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Dublin Airport Terminal 2 Operating Cost Assessment

R01000

6th November 2009

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- The report states a number of assumptions made during our analysis. While we have no reason to believe any of these assumptions are unreasonable, we note that if any prove incorrect, actual results could vary from those we have projected.
- Third parties to whom CAR may make this report available should not rely on the findings or conclusions set forth in this report without obtaining independent professional advice and undertaking their own due diligence. Any reliance on this report by a third party or any decisions made by any such third party based on this report, are the sole responsibility of such third party. The Consultants have not had and do not acknowledge any duty of care to any such third party with respect to the report, and shall have no financial or other liability to any such party with respect to any matter related to any decisions made by any such party, in whole or in part, on this report.

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Terminal 2 Operating Costs

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Booz & Company was appointed to assess the impacts on operating expenditure of opening Dublin Airport's Terminal 2

Regulated Charges at Dublin Airport

- The CAR regulates the following charges at Dublin Airport (other airport functions are either regulated elsewhere or provided by a competitive market):
  - Runway landing and take-off charges
  - Aircraft parking charges
  - Charges for the use of an air bridge
  - Passenger processing charges
- The Commission uses price cap regulation based on the 'Single Till' approach

CAR's Statutory Objectives in Setting the Cap

- The efficient and economic development of Dublin Airport
- The ability of the Dublin Airport Authority to operate in a financially viable manner
- The protection of the interests of users and potential users of the airport

Regulatory Building Blocks

Used to derive price cap

- regulatory asset base
- return on an efficient capital stock
- depreciation charge on capital stock
- estimate of efficiently incurred future operating expenditures
- estimate of future commercial revenues

- This requires the CAR to take a view on DAA's Operating Costs
  - Terminal 1: assessment previously conducted; impact of opening T2 on T1 to be determined
  - Terminal 2: assessment required

Booz & Company developed a project plan and robust methodology to meet the CAR's requirements for this project

Our Understanding

- A detailed examination of Dublin Airport operating expenditure (opex) has been conducted, almost exclusively focused on the existing terminal. Detailed coverage of Terminal 2 opex is now required
- Government policy originally planned for the operation of Terminal 2 to be competitively tendered and therefore excluded from the determination
- Recent uncertainty over which Terminal 2 operations will be included within a tender process means that T2 operational costs must now be included in the determination
- Without a firm understanding of how the opex for the whole airport will be affected by the opening of Terminal 2, the Commission cannot reliably determine an appropriate price cap for the DAA
- The Commission needs to make a determination during December 2009, with sufficient time during November for stakeholders to review the new Draft Determination

Terms of Reference

- To forecast the efficient operating costs that will be incurred by the DAA as a result of opening a new passenger processing terminal and pier at Dublin Airport. The assessment should determine the following:
  - The costs of the 'non-tendered services' in Terminal 2 and the impact in terms of costs, if any, on the wider airport (i.e. current facilities) once Terminal 2 commences operations (where the tender refers to the tender for an operator of certain terminal facilities as currently being conducted by the Department of Transport and its advisors)
  - The costs of the 'tendered services' in Terminal 2 and the impact in terms of costs, if any, on the wider airport (i.e. current facilities) once Terminal 2 commences operations
  - The transitional and one-off costs that DAA may incur in opening Terminal 2
  - Economies/diseconomies of scale/scope that may arise from the opening of a second terminal at the airport. The Commission requires an analysis of the efficient operating costs for DAA's Terminal 2 and its effect on the operating costs for the existing terminal
- CAR also required consideration of two 'mothballing' scenarios, the result of which is included as an Appendix to this document. On the basis of this, CAR requested Booz to proceed on the basis of T2 being fully operational with 40% of Dublin Airport's traffic

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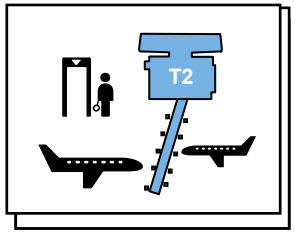
Our work programme used a bottom-up methodology to evaluate operational costs, validating them against comparable airport data

ILLUSTRATIVE EXAMPLE

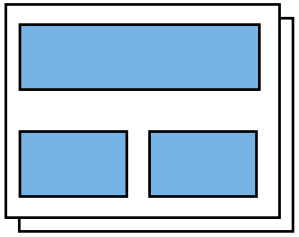
Operating Cost Methodology

Concept of Operations



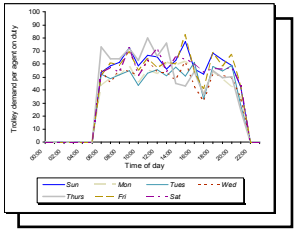
- The project reviewed the concept of operations for Terminal 2…

Data Gathering



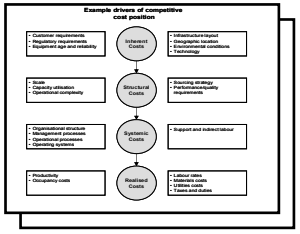
- …and developed a flight schedule based on historic pax numbers.
- We held meetings with airport users and DAA…
- and identified relevant benchmarks where available

Data Analysis & Outcomes



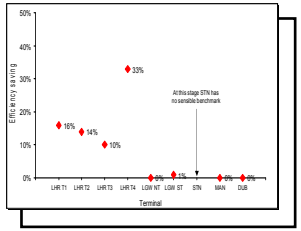
- We independently developed a set of costs for payroll and non-payroll items for the first full year of operation (2011)

Drivers



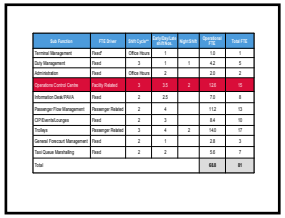
- We examined how costs would ramp up in 2010, which will not be a full year of operation
- …and specified the drivers for subsequent years

Develop independent cost estimate



- …and analysed the relative positions of DAA and Booz forecasts

Assessment



- …to report the costs of an efficient operator to inform CAR's regulatory determination

