Auckland Airport A-CDM Partners Document

Version 1.1
03rd June 2015

Document created specifically to communicate the requirements and processes of the Airport CDM (Collaborative Decision Making) project at Auckland Airport NZ.

Important: This Document *is not* intended as a user manual for the Airport CDM portal. Refer to the 20/20 Collaborative Decision making user manual for those requirements.

www.aucklandairport.co.nz/cdm

Purpose

This purpose of this document is to communicate the requirements, success measures, and processes specifically for the Airport CDM (Collaborative Decision Making) project at Auckland Airport NZ.

The CDM project includes key stakeholders who have been involved with the implementation of CDM at Auckland Airport, known as the Auckland CDM Partners:

- Auckland Airport
- 20/20
- BARNZ (Board of Airline Representatives New Zealand)
- Airways Corporation New Zealand
- Aerocare
- Air New Zealand
- Menzies

Document Control

Change Record

Version Number	Issue Date	Author(s)	Change Reference
1.0	26/01/2015	Mark Wilson	Initial draft drawing on NZ National A-CDM documents and Auckland CDM Partners discussions.
1.1	26/05/2015	Mark Wilson	Additions of flow chart and processes
1.2			
1.3			
1.4			
1.5			
1.6			
1.7			
1.8			
1.9			
2.0			

Executive Summary

The Introduction and Implementation of Airport CDM at Auckland Airport aims to improve overall efficiency, predictability and punctuality of airport operations. It promotes the sharing of real-time and predictive operational information, enabling airport partners to make the right decision on the basis of situational awareness. The decision making process is enhanced by taking into account the preferences and constraints of all airport stakeholders.

The concept of Airport CDM aims to benefits and improvements to Auckland Airport by the way of:

- Reduction in taxi times, airfield carbon footprint and subsequent fuel burn and engine running time.
- Optimised ground resources - staff & GSE equipment.
- Greater asset utilisation - aircraft stands, taxiways and runways.
- Greater optimisation of the network and airspace.
- Improved recovery from disruption.

Background

In October of 2014 the Auckland CDM project picked up momentum from the Operational planning aspect. A working group was formed, “Auckland CDM Partners” This group included all stakeholders involved in Airport CDM and formed the basis of the needs and requirements for the Portal as well as decisions around parameters and processes. The Partners met fortnightly to discuss the implementation of Airport CDM at Auckland Airport.

Early on it was confirmed by all Partners that a staged approach would be adopted. This meant that for stage one a strong focus would be on sharing an accurate TOBT (Targeted off block time). This is information that the ground handler has control of therefore this became a ground handler interaction. Other milestones are listed in the breakdown that follows on page 09.

There has been strong successes through the Implementation of Airport CDM globally. The exciting part for all involved in the Auckland project is that Auckland Airport will be the first to adopt this concept and go live in the South Pacific Australia /New Zealand region.

There is a national A-CDM project being led by Airways Corporation NZ. The Auckland Airport project is the first Airport to implement A-CDM as part of this project. There is a separate Charter document that encompasses this national project and there is nothing in this document or these procedures that is likely to be misaligned or conflict with the national project or charter document.

Contents

Appendices

Acronyms. Common acronyms used in Airport CDM at Auckland Airport

Acronym	Definition
A-CDM	Airport Collaborative Decision Making
ACGT	Actual Commence of Ground Handling Time
ACISP	A-CDM Information Sharing Platform
ACNZ	Airways Corporation New Zealand
A/DMAN	Arrival & Departure Management
AEGT	Actual End of Ground Handling Time
AFTM	Air Traffic Flow Management
AGHT	Actual Ground Handling Time
AIAL	Auckland International Airport Limited
AKL	Auckland
AIAL	Auckland International Airport
AIBT	Actual In-Block Time
ALDT	Actual Landing Time
AMAN	Arrival Manager
ANSP	Air Navigation Service Provider
AO	Aircraft Operator
AOT	Airside Operations Team
AOBT	Actual Off-Block Time
AOC	Airline Operations Centre
AODB	Airport Operational Database
ARDT	Actual Ready Time
ASAT	Actual Start-up Approval Time
ASBT	Actual Start Boarding Time
A-SMGCS	Advance Surface Movement Guidance and Control System
ASRT	Actual Start-Up Request Time
ATC	Air Traffic Control/Air Traffic Controllers

