely, most of the passengers will meet their final destination. This idea defines the strategy of the action plan.

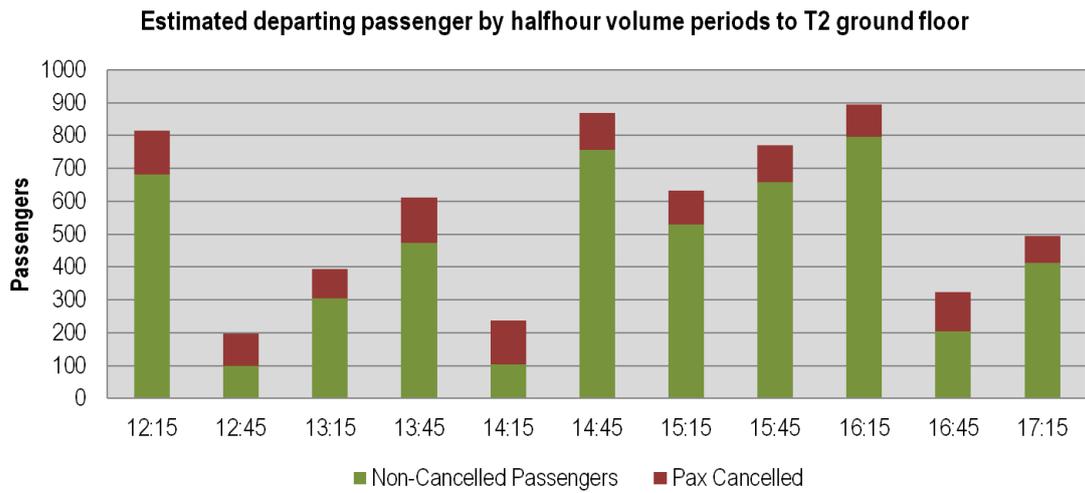


Figure 5 – Temporal progression of estimated volumes of passenger arriving to the Terminal showing non-cancelled flight (green) and cancelled flight (red) volumes by half-hour periods. Source: Author.

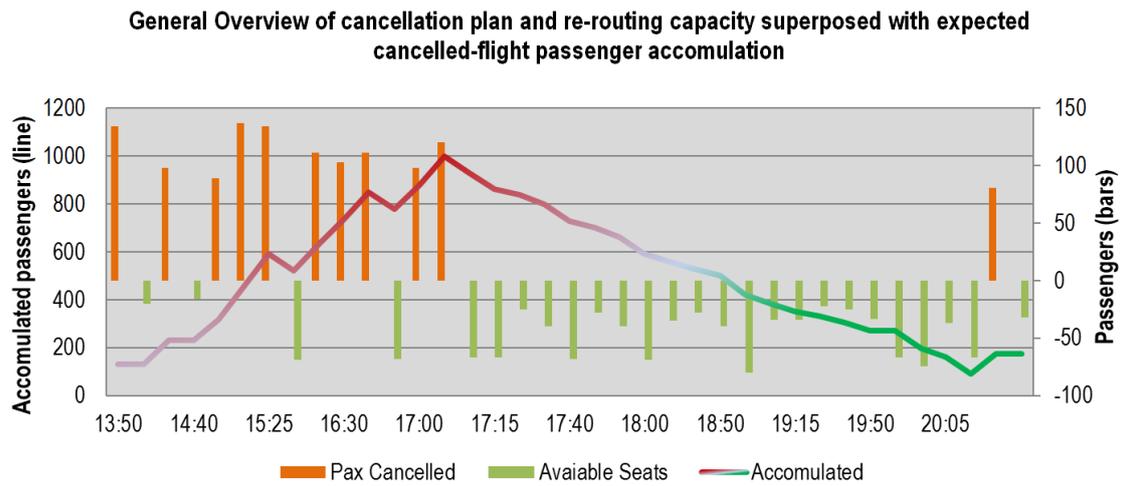


Figure 6 – Temporal progression of estimated levels of accumulated passengers and the cancelled flights (orange) and the estimated available seats for re-routing purposes (green). Source: Author.

