

Heathrow Hub

Arrivals Baggage Issues

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Context

The Heathrow Hub concept provides for the necessary runway and passenger terminal infrastructure development to support forecast growth to 20XX.

This scheme proposes a primary passenger terminal or landside/airside portal to the north and continued use of a second portal to the west (expanded current T5) and possibly to the east (expanded new T2).

From each portal departing passengers will proceed through check-in, bag drop and security processes before being transported to the terminal / pier of departure via high speed transit systems. Checked baggage would be security screened before being delivered to the relevant departing terminal/pier for temporary storage, sortation and make-up to flight as normal.

Passengers transferring through Heathrow would follow conventional connections processes between arriving and departing terminals and their baggage transferring and sorting through to the departures systems as normal. Transfer passengers would not need to route through the northern portal. Terminating arriving passengers would have the option of collecting baggage and clearing customs through either of the three portals.

The routing, transport and delivery of outbound and transfer baggage is envisaged to operate in existing processes and rules utilising known conventional baggage handling and screening technologies. Inbound baggage handling and sortation processes will require new technology and processes to support the multi-portal concept and this is the subject of this document.

Arriving Baggage

Currently, baggage from inbound flights are segregated into those transferring to another outbound flight and those completing their journey at Heathrow (terminating arrival bags). Processes exist to sort individual transfer bags to the correct departing terminal where they will be screened, stored and sorted along with originating baggage. Terminating arrivals bags are however, terminal specific whereby bags are reclaimed by the passenger at the terminal the aircraft arrived on. In this process, arrivals bags are simply transported to the local reclaim area in bulk and no sortation beyond sending a group of bags to a given reclaim device is needed. In particular, no bag by bag sortation is necessary.

In the Heathrow Hub concept, the arriving aircraft may be allocated a stand / gate that may or may not be associated with a given terminal or landside/airside portal and therefore reclaim area. Whilst association rules could apply with certain carriers and flights predominately being allocated gates local to a given portal, additional stand capacity can be achieved by utilising any available gate across the airport campus. In a future where each portal becomes common use with no airline dedications, then this may become the norm. Additionally, the concept of multiple portals provides the opportunity for passengers to select the exit portal best suited for their onward travel arrangements, for example: if connecting with high speed rail services, then the northern portal would be the best exit regardless of where the inbound flight was parked.

To support such a concept, new processes to identify and route individual terminating arrival bags to a chosen portal will need to be developed. This may appear to be a challenge as full scanning and sortation of every terminating arrival bag to one of up to three portals and multiple reclaim devices would require baggage handling infrastructure comparable to that of the departures systems. However, if the concept is considered an exception rather than a norm, then infrastructure need only be sized to support a small proportion of bags that are not delivered to the default portal of arrival. The types of passenger that might fall into this exception category might include:

1. Premium (first/business, etc)
2. Pre-determined onward travel arrangements (rail, limousine collection, etc)
3. Pre-determined or last minute personal choice

The main impact of any concept that applies different rules to individual bags in an arrival group is the need to identify each bag and route it to the correct output destination according. Each bag will have a unique 10 digit barcoded IATA standard tag applied at origin which when read can, via the airline terminating Baggage Source Message (BSM), provide data on passenger name, flight number, class, route, etc, which can be used to determine the bags' final output destination which could include a given arrival portal in one of the BSM fields.

Whilst exception types 1 and 2 above would be written into the airline departure control database (passenger's PNR - Passenger Name Record and associated BSM) at the original point of departure, to support the last minute change of mind and/or different choice exit portal, systems will need to be in place for passengers to either notify change of intent and/or an automated passenger tracking system. This way, a passenger's bag will always follow to the same exit portal.

Intentional changes might be made by the passenger whilst en-route perhaps by use of a smart phone app for instance or other means to communicate and modify the BSM accordingly. Unintentional, or

last minute choice of exit will require some form of passenger tracking through the arrivals process. Options might include: biometric identification systems such as facial recognition as used by police and other law enforcement organisations installed along the arrival routes and decision points. If individual passport control points are retained at each exit portal, these can be used for passenger location triggers to confirm which exit the passenger is heading.

Having resolved the issue of knowing which portal the passenger intends to exit through, the arrivals baggage process will need to ensure his/her bag is automatically routed to suit. One concept to achieve this would be to utilise the evolving use of distributed departures baggage handling and make-up systems. In brief, in order to support the Heathrow Hub concept on the outbound, all terminals/piers will need to be able to receive departures baggage checked-in at any portal or transferred from another inbound flight. These distributed baggage centres would be connected by an underground tunnel network transporting bags at high speed on either destination coded vehicles (DCVs) or tub based systems. Such systems already exist in part between T5A, B, C and T3 and are planned between T2A, B and T4. Since such infrastructure is essential for the outbound process, the arrivals sortation and distribution can utilise the same. DCVs and tubs all have to recirculate so using these empty devices for arrivals bags on the return makes absolute sense.

Once at the correct portal, bags may be bulk discharged to the designated flight reclaim belt (default arrivals) or to a specified belt such as a premium reclaim serving multiple flights. To date, premium passengers pay for certain privileges in terms of segregated check-in, fast track security, lounges, cabin, fast tracked immigration and even meet/greet and onward travel, but at reclaim they are mixed with all classes of travel. Arrivals sortation would enable segregation here too and offer carriers the opportunity of having their own dedicated premium reclaim area incorporated into an arrivals lounge or similar. The concept may be taken even further to include arrival baggage delivery to hotel or other destination as may be conceived by service providers to relieve the passenger of the need to handle baggage themselves.

Since passenger name, origin, airline data, etc would be known for each arriving bag along with it's owners chosen exit portal destination, this data could be communicated to UK BF for customs alert at portals other than default in support of the current practice of vigilance over certain flights in known arrivals terminals.

Whilst the individual technologies needed to support the principles discussed exist today, their combined use in the concept of the Heathrow Hub is new and would need to be proved. One aspect that would need particular attention is that of matching arrivals delivery in-system-time to passenger travel time to the reclaim. Airports are currently judged and compared with others in part on their respective arrivals delivery performance (ADP). This is a measure of time from flight arrival to first bag on the reclaim belt and the process of identifying and routing bags may simply add time to this measure. However, it is proposed that provided the bag is available within an acceptable time of the individual passenger arriving at the reclaim device (wherever that may be) this should be the new measure of acceptable ADP.