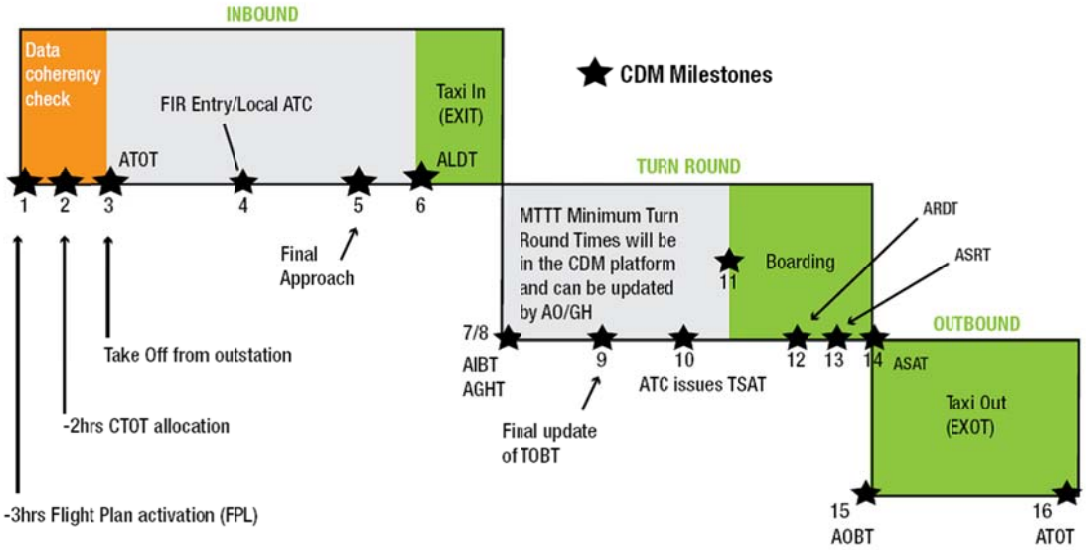
ATFCM	Air Traffic Flow and Capacity Management
ATM	Air Traffic Management
ATMRPP	Air Traffic Management Requirements and Performance Panel
ATOT	Actual Take Off Time (equivalent to ATC ATD or ACARS OFF)
ATS	Air Traffic Service(s)
ATTT	Actual Turn-Round Time (AOBT-AIBT)
AXIT	Actual Taxi-In Time (AIBT-ALDT)
BARNZ	Board of Airline Representatives New Zealand
CDM	Collaborative Decision Making
CDM-A	CDM Airport
CDTI	Cockpit Display of Traffic Information
CFM	ACNZ Collaborative Flow Manager
CIBT	Calculated In Block Time
CLDT	Calculated Landing Time
COBT	Calculated Off Block Time
ConOps	Concept of Operations
COTS	Commercial Off The Shelf
CPDSP	Collaborative Predeparture Sequence Planning
CSA	Common situational awareness
CTOT	Calculated Take Off Time
DMAN	Departure Manager
EET	Estimate Elapsed Time
EIBT	Estimated In Block Time
ELDT	Estimated Landing Time
EOBT	Estimated Off Block Time
ETA	Estimated Time of Arrival
ETOT	Estimated Take Off Time
EXIT	Estimated Taxi-In Time