3 INCIDENT RESPONSE

Once the cancellation plan has been set, the action plan can be developed. The action plan is intended to be consistently coherent with the assumption that the terminal will get crowded both before and after the security check. For this, the action plan considers all the immediate and mid-term actions to be taken in order to control the flows of passengers. Since the peak of accumulated passengers is expected around 1700UTC (Figure6), the reaction must be efficient but be able to adapt in case new events unfold (i.e. more cancellations, longer than expected delays). A meeting has been set at 1530UTC with all the Duty Managers to evaluate the situation and take further actions or modifications to the terminal strategy. Throughout the action plan, several stakeholders must be approached in order to efficiently coordinate the response of the terminal as a one. The following sections describe the key points to consider when dealing with them.

3.1 ACTION PLAN and STAKEHOLDER IMPLICATIONS

| Aimed goals of the action plan: | | | | |
|--|---|--|--|----------------------------|
| <ul style="list-style-type: none"> To arrange the possible means by which the highest amount of passengers are able to meet their final destination, thus limiting the consequences of the crash to the day. To permit non-cancelled flight passengers to undertake all the departure steps without major constraints by the cancelled flight passengers. To provide the maximum level of service quality and safety by responding and managing the passengers through the terminal in an informed way. To reduce the impact of the passenger accumulation in the terminal with especial emphasis on cleaning services, PRM assistance, and flawless communication with stakeholders. To provide the adequate spaces for passengers waiting for their flights. To reduce the overall stress levels of the passengers related to delays, the crash itself, or other factors of the day. | | | | |
| Time UTC | Action to be taken | Delegated responsibility and Manpower | Intended outcome of the action | Related Stakeholder |
| 1300-1300 | Submission of T2 cancellation plan. | TDM | To have an estimate of the passenger volumes. | ASM ² |
| 1305-1305 | Emit a press note highlighting the cancelled flights in T2 and remarking the importance for affected passengers to arrive to the terminal with time to check for re-routing or contact with airline if they do not wish to fly. | TDM | To make people aware of the situation and be able to anticipate as much as possible the effects of the cancellations for the passengers. | |

² Airline Station Management

| | | | | |
|-----------|--|-------------------|--|--------------------------|
| 1310-1330 | Locate sensible areas of the terminal from which the crash site can be seen and assess on areas to cover. Change TV to non-reporting channels. | CSDM ³ | To avoid local constraints and potential causes for increased stress to the passengers. | TCS ⁴ |
| 1310-1330 | Contact with cancelled flight's Airlines Station Managers. | TDM | To justify the cancellation plan decision and obtain specific LF information in order to re-route passengers. | ASM |
| 1330-1900 | Re-adjust RMS output according to expected volumes of accumulated passengers. | SDM ⁵ | Anticipate the expected queues that will form in the security check area and increase the overall security presence within the terminal. | TS ⁶ |
| 1330-1400 | Contact 1350UTC and 1400UTC flights carriers, LX and AF, regarding the passenger re-allocation and information. | TDM-CSDM | Efficient communication by the flight gate to re-allocate the passengers as soon as possible to 1600UTC and 1710UTC flights. | ASM |
| 1335-1400 | Ensure that baggage of 1350UTC and 1400UTC flyers is successfully re-allocated and/or sent to baggage claim zone. | BDM ⁷ | Avoid a likely-to-be high amount of passengers without bags and a lot of bags without passengers situation, created by the confusion of having most of the passengers airside when the cancellation is done. | TCS |
| 1345-1345 | Check if the rotatory entrance door which is out of service can be fixed or opened. | EDM ⁸ | Allow better passenger flows in and out the T2. | TE ⁹ |
| 1350-2000 | Call for priority clearance of the retail area. | TDM-CSDM | Avoid constraint of passenger flows out of the security check to achieve a decrease in their stress. This will help increasing retail although the circumstances of the day. | RO-SC ¹⁰ /TCS |