A combination of approaches was used to establish efficient operating costs

- Benchmark data often consolidates FTEs and costs across a broad range of functions
  - Maintenance often includes airfield maintenance such as runway lighting and surface repairs
- A number of functions are almost always outsourced at airports and therefore only contract cost data is available:
  - Secondary maintenance, such as specialised Baggage System maintenance
  - Security equipment servicing
  - Cleaning and waste disposal
- Some functions are highly dependent on the configuration of the terminal and do not lend themselves to comparisons with airports of different construction, layout, and technology complexity
- Historic benchmark data from non-Irish airports may require currency conversion, annual CPI adjustment and national/local purchasing power factors, potentially introducing error at every stage
- The labour structure within Ireland is different to other countries and may prevent realistic comparison
- Some comparisons may only be possible in qualitative terms; the availability of data restricts the scope of detailed quantitative analysis on some processes
- Other processes lend themselves to more detailed analysis using a range of indicators:
  - Passenger Operations, Passenger Security Screening, and Cleaning
- Operating cost estimation for new terminals carries inherent uncertainties:
  - New building design with unknown effects on passenger efficiency and staff efficiency across all functions
  - Different mix of passengers and flight schedules
  - High operational risk if staffing levels are too low
  - Long list of technical equipment with uncertainty over servicing schedules and expected failure rates

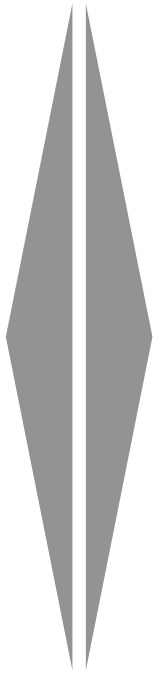
Underpinning our work programme is the principle of determining the costs that an *efficient operator* would incur

Booz Definition of an Efficient Operator
▪ An *efficient operator* is one that is motivated through competitive forces to drive down costs in every area across the business whilst meeting the needs of its customers ▪ It will utilise the resources at its disposal to maximise the value delivered to its customers, achieving no more or less than the required levels of service, and reducing as far as possible the resources required to do so ▪ An efficient operator may sub-contract certain functions and services where doing so would be economically advantageous

Our analysis included stakeholder meetings with DAA and airport users, and a review of previous submissions

Stakeholder Meetings

- DAA
  22nd September 2009
- Aer Lingus
  22nd September 2009
- Dublin Airport Consultation Committee (DACC)
  23rd September 2009
- Department of Transport's advisors in relation to the T2 facilities manager procurement
  6th October 2009
- Ryanair
  6th October 2009



Documents (non-exhaustive list)

- Draft Determination (June 2009)
- DAA submissions
- DAA forecasts
- DAA responses to Booz questions
- Airline responses to Draft Determination
- Communications regarding Temporary Boarding Gates
- Terminal 2 plans
- Infrastructure specifications
- Existing cleaning and maintenance contracts
- Arup Terminal 2 energy assessments
- Indecon-Jacobs Terminal 1 opex report
- Terminal 1 resource allocation data (security, cleaning, passenger operations)
- Historic traffic data
- Winter 2009/10 slot allocation
- Salary surveys (IBEC, Brightwater)
- UK CAA and Competition Commission reviews of BAA Airports and Manchester Airport
- …

DAA and the Government's procurement advisors provided insight into how T2 is planned to operate

Operational Insights

From stakeholder meetings with DAA and the T2 Procurement Advisors

DAA	Government's Advisors on T2 Procurement
▪ DAA has agreed with unions the principle that T2 must start from a fresh cost base, not linked to T1 agreements ▪ Working assumption that Aer Lingus and the transatlantic carriers would occupy T2 ▪ T2 seen as a largely independent operation but with possibly some movement of management and retail staff between terminals ▪ Partial operation of T2 has not been considered ▪ Current equipment maintenance contracts kept short to open this up to T2 facilities management bidders ▪ Temporary Boarding Gates (TBG) to be demolished in October ▪ CCTV monitoring, IT, fire service, stand allocation and certain other functions are to be "campus" wide and not based in T2	▪ T2 Opening Date is still set for November 2010, as stated in the PQQ ▪ Government is planning to go to tender on 30th November but will not go until there is a final determination. The Data Room will not open until that date or later ▪ Specifications for the tender are being developed by DAA ▪ CBP protocols have not been finalised with the US Authorities ▪ No view on what traffic will operate out of T2

Discussions with and information supplied by DAA and procurement advisors informed detailed assumptions underpinning our analysis

Our discussions with Airport Users revealed concerns about the way in which T2 will operate and the potential for additional cost

Airport Users' Main Issues

From stakeholder meetings

Aer Lingus

- Plans to move to T2 if conditions are met:
  - No differential pricing
  - Link from Pier B to E in place at no extra cost
  - Their dedicated automated bag drop system transferred from T1 to T2
- Concerns about workability and cost of the CBP facility
- Will require 20 of the proposed 56 check-in desks at T2
- Preferred time to move Spring 2011
- Has overcome some of its legacy staff T's&C's issues and expects DAA to make similar progress

Dublin Airport Consultation Committee

- "Diseconomies of scale" will arise if T2 is opened, increasing costs to users
- T1 has ample capacity, and, if TBG is kept, T1 also has sufficient gates, for the forthcoming regulatory period
- T1 Opex Assessment is not an adequate baseline for efficient Opex
- T2 is over-sized and over-specified - retail areas particular concern
- Concerns about T2 tendering process, particularly way in which the entire operation is not to be tendered and the role of DAA in specifying services
- DACC experience with DAA-specified out-sourced services (e.g. PRM provider) is negative
- Operating cost of airport as a whole required, not separate for each terminal
- DAA needs to provide adequate links between T1 and T2 at no extra cost

Ryanair

- As DACC but additionally:
  - Disagree with restrictive remit given to Booz & Co.
  - Manner in which DAA's costs are allocated is not transparent and needs to be reviewed regularly to reduce scope for regulatory gaming
  - Opex Assessment cannot rely on DAA accounts
  - Reiterate DACC's view that DAA current Opex. is inefficient and Ryanair do not accept the T1 Opex Assessment
- Differential pricing is required

Discussions with and information supplied by airport users informed detailed assumptions underpinning our analysis

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Operating expenditure at Dublin Airport is structured into staff and non-staff costs