EXOT	Estimated Taxi-Out Time
FIDS	Flight Information Display System
FIR	Flight Information Region
FIS	Flight Information Service
FIXM	Flight Information Exchange Model
FMS	Flight Management System
GHA	Ground Handling Agent
IATA	International Air Transport Association
IBT	In Block Time
ICAO	International Civil Aviation Organization
IT	Information Technology
KPA	Key Performance Area
KPI	Key Performance Indicator
LoA	Letters of Agreement
MET	Meteorological (weather information)
MoU	Memorandum of Understanding
Pax	Passengers
RWY	Runway
RDMS	Runway Demand Management System
TMA	Terminal Manoeuvring Area
VTTC	Variable Taxi Time Calculation

Introduction

By using Airport CDM at Auckland Airport all Partners will have greater visibility of a flights status depending on which of the 16 milestones the aircraft is in. The Milestones are shown on figure 1.0 below.

Figure 1.0



Auckland CDM Partners will share information on the flights inbound, turnaround and outbound phase in order to reach the benefits that the Airport CDM concept aims to meet.

Auckland CDM partners will have visibility of the flights status on the CDM portal which the authorised Partner will interact with in order to update and confirm certain fields. For stage 1 of Airport CDM at Auckland Airport the main focus will be for ground handlers updating the TOBT (targeted off block time), the ACGT (Actual Commencement of ground handling) and the ASBT/ AEBT (Actual boarding start and end times). As the success of Airport CDM relies on up to date and accurate information being fed into the system it is important that any inputs and requirements are met. (As per the Memorandum of Understanding)

Data Breakdown

Figure 2.0 describes the data element, the source the information is received from, the importance of the data, the timeliness of the input.

(Taken from Airport 20/20 Solution design Document for Auckland Airport)