³ Customers Service Duty Manager

⁴ Terminal Customer Service

⁵ Security Duty Manager

⁶ Terminal Security

⁷ Baggage Duty Manager

⁸ Engineering Duty Manager

⁹ Terminal Engineering

¹⁰ Retail Operation – Shops and Catering

| | | | | |
|-----------|--|------------------------|---|------------------|
| 1355-2000 | Set information points (staff) allocating people in seating rooms, gates, etc.[7] | CSDM–SDM | Avoid congested areas in the main passenger flow areas of the terminal. | TCS |
| 1355-2000 | Set up an auxiliary information desk in the entrance of T2 informing on cancellations, passenger rights, and alternatives for each destination.[6][2] | CSDM–FDO ¹¹ | Give a first ensured impression to passengers who will be arriving with or without knowledge of the unfolded events. | LO ¹² |
| 1400-2000 | Set “zig-zag” lane separator around airlines information desks and ticket sale points.[3] | CSDM–FDO | To provide immediate ordered assistance by the airlines to their customers and re-allocate as much fliers as possible. | LO/TCS |
| 1405-2000 | Set an information point for arriving passengers [5] before they leave the baggage claim area.[1] | CSDM–FDO | Avoid as much mixing between departing and arriving flows of passengers. | LO/TCS |
| 1410-2000 | Call upon PRM services to anticipate arrivals of disabled passengers and make them aware of the cancellation situation and what options their passengers hold. | CSDM | Ensure that disabled passengers can get through the expected crowd of cancelled passengers without major problems. (EU 1107/2006, art 7.1). | TCS |
| 1415-1415 | Submit a request for increased police presence 1600 and 1800 UTC. | CSDM | Increase security presence during the expected peak hours of accumulated passengers. | TCS |
| 1420-2000 | Place an additional boarding pass check before the security check [4]. | SDM | It is possible that the confusion may drive passengers to attempt to go airside without having checked their flight status. This way the narrow area of the security check will not get obstructed. | TCS |

¹¹ Floating Duty Officer

¹² Landside Operations

| | | | | |
|-----------|--|-----------------------|---|---------|
| 1430-1500 | Check availability and/or possible command for blankets. | CSDM-FDO | Expecting long passenger stays in the terminal due to delays, during the evening and night it is possible that temperature in the terminal will drop. | ASM/TCS |
| 1530-1550 | Terminal action plan meeting | TDM-SDM/BDM/ED M/CSDM | Evaluate terminal response to crisis and take the appropriate decisions if non-expected issues arise. | |
| 1550-1510 | Contact Airline representatives on possible further cancellations due to crew miss position or other problems. | TDM | Re-estimate the expectation of accumulated passengers and/or take decisions regarding possible delays during the next day | ASM |
| 1700 | Communicate all strategic decisions made to the office work TDM and to the next day on duty Terminal Manager | TDM | Ensure a continuous line of communication of the strategy to increase the efficiency of the overall response. | |

Figure 7 – Short/Midterm Action Plan to control and organize the flows of passengers with both cancelled and non-cancelled flights. The referenced points can be checked in Figures 8 through. Source: Author.