Staff Costs	Terminal	
	1	2
Airfield Services & Facilities	✓	×
Terminals	✓	✓
Airport Police Fire Service	✓	✓
Maintenance	✓	✓
Cleaning	✓	✓
Airport Management & Support	✓	✓
Car Parks	✓	×
Commercial	✓	×
Retail	✓	✓
Head Office	✓	×

Circled categories are campus-wide activities, accounted for within Terminal 1 costs

Dashed circled categories contain a mixture of campus-wide and terminal specific activities

Non-Staff Costs	Terminal	
	1	2
Repairs and Maintenance Costs	✓	✓
Rents and Rates	✓	✓
Energy Costs	✓	✓
Technology Operating Costs	✓	✓
Insurance	✓	✓
Cleaning Contracts & Materials	✓	✓
CUTE Operating Lease Costs	✓	✓
Fees and Professional Services	✓	✓
Marketing & Promotional Costs	✓	✓
Aviation Customer Support	✓	×
Telephone Print and Stationery	✓	✓
Employee Related Overheads	✓	✓
Other Overheads	✓	✓
Travel & Subsistence	✓	✓
Car Park Direct Overheads	✓	×

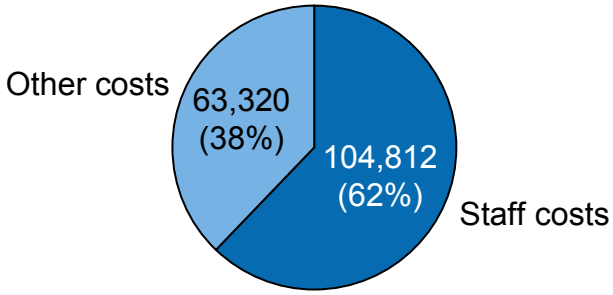
Historically, Dublin Airport's staff costs have accounted for 62% of total operating expenditure when Head Office costs are excluded

- Dublin Airport undertakes a large proportion of functions in-house that other airports often contract out
  - Security *(50%)*
  - Cleaning *(74%)*
  - Front Line Maintenance *(10%)*
  - Major Maintenance *(60%)*

  Numbers in brackets indicate the % UK airports that subcontract the function

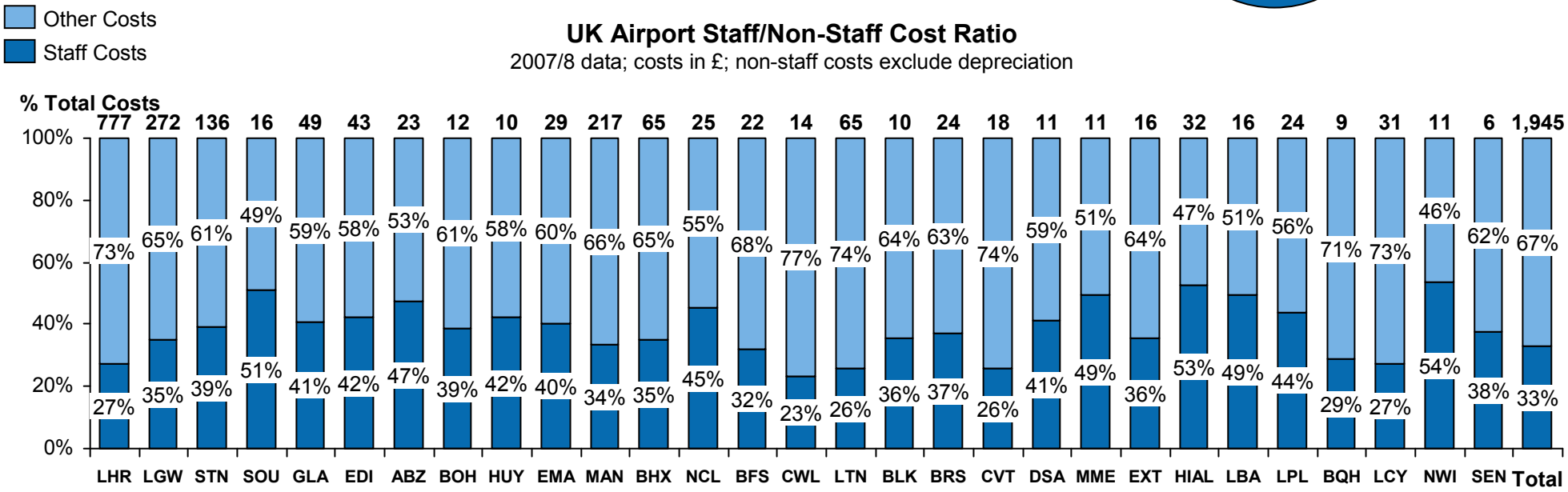
2008 DAA data for Dublin Airport (€k)

Excludes Head Office payroll and non-payroll costs



UK Airport Staff/Non-Staff Cost Ratio

2007/8 data; costs in £; non-staff costs exclude depreciation



Source: CRI Airport Statistics 2007-8; 'Other costs' exclude depreciation

Operating costs for the new terminal will comprise a mixture of fixed costs and variable costs that are driven by traffic

Fixed Costs

- Driven by infrastructure capacity and fixed in the short-term
- Functions that need to be performed regardless of the number of passengers or staff
- Expenses that are related to the infrastructure rather than passengers or staff

Variable Costs

- Driven by passenger or staff numbers
- Often afford greater opportunities for improved efficiency

- DAA considers 60% of total operating costs to be fixed (although variable in the long term)
- Of these, it considers some to be largely externally determined and therefore exogenous to the Commission's model:
  - Rates
  - Insurance
  - Energy
  - Regulatory levy
- Our review will determine the extent to which these costs are fixed or variable and the control DAA might have over the period of the Determination

Discussion

- In reality, very few costs are truly fixed though most costs have a fixed component. For example:
  - Baseline level of cleaning is required even for rarely used areas
  - Routine maintenance is needed even for under-utilised equipment
  - Concession agreements and service contracts require management regardless of revenues
  - Energy consumption is affected by building load
  - Energy saving measures can be introduced to reduce consumption
  - Energy prices can be negotiated
  - Water consumption depends on floor area to be cleaned but is also affected by passenger and staff numbers
- Increases in passenger numbers often allow operations to become more efficient by smoothing peaks in demand where resources have previously been under-utilised
- Staff numbers themselves drive costs in other areas, e.g. Human Resources, utilities, overheads