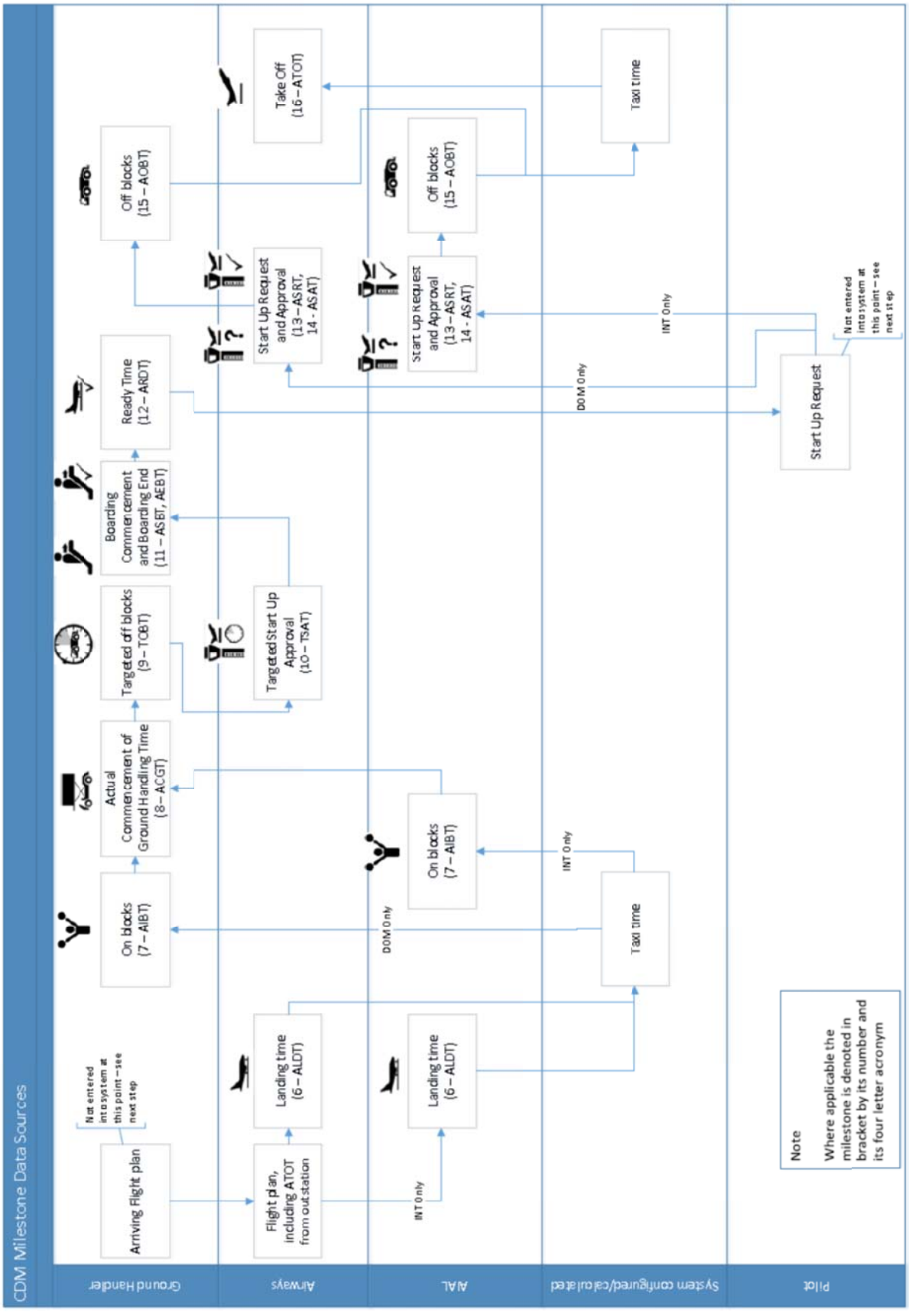
Figure 2.0

Data Element	Source	Importance	Timeliness
SIBT	20/20 AODB	Mandatory	Creation of daily flight from seasonal data; at AIAL: 7 days out
SOBT	20/20 AODB	Mandatory	Creation of daily flight from seasonal data; at AIAL: 7 days out
ELDT	Airways NZ	Mandatory	Flight plan activation; ongoing updates for relevant changes (+/- 5 minutes or more)
ETOT	Airways NZ	Mandatory	Flight plan activation; ongoing updates for relevant changes (+/- 5 minutes or more)
CTOT from outstation	Airways NZ	Medium	When allocated by outstation
ATOT from outstation	Airways NZ	Medium	At time of event
Allocated Runway	Airways NZ	Mandatory	As soon as allocated; ongoing updates
ALDT	Airways NZ	Mandatory	At time of event
EXIT	AIAL: CDM Portal	Medium	When required to override variable taxi time
EIBT	Airlines	High	Ongoing updates
EOBT	Airlines	High	Ongoing updates
AIBT	AIAL: DGS / CGS	Mandatory	At time of event
ECGT	Ground Handler: CDM Portal	Low	When available
ACGT	Ground Handler: CDM Portal	Medium	Ground Handler at time of event
TOBT	Ground Handler: CDM Portal	Mandatory	As soon as available; no later than x minutes before TSAT issue by Airways with x being locally defined
TSAT	Airways NZ AIAL: override capability for int'l via CGS	High	As soon as available; no later than x minutes after final TOBT with x being locally defined
ESBT	Ground Handler: CDM Portal	Medium	As soon as significant deviation from standard known
EEBT	Ground Handler: CDM Portal	Medium	As soon as significant deviation from standard known

Data Element	Source	Importance	Timeliness
ASBT	Ground Handler: CDM Portal	High	At time of event
AEBT	Ground Handler: CDM Portal	High	At time of event
AOBT	AIAL: DGS / CGS	Mandatory	At time of event
ASRT	Airways NZ	Medium	At time of event
ASAT	Airways NZ	Medium	At time of event
EXOT	AIAL: CDM Portal	Medium	When required to override variable taxi time
ATOT	Airways NZ	Mandatory	At time of event

Process flow chart

To determine the inputs further and to clarify the area responsible for each input please refer to the below process flow chart, Figure 3.0.



Stage 1 at Auckland Airport

The Auckland CDM partners have agreed on some processes/ system rules that will form the basis of the requirements from a Partner Interaction aspect.