3.2 TERMINAL 2 LAYOUT AND ACTION PLAN VISUAL AIDS

T2 Ground Floor Layout

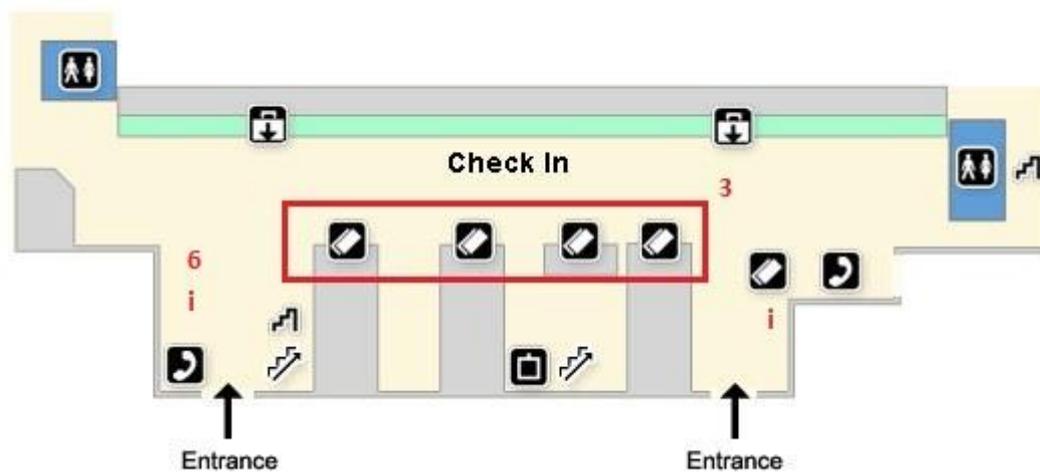


Figure 8 - Ground Floor Level Layout for old Terminal 2 at Heathrow Airport. Source: <http://www.heathrow-airport-guide.co.uk/terminal-2-map.html>. Modified by Author.

T2 Departures First Floor Layout

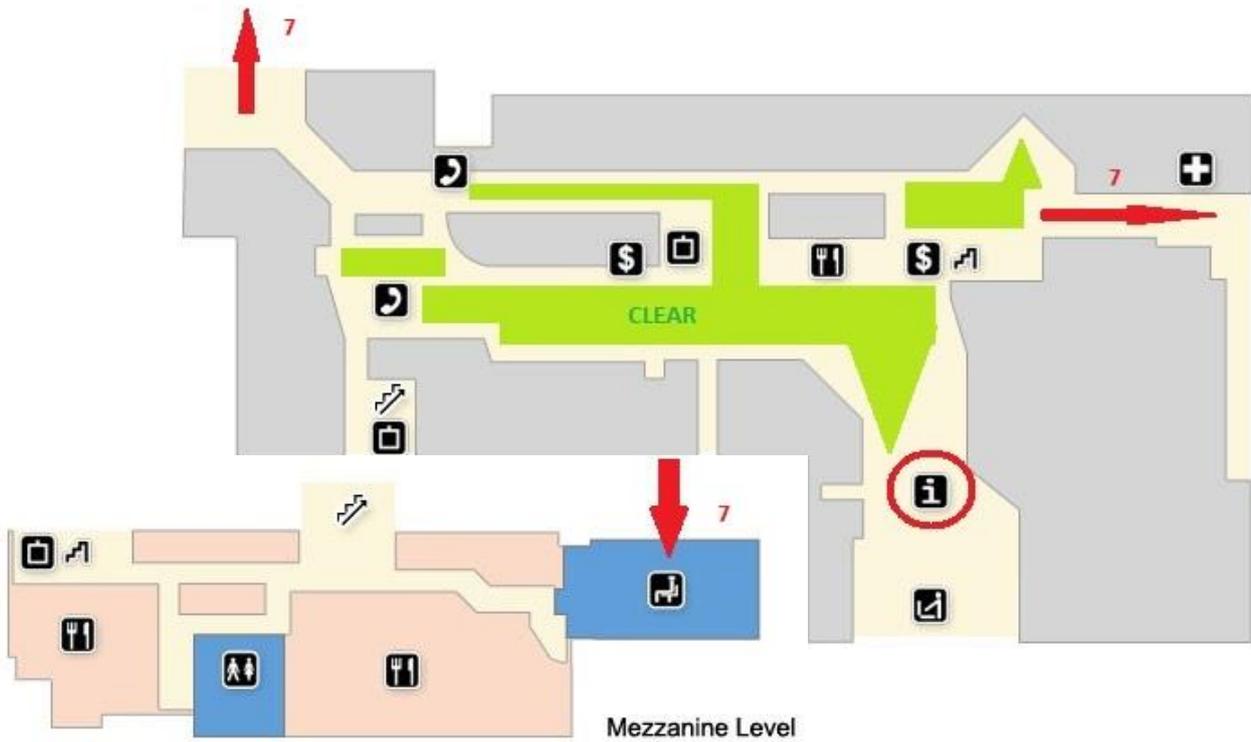


Figure 9 – Arrival first Level Layout for old Terminal 2 at Heathrow Airport. Source: <http://www.heathrow-airport-guide.co.uk/terminal-2-map.html>.