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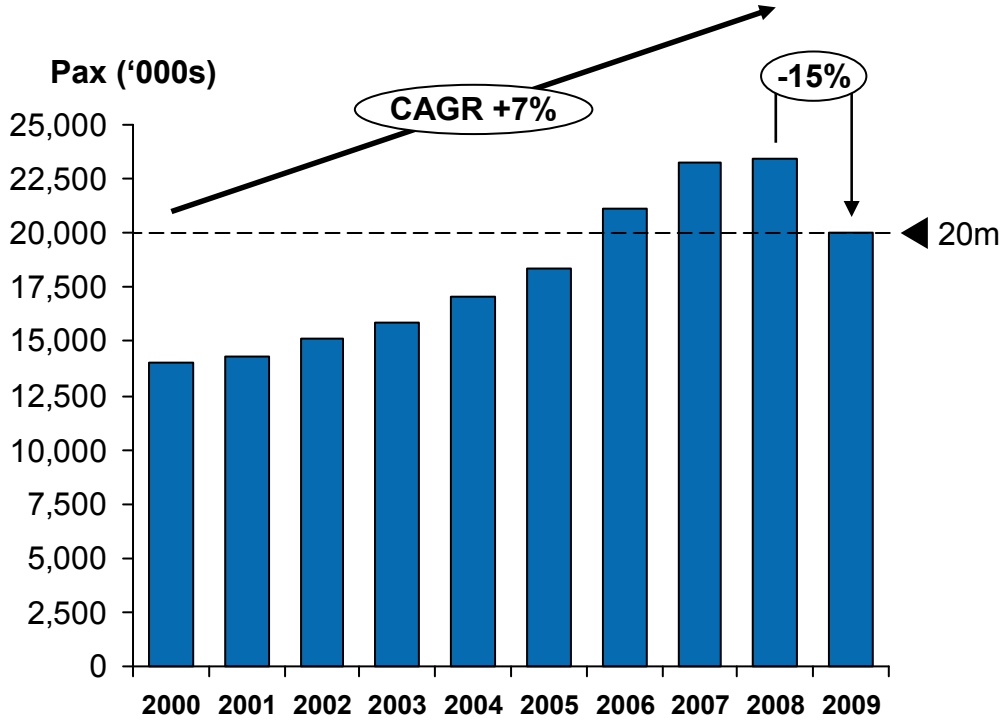
Passenger traffic at Dublin Airport is in decline after a period of strong growth

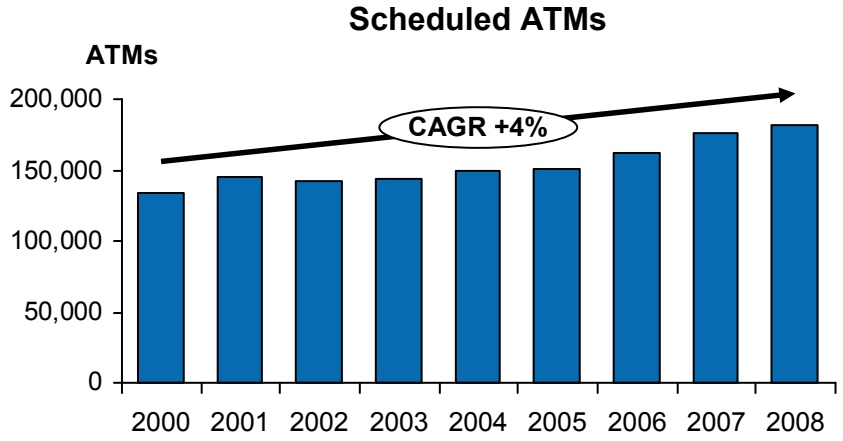
- From 2000 to 2009, passenger numbers had a compound annual growth rate of 7%
- Passenger numbers have declined in recent months, with Dublin worse affected than many other comparable airports in north-west Europe
- DAA's current forecast for 2009 full year indicates a 15% decrease compared with 2008
- Passenger traffic is not forecast to return for several years

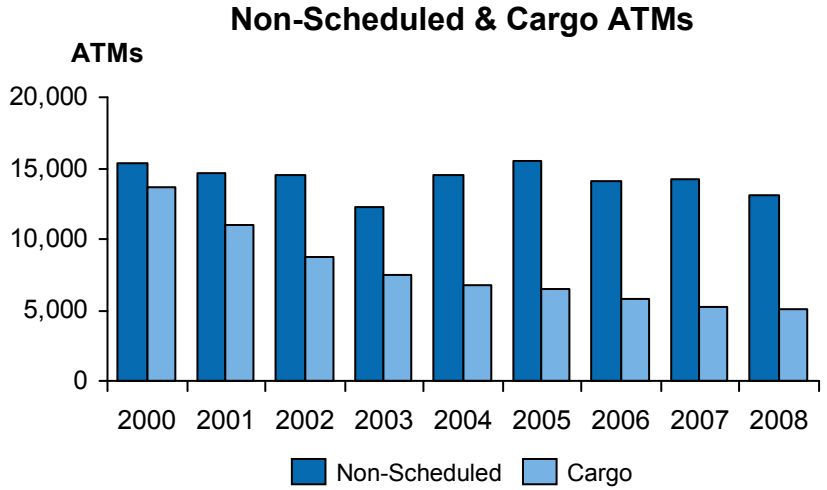
Dublin Airport Passenger Numbers
2000-8 actual Data; 2009 full year estimate