The portal will be a web based and has been designed to show alerts for certain events and designated time parameters. Alerts will be provided for:

- Landing times. EDLT/ ALDT.
- Commencement of ground handling. ECGT.
- Boarding. ASBT/AEBT.
- Off blocks. EOBT/ TOBT.
- Missing flight plan.
- FIDs discrepancy alert.

In most cases the Initial alert will be orange and then the final alert will be red. The only exception to this is the missing flight plans which has three levels of alerts, yellow, orange and red. The parameters for the above alerts are detailed below and are Auckland specific based on inputs from the Partners.

Expected Implementation at Auckland Airport for stage one of Airport CDM is late May/ early June 2015. Stage one will include International and domestic jet aircraft for scheduled passenger flights. The success of stage one will determine the rollout of regional passenger flights and stage two.

Stage two Airport CDM is likely to include further breakdowns of the turnaround process resulting in more information sharing and increased knowledge of exactly how the Aircraft is tracking in the turn and when milestones have been met.

Landing times

The alerts act as indication for the Auckland CDM Partners of when a specific flight is nearing Auckland Airport. This is updates via Airways Corporation New Zealand Arrivals Manager feeds and is accurate to within +/- 2 minutes.

Figure 4.1

EDLT/ADLT	First Alert	Final alert	Manual Input required	Result
Domestic	**-20**	**-10**	Nil-Automatic feed from ACNZ	Advises all partners of the most accurate time that the aircraft will land at NZAA. The 10-minute alarm is a trigger to remind ground handlers that they should be at the stand.
International	**-20**	**-10**	Nil-Automatic feed from ACNZ	

The process for this is for all Partners to be aware. The alert is an awareness tool to promote planning for the handler to be at the stand at -10, the Airline to be aware that there flight is nearing and for Airways and AIAL to be able to better plan movements.

Once the Aircraft has landed the ELDT will become an ALDT. The variable taxi time will then be added to the ALDT and will result in a calculated time for the EIBT. If the EIBT is not met and over runs the time will continue to roll and then alert until the EIBT becomes an AIBT when the Aircraft is considered “in blocks”.

No cheat sheet is required for this alert as it is an alert only that does not require interaction.

Commencement of Ground Handling

For an aircraft that arrives at Auckland Airport and then tows to a layover for a long period. The ground handler will need to confirm when the ground handling commences after the tow back to the departure stand. The portal will alert as per below in figure 4.2.

Figure 4.2

ECGT/ACGT	First Alert	Final alert	Manual Input required	Result
Domestic	**-10**	**-5**	Ground handler	Ground handling commences and the calculations in the portal can estimate the EOBT. The handler will need to update the TOBT when required as per the TOBT process.
International	**-20**	**-10**	Ground handler	

The process at Auckland is for the Ground handler to confirm the ECGT as an ACGT in order to start the turnaround process on the portal. This then takes the given parameters into account and performs calculations to provide an EOBT. The handler will be required to update the ECGT when the aircraft has been towed back onto the departure stand or, in the case of an early tow back, when the turn process begins to prepare for the departure process.

The consequence of not confirming an ACGT will mean that calculations will not perform in order to provide an accurate EOBT. If this function is missed the alerts for a TOBT to be entered will also be inaccurate and possibly missed resulting in incorrect measures being shared.

Refer to the 20/20 collaborative decision making user manual for cheat sheet on how to confirm an ACGT.

Boarding times

Boarding times will alert in the portal when they meet the parameters that ground handlers have provided. These parameters are specific for the flight service type and are detailed in figure 4.3.