T2 Arrival First Floor Layout

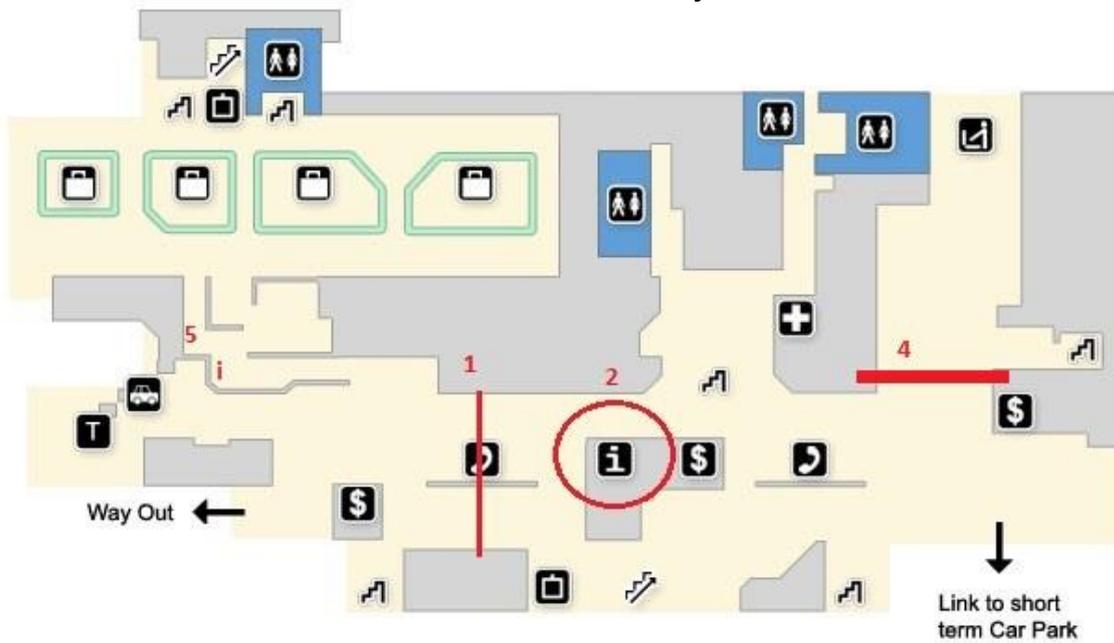


Figure 10 – Arrival first Level Layout for old Terminal 2 at Heathrow Airport. Source: <http://www.heathrow-airport-guide.co.uk/terminal-2-map.html>. Modified by Author.

4 STAKEHOLDER COMMUNICATION PLAN

4.1 AIRLINE STATION MANAGER

Communicating efficiently with airlines is the upmost important part of the communication plan. First of all a justification of the terminal strategy and cancellation plan must be given, especially to those carriers which suffer the most cancellations. The terminal strategy and the airline interests must grow in the same way, explaining the cancelled-flight passenger procedure so airlines can plan accordingly. Once this issue is solve, it will become very important to try to obtain the maximum information on re-routing possibilities, since this will give an idea on possible changes of the action plan. The terminal strategy is likely to please most of the airlines, but feedback on the decisions made must be asked for the sake of the commercial relationship. Moreover, it shall be asked from the airlines to give a prevision of possible flight cancellations due to crew miss position, or other issues that may arise due to ATC constraint. These possible third-parties considerations may affect the original cancellation plan and once the information of the airlines is detailed, decisions on left-over passenger situations can be handled. A keen approach to the airlines overall shall be made since a lot of crews will get miss placed and it is important for both parties to succeed together with a common plan.