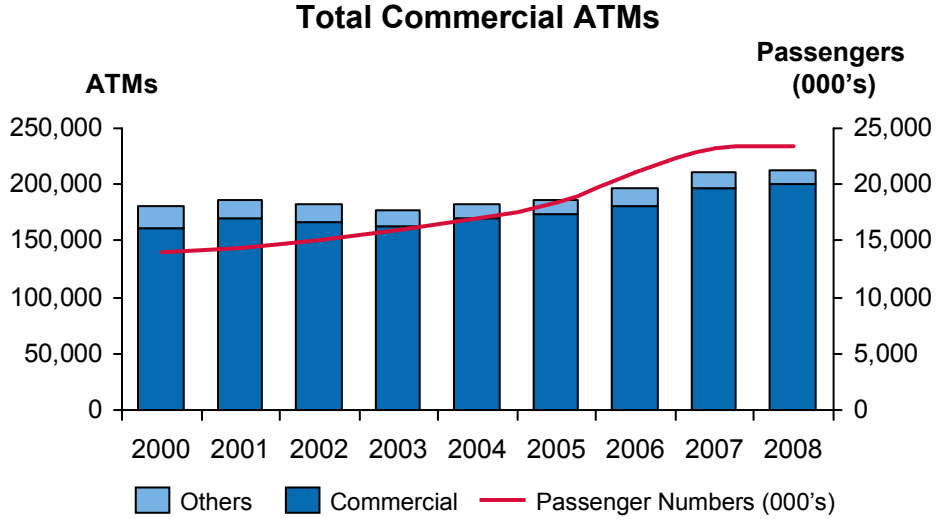


Source: DAA Annual Reports

Prior to 2008, passenger numbers grew faster than ATMs as operators improved load factors and upsized aircraft



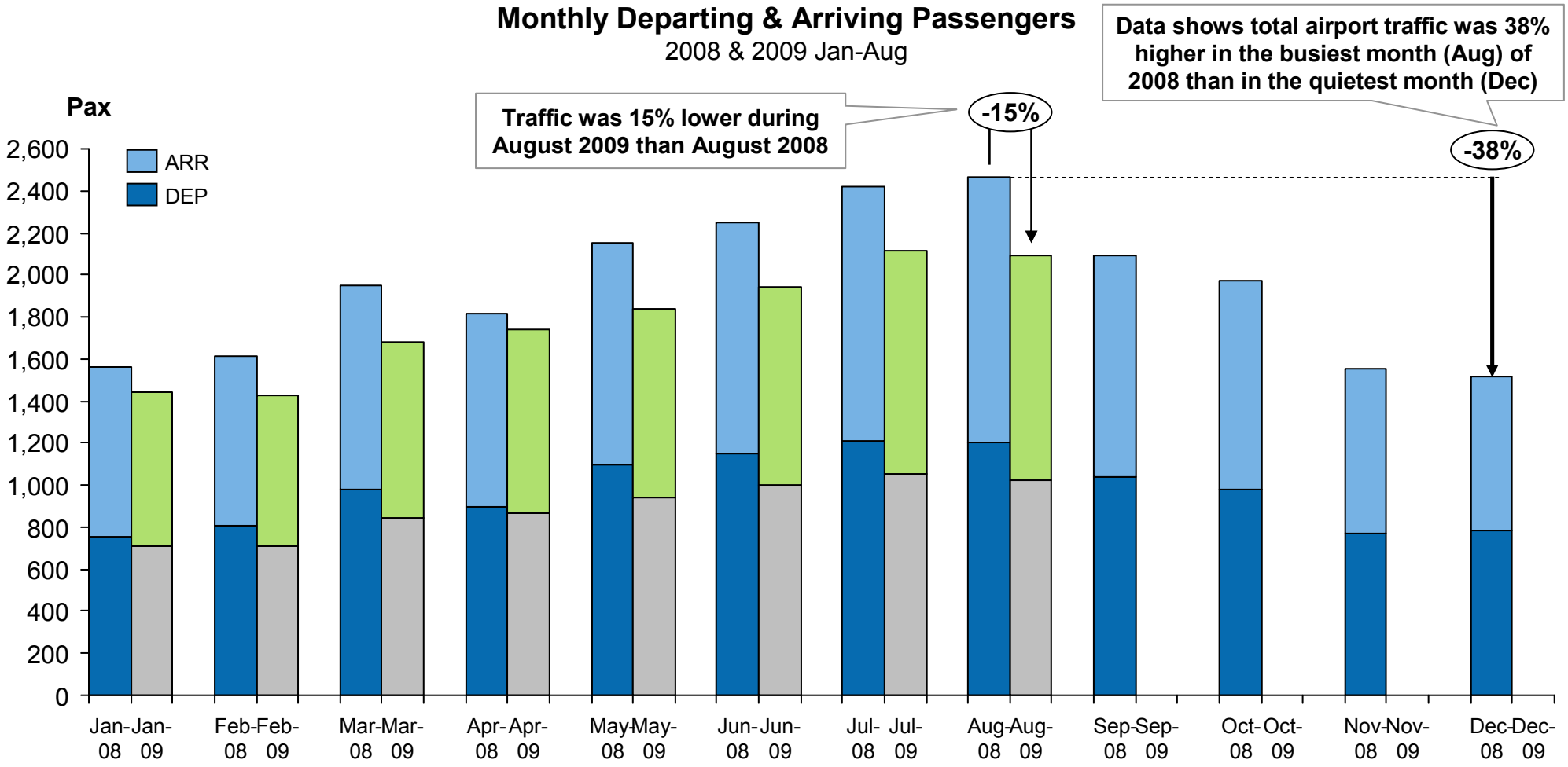




- Passenger numbers grew steadily since 2000 (CAGR 7%) but ATMs did not rise in the same way
- This implies a trend towards higher load factors and in some cases larger aircraft
- Cargo ATMs decreased steadily over the same period

Source: DAA Annual Reports

Traffic in 2009 is following the same monthly profile as in 2008 but with passenger numbers around 15% lower