Figure 4.3

ESBT,EEBT, AOBT	First Alert (minutes) ESBT	Final alert (minutes) EEBT	Manual Input required	Result
Air NZ Dom	**Supplied Parameter**	**Supplied Parameter**	Boarding agent	All Partners are aware when boarding commences and completes. Indicating that the flight is reaching the end of the turnaround phase.
Air NZ Int	**Supplied Parameter**	**Supplied Parameter**	Boarding agent	
Aerocare Int	**Supplied Parameter**	**Supplied Parameter**	Boarding agent	
Aerocare Dom	**Supplied Parameter**	**Supplied Parameter**	Boarding agent	
Menzies	**Supplied Parameter**	**Supplied Parameter**	Boarding agent	

The Boarding agent confirms the ASBT and then the AEBT when boarding starts and ends. This function can be carried out in the gate lounge on same screen that igate is displayed on. The CDM portal will be displayed on a separate tab and reached through the appropriate log in.

The consequence of not actioning the ASBT and AEBT will be the lack of shared information. The portal has been set up so that if a TOBT has been set the portal will not calculate a new TOBT if the ASBT or AEBT is missed. This gives the priority to the TOBT. The ASBT and AEBT are still considered important functions and will add to the overall efficiency of the Airport through providing visibility of the process.

Refer to the 20/20 collaborative decision making user manual for cheat sheet on how to confirm or update an ESBT and EEBT to an ASBT or AEBT.

Off Blocks

For stage one a high priority is placed upon the ground handler ensuring that an up to date and accurate TOBT is given. The alarms set around the TOBT are indicated below in figure 4.4.

Figure 4.4

EOBT/ TOBT	First Alert	Final alert	Manual Input required	Result
Domestic	**-20**	**-10**	Ground handler	Confirms or updates the EOBT as a TOBT. This is to remain accurate to within +/- 5 minutes and is a vital part of stage 1
International	**-20**	**-12**	Ground handler	

When the orange alert appears the handler should be thinking about a TOBT and weather it will be the same as the EOBT or weather an update is required. The red alert at -10/-12 indicates that the TOBT should have been entered. If the TOBT is the same as the EOBT then it should be confirmed so that a TOBT shows in the portal. If the EOBT is not correct then the EOBT should be updated to a more accurate time and then confirmed as a TOBT. The accuracy of the TOBT needs to be +/- 5minutes of the AOBT. There is no limit to the number of times that a TOBT can be updated. For instance if a TOBT is entered but then a technical fault occurs and the aircraft needs another 10minutes on the stand then the TOBT should be updated again. At all time when a TOBT is set it should be within +/- minutes of the best known time that the aircraft is expected to call for pushback.

The consequence of not updating the TOBT to within +/- 5 minutes will have an adverse effect on the success measures that Airport CDM aims to meet. The TOBT is a crucial part of Airport CDM. Sharing accurate TOBTs will help to create better planning around, OTP, arrival congestion, departure congestion, airfield use and airspace planning.

Refer to the 20/20 collaborative decision making user manual for cheat sheet on how to confirm or update a TOBT.

Missing Flight Plan

When a flight plan is not matched in the CDM portal an alert will show by highlighting the flight number. The initial alert is yellow, the next alert is orange and the most severe alert is red.

Figure 4.5

Missing Flight Plan	First Alert	Second alert	Final alert	Manual Input required	Result
Domestic	**-3 hrs**	**-2 hrs**	**-1 hr**	Ground Handler	Matched flights and correct information sharing
International	**-3 hrs**	**-2 hrs**	**-1hr**	Ground Handler	

The process at Auckland is for the handler to match the missing flight plan with the correct flight plan before the alert reaches the red level of severity.

The consequence of not matching a flight plan is that no calculations can be performed by the CDM portal automatically and only manual inputs will register. Also, no updates will be received by Airways for the flight so the accuracy can be severely degraded and incorrect having an adverse effect on the Airport CDM aim.

Refer to the 20/20 collaborative decision making user manual for cheat sheet on how to match a missing flight plan

FIDs discrepancy alert

What is displayed on the CDM portal can differ from what is displayed on the public Flight Information Display. This decision was made by the partners due to accuracy that is required in the portal and the requirement that may be needed to not necessarily update the public with the same delay message.