4.2 TERMINAL SECURITY

The terminal security is a very important stakeholder to take into account. Although Police presence support has been asked for, security is still in charge for the security check from landside to airside, which is likely to be a congested zone due to the overlapping of passengers attempting to pass and the narrowness of the check zone. All these considerations shall be transmitted to TS and collaboration with the information staff from TCS shall also be asked in order to minimise as much as possible the stress build-up during the lane. Since the RMS has been updated to increase the staff levels, these extra units shall be asked to have their presence in the forecourt, in order to help the flows of passengers to get into the terminal and follow the customer service staff instructions. Briefing on the terminal strategy shall be communicated and advice asked on safety and security issues that may not be contemplated. Additionally,

constant communication will be asked in order to identify possible deficiencies during the afternoon and evening and a request for extra units during the night shall be made as it is expectable to have a number of passengers waiting for their flights to departure. In no moment there must be the congestion and the passenger pressure lead to a decrease in the quality of safety or security.

4.3 LANDSIDE OPERATIONS

Coordination of an efficient forecourt is one of the main priorities to the terminal strategy. An efficient management of arriving and departing passengers shall be asked to that the forecourt doesn't get crowded and passengers can proceed to check-in, airline desks or security check with the minimum obstruction possible. It is a strong possibility that queues in the check-in area and Airline ticket desks get very busy, so it shall be asked that lanes are made from the ground floor and into the forecourt (Figure8). Any staff members of the landside operations shall be asked to inform to the arriving passengers that they are to check their flight status [6i] and proceed to the information desks as planned.

4.4 TERMINAL CUSTOMER SERVICE

Terminal customer service is one of the key parts of the action plan to meet the set goals for the day. Especial emphasis must be made from the first moment that patience towards frustrated passengers is essential to get them to follow the instructions through the terminal. Full informed communication of the strategy must be made in order to obtain feedback on the action plan and to set a coordinated response to the upcoming events (distinction between non-cancelled flight passengers and cancelled flight passengers at ground floor entrance [6i], efficiently tell passengers what to do in each case, set lines to Airline desks to accelerate re-routings or claims, avoiding arrival and departure passenger mixing, etc.). Moreover, cleaning services must be asked to be reinforced since it is probable that the terminal will get more waste than in a usual operation day, so it would be recommended to increase the cleaning services during the non-operating hours of the night. Constant communication of the congestion status of the terminal shall be asked so the appropriate response can be given. Extraordinary measures such as an advisory line [4] before the security check of the boarding passes with well-informed-on-

cancellation staff shall also be asked to reduce as much as possible the congestion during the security check. Overall, TCS is the base for communication, and it must be highlighted from the first moment that extra care and situational awareness is asked from all staff informing of the situation to the passengers.

4.5 RETAIL OPERATIONS – SHOPS & CATERING

Dealing with ancillary interests during the crisis is important in order to achieve an image of normality within the terminal, especially once passengers have passed the security check. Figure9 shows the areas designated to be cleared, and this is for two reasons. The first is to get passengers stress levels to come down after passing security check. This will have a positive effect on the terminal operations and on the revenues. Considering this, shop retailers (which are right after the security check) shall be asked to continue with activity in a normal way and to have an extra point of kindness towards costumers, who will be distressed by unfolding events. Additionally, catering shall be warned of the expected accumulation of passengers that will need to be catered (whether by the airline in delays extent of by themselves), so that they can attempt to increase their staffing levels for the afternoon.

4.6 TERMINAL ENGINEERING

The first thing to be asked is to attempt to fix the main door entrance which is broke. Also a special alert status shall be asked in order to be on call if any automatic escalator, elevator, or other facility were to go out of service, since a poor response to this situation would surely increase the anxiety of the passengers. The same applies to the management system of the building. Any small operational issue can easily become a major problem.

5 CONCLUSIONS

An efficient communication with all the stakeholders is as important as the communication with the passengers when dealing with unexpected circumstances such as the presented in this paper. Aiming to get as much passengers to their final destination goes in the interest of the terminal, the airlines and the passengers, so communicating the intentions from the very beginning in an efficient way is the best way to achieve cooperation from all parties. The worst identified issue is the anxiety that the situation may produce to passengers, since the terminal will be over its capacity and the circumstances involving an air crash are very close. Succeeding in getting all stakeholders to work within the same terminal strategy is fundamental in order to restore normal operation as soon as possible.

REFERENCES

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