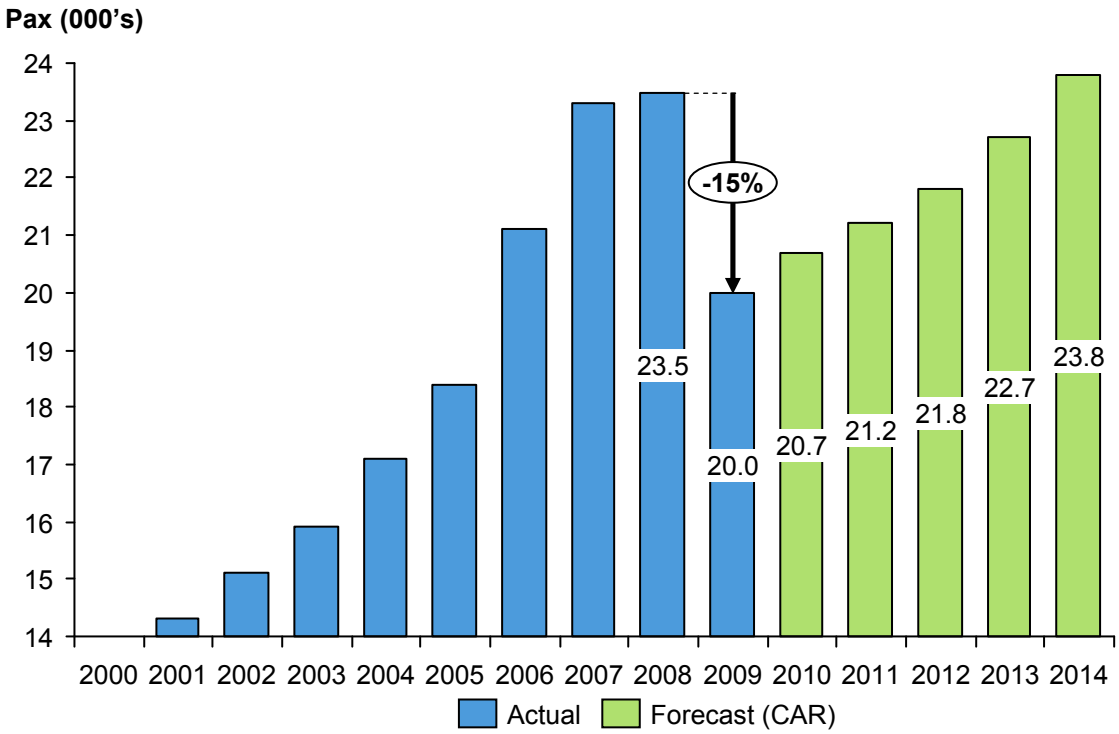


Source: DAA historic schedule data with actual passenger numbers

Traffic is forecast to grow from 2011 onwards with a recovery to 2008 levels not anticipated until 2014

- DAA and airlines have developed passenger forecasts for the next determination period
- The forecasts are broadly comparable, with CAR's figures (shown here) slightly more optimistic
- Booz & Company's model uses CAR's forecasts at the time of the Draft Determination to drive any changes in operating costs through the determination period

Dublin Airport Passenger Numbers
Actual Data and CAR Forecast



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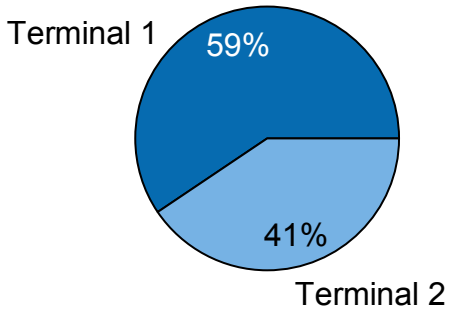
Our analysis is built on a number of assumptions concerning the scope of operations for Terminal 2

- Our cost estimates assume that T2 will be completed in April 2010 and will open in November 2010, with operational readiness activities taking place in the months prior to opening
- Our cost estimates have been determined on the basis of those that an efficient operator would incur. Costs, where possible, been developed independently of, but in relation to, the costs submitted by DAA
- Terminal 2 will serve Aer Lingus (anchor tenant) and airlines operating long-haul routes from Dublin
- Several activities are regarded as 'campus-wide' and which are staffed from Terminal 1:
  - Car park attendants, cleaning and maintenance
  - All external works (including airfield and apron) other than those concerned with the Terminal 2 building
  - Fire service
  - Airport police
  - Protocol staff, concerned with VIPs and state visits
  - Aerodrome Manager and other roles required by aviation legislation
- Terminal 2 has a nominal operating window of 03:30 to 01:00, with the potential for this to be reduced dependent on flight departure and arrival times
- With the exception of management and retail staff, the airport operator's staff will not move between terminals
- Hold baggage screening and ground handling (including operation of air bridges) will be the responsibility of airlines
- Retailers (with the exception of DAA-operated shops) will be responsible for their own cleaning
- US Customs & Border Protection (CBP) process will be undertaken by CBP personnel with no full-time airport resourcing. CBP will supply and maintain its own security screening equipment

Passenger Terminal Split

Based on current airline allocation assumptions and 2008/9 pax data



Terminal 2 Airlines

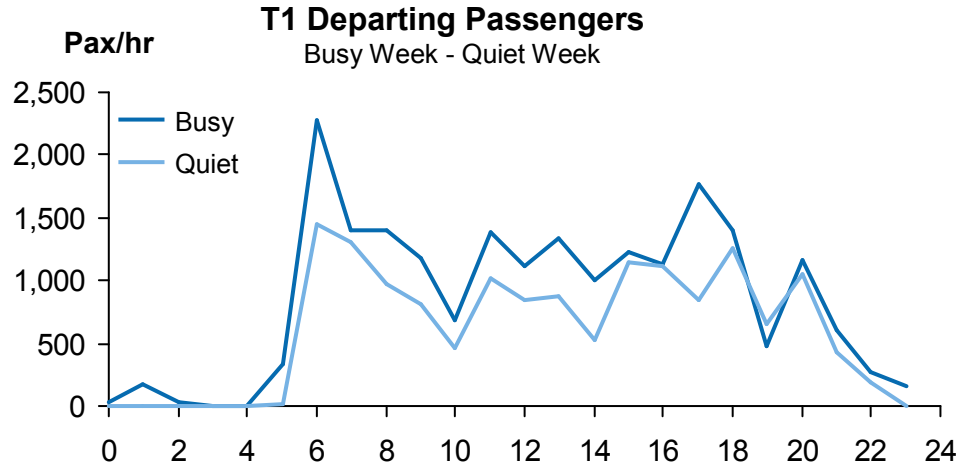
- Aer Lingus (Anchor Tenant)
- Continental Airlines
- Delta Air Lines
- Air Canada
- Air Transat
- Etihad Airways
- FlyGlobeSpan
- US Airways