By separating the two we can ensure that all updates are delivered to the CDM portal weather the public need to be aware or not. There is an alert to the user to indicate that the CDM displayed TOBT differs more than 15 minutes from what the public FIDs display. Refer figure 4.6.

Figure 4.6

Missing Flight Plan	Alert	Manual Input required	Result
Domestic	**+/- 15 minutes difference between FIDS and TOBT/EOBT**	Nil	Awareness of a discrepancy between the two inputs
International	**+/- 15 minutes difference between FIDS and TOBT/EOBT**	Nil	

The discrepancy alert will display on the FIDs column in ground handler view. This alert will not display on the Apron Tower view as that view does not have the FIDs column. The process around a discrepancy becomes internal for the airline and handler. The main focus for Airport CDM is that the TOBT remains accurate no matter whether there is a discrepancy between the FIDs time and the TOBT.

No cheat sheet is required for this alert as it is an alert only that does not require interaction.

Auckland Airport CDM Partners

Memorandum of Understanding

In order for the Auckland project to be successful, and Auckland CDM Partners to realise the benefits, the Auckland CDM Partners agree to collaborate and execute the processes as outlined in this document and the National A-CDM charter document.

Collaboratively we aim to make the airport work more efficiently for all Partners through the sharing of information over the CDM portal and interacting with the portal when required with accurate information.

Stage One (1) CDM implementation at Auckland Airport will be on a TOBT (Targeted off block time) being entered with a +/- 5 minute accuracy required between the TOBT and the AOBT (Actual Off block time) along with an interaction from the gate lounge of boarding start and completion. Other required inputs are detailed in this document.

Stage two (2) CDM will follow through further consultation with Auckland CDM partners.

"Together, let's create the perfect flight"

References

	Document Title	Version and date
1	Eurocontrol CDM Operations Concept Document	v1.4, Sep 2006
2	A-CDM Concept of Operations- New Zealand	v0.2, Nov 2014
3	ACI/IATA/Eurocontrol A-CDM Implementation Manual	v4.0, Mar 2012
4	Australian Airports A-CDM Operational Concept	v1.3, May 2014
5	National Airspace and Air Navigation Plan	v1.o June 2014
6	Airport 20/20 CDM solution design for Auckland Airport	Revision 2.0- 20th Jan 2015

Appendix 1.1

CDM (Collaborative Decision Making) at Auckland Airport

GROUND HANDLER INFORMATION SHEET

FAQ

What is CDM?
CDM stands for Collaborative Decision Making. The key aim of CDM is to facilitate the sharing of operational data to allow better informed decisions to be made.

Why
The principle of CDM is to optimise the turnaround process in order to ensure the best coordination of resources and the best use of airport infrastructure.

What benefits will we expect to see?

How will CDM be rolled out?

CDM will be rolled out at Auckland Airport in a staged approach. Stage one will largely be concentrated on the ground handler updating what is known as a TOBT (Targeted off block time). This is then shared to the other CDM partners in order to create better visibility.

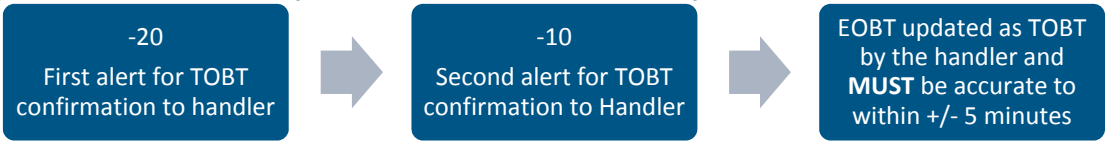
What is the TOBT and how does it work?
TOBT- Targeted off blocks time is a more up to date and accurate EOBT (Estimated off blocks time). The CDM portal that the ground handlers will use will alert the handler that a TOBT needs to be confirmed or updated at -20. This will alert again at -10 minutes. This alert advises the handler that the EOBT needs to be confirmed as correct, or amended, this will then become the TOBT. The accuracy required initially for the TOBT is +/- 5 minutes.