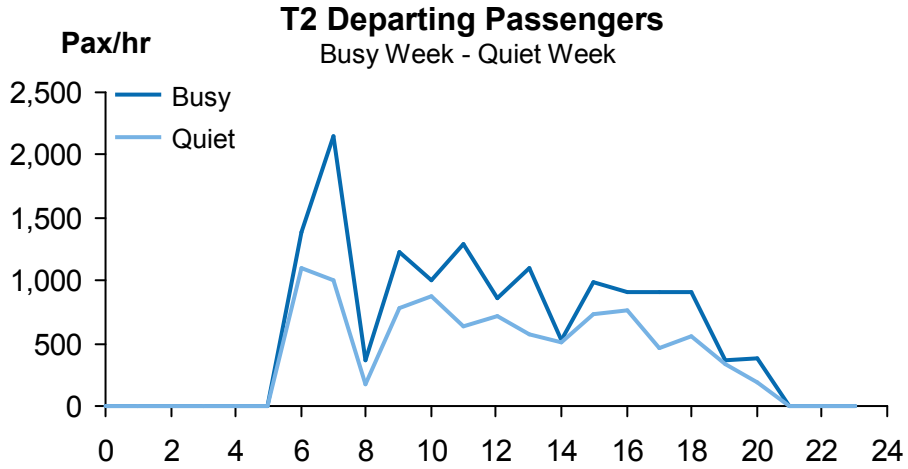
Source: DAA data; Booz & Company analysis

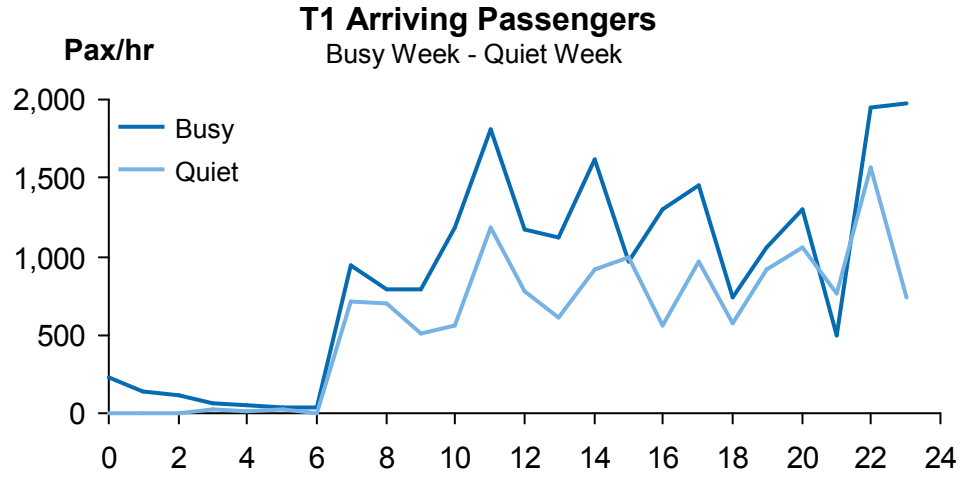
We have developed a list of assumptions sourced from documents, specific data requests and meetings

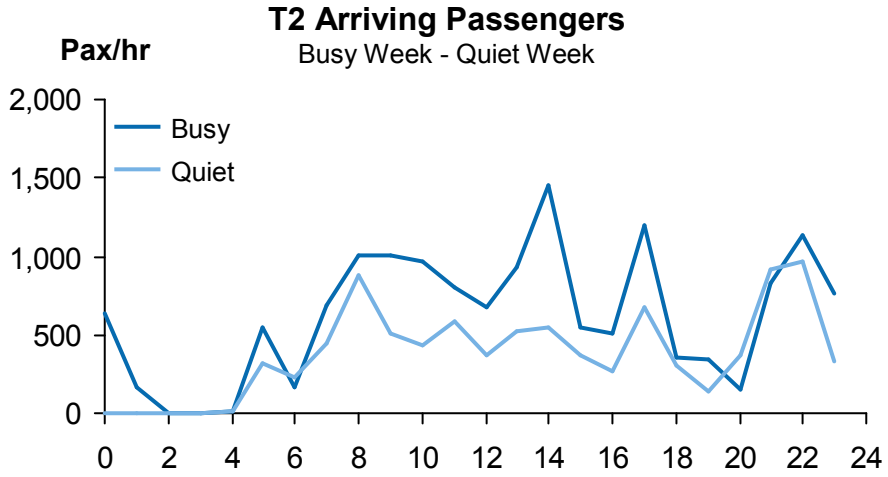
Category	Assumption	Source
Traffic	▪ 40% traffic will transfer to T2 in November 2010, formed of Aer Lingus and all carriers operating long-haul routes ▪ T2 airlines will comprise: Aer Lingus (Anchor Tenant), Continental Airlines, Delta Air Lines, Air Canada, Air Transat, Etihad Airways, FlyGlobeSpan, & US Airways ▪ All other airlines will continue to operate from T1	DAA
Traffic	▪ Transfer passengers will continue to make up a very small percentage of total traffic (0.3% in Summer 2009)	Booz
Staffing	▪ Security and cleaning staff will be entirely separate between T1 and T2 ▪ Management, retail and support staff will move between terminals ▪ Queue management staff will not be required once T2 has bedded-in and T1 congestion dissipated	DAA
Operations	▪ T2 will be open 24hrs a day, 364 days a year ▪ Security Central Search operating hours will be 03:30 to 01:00, as in T1 – N.B. current Booz T2 traffic analysis shows last flight departs at 20:55 in historic data, 20:45 in Winter 2010 schedule ▪ Security staff search will be open from 05:00 to 17:30 in departures; 24/7 in arrivals	DAA question response
	▪ CBP process is operated by US CBP personnel, but some passenger operation staff will be required to provide support	DAA/Booz
Maintenance	▪ Major equipment will be covered by warranties initially	DAA meeting
Terminal 2 infrastructure	▪ No additional car parking facilities will be constructed opposite T2 within this determination period	DAA meeting
	▪ T2 'operational area' is 66,000sqm ▪ T2 actual size is 75,000sqm; Pier E size is 23,000sqm ▪ 8,500sqm retail space, of which DAA will operate 1,400sqm	DAA business rates forecast
	▪ All of DAA's retail activity will be airside Duty Free not Food & Beverage	Booz
	▪ Current designs include a one-directional link between Pier B and T2/Pier E. Aer Lingus will not move to T2 unless a bi-directional link is provided	Aer Lingus meeting
Terminal 1 infrastructure	▪ No areas within T1 will be closed once T2 opens (except Temporary Boarding Gates, closure scheduled Oct 2009)	DAA meeting
T2 commissioning and handover	▪ DAA will provide in-house training on T2 to all T2 staff including airlines (4,000)	DAA meeting
	▪ The majority of commissioning costs are accounted for within the Capex plan, with some operational readiness and handover costs treated as opex	Booz DAA