What is required from the Ground handlers?

The Ground handler will have the function of either confirming or updating the TOBT and ensuring that it is kept accurate to within +/- 5 minutes.

The Gate agent will confirm from the gate lounge when boarding begins and ends by selecting the appropriate start/ end boarding tile.

Update the TOBT if information is received from the flight crews or other Operators advising that the TOBT cannot be met. This could be for any reason, i.e., training, crew issues, tech issues, loading, catering, boarding, fuelling or other factors. It's important that this message gets entered so that all partners can have visibility. Inaccurate TOBTs will adversely affect the benefits that CDM aims to provide.



Appendix 1.2

CDM (Collaborative Decision Making) at Auckland Airport -Pilot interaction-

FAQ

What is CDM?
CDM stands for Collaborative Decision Making. The key aim of CDM is to facilitate the sharing of operational data to allow better informed decisions to be made.

Why
The principle of CDM is to optimise the turnaround process in order to ensure the best coordination of resources and the best use of airport infrastructure.

What benefits will we expect to see?

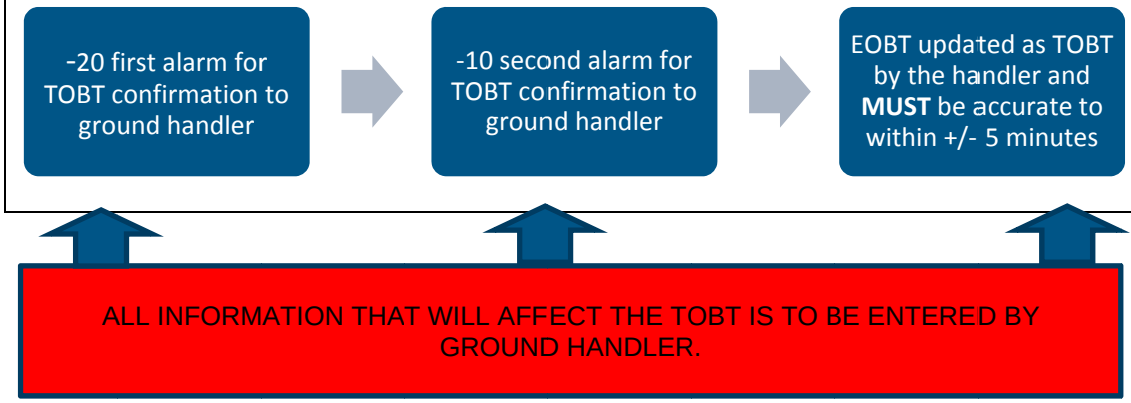
How will CDM be rolled out?

CDM will be rolled out at Auckland Airport in a staged approach. Stage one will largely be concentrated on the ground handler updating what is known as a TOBT (Targeted off block time). This is then shared to the other CDM partners in order to create better visibility.
Stage 1 of CDM will go live in March 2015.

What is the TOBT and how does it work?
TOBT- Targeted off blocks time is a more up to date and accurate EOBT (Estimated off blocks time). The CDM portal that the ground handlers will use will alert the handler that a TOBT need to be confirmed or updated at -20. This will alert again at -10 minutes. This alert advises the Handler that the EOBT needs to be confirmed as correct, or amended, this will then become the TOBT. The accuracy required initially for the TOBT is +/- 5 minutes.

What is required from the flight crew?
All that we are asking of the flight crew is that you advise your handler in advance with any change, expected overrun or potential impact to the TOBT so that they can update the TOBT in the CDM Portal.

Provide information to the handler if the TOBT will not be met. This could be for any reason, i.e., training, crew issues or other reasons. It's important that this message gets through so that all partners can have visibility. Inaccurate TOBTs will adversely affect the benefits that CDM aims to provide



For further information on Auckland Airport CDM please refer to the below url

www.aucklandairport.co.nz/cdm