Daily traffic volumes for each terminal have been derived, based on stated assumptions, to support our resource scheduling









Busy Week = Week 30, 2009
Quiet Week = Week 50, 2008

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Terminal 2 Operating Costs

Terminal 1 Cost Impact

Overall Summary

Appendix

Staff costs

Non-staff costs

Start-up costs

Our analysis of Terminal 2 has determined staff numbers (FTEs) and costs for each of the operational functions

Total Operating FTEs and Costs at Terminal 2
(Booz estimate)

Staff Category	2010		2011	
	FTE	Cost (€)	FTE	Cost (€)
Passenger Operations	27	950,430	75	2,627,305
Airport Police Fire Service	74	2,835,166	152	5,819,755
Maintenance	30	1,635,163	54	2,922,859
Cleaning	49	1,602,002	143	4,745,360
Airport Management & Support	7	445,088	13	818,511
Retail	18	893,559	70	3,419,047
Total	**205**	**8,361,408**	**508**	**20,3252,837**

Note: Costs are expressed in nominal terms unless otherwise stated

Passenger Operations concerns the smooth running of the airport and the provision of information to passengers

Definition

- Passenger Operations comprises the following list of functions:
  - Operations Control Centre
  - Information Desk / Public Address & Voice Alarm (PAVA)
  - Passenger Flow Management
  - Commercially Important Passenger (CIP)/Events/Lounges
  - Trolleys
  - General Forecourt Management
  - Taxi Queue Marshalling

The operating characteristics for each function were defined prior to determining the required levels of resources

Sub Function	Operational Characteristics	Resource Calculation Methodology
Operations Control Centre	▪ 24/7 operation satellite control centre monitoring operational/Terminal systems, e.g. CCTV, Fire Alarm, key passenger equipment monitors (lifts, escalators), contingency co-ordination with DAA	▪ 24/7 3 cycle shift system 4 on early shift, 3 on late shift, 2 on Night shift
Information Desk/PAVA	▪ Early and late shift manning of Airport information desk dealing with all customer and airport related queries in T2 – back office use of PAVA in conjunction with Operations centre	▪ 18 hours early and late shift 3 on early shift, 2 on late – back office operation of PAVA
Passenger Flow Management	▪ Early and late shift queue / passenger flow management dealing with and assisting customers – primarily landside but may also have roles at Immigration/arrivals and Customs Border Protection (CBP) and passenger preparation for security	▪ Passenger related with average of 4 staff per shift, early and late. In practice this will vary according to passenger volumes and deployment of part shift and full shift staff
CIP/Events/Lounges	▪ Early and late shift manning of CIP (commercially important passengers) lounge – dealing with all VIP related activity at the airport	▪ 18 hour shift system 3 staff early and late – 2 for desk and back office, one potentially mobile
Trolleys	▪ Early, late, and potentially night shift collection of trolleys and redistribution to passenger collection points	▪ Passenger related assuming average cover of 4 staff per early and late shifts and two on nights, actual resource levels to be varied with use of part shift and full shift staff and related to passenger volumes
General Forecourt Management	▪ Early and late shift coverage ensuring the forecourt area is maintained in terms of cleanliness, clearing potential passenger and traffic hazards, etc..	▪ Two shift system: Early and Late, 1 staff per shift, 18 hour coverage. Flexible working with Taxi marshalling as required
Taxi Queue Marshalling	▪ Early and late shift coverage at Taxi pick up area, managing passenger queues and ensuring speedy pick up and departure of taxi's, maintaining the traffic flow	▪ Two shift system: Early and Late, 2 staff per shift

Our assessment of the Passenger Operations function has identified a requirement for 75 FTEs in the first full year

Sub Function	FTE Driver	Shift Cycle**	Indicative Early/Late Shift No.	Indicative Night Shift No.	Operational FTE	Total FTE
Operations Control Centre	Passenger Numbers	3	3.5	2	12.6	15
Information Desk/PAVA	Fixed*	2	2.5		7.0	8
Passenger Flow Management	Passenger Numbers	2	4		11.5	14
CIP/Events/Lounges	Fixed*	2	3		8.4	10
Trolleys	Passenger Numbers	3	4	2	16.0	19
General Forecourt Management	Fixed*	2	1		2.8	3
Taxi Queue Marshalling	Fixed*	2	2		5.0	6
Total					**63.3**	**75**

Shift staff levels are indicative i.e. functions with an FTE driver of passenger numbers will vary according to passenger volumes across the year – Total FTE is the annual average figure

Includes allowance for absence, leave and sickness

*Fixed is defined as manning levels not passenger or facility related other than in cases of significant step changes in passenger flows or facility availability
**Shift Cycle relates to period of operational coverage: Day = Mon-Fri office hours, 2= Early & Late shift coverage, 3 = Early, Late and Night coverage

Whilst some Passenger Services functions costs are considered to be fixed, the larger sub functions are driven by passenger numbers

Security Resource Category	Driver
Operations Control Centre	▪ Passenger Numbers
Information Desk/PAVA	▪ Fixed
Passenger Flow management	▪ Passenger Numbers
CIP /Event/ Lounges	▪ Fixed
Trolleys	▪ Passenger Numbers
General Forecourt Management	▪ Fixed
Taxi Queue Marshalling	▪ Fixed

Elasticity
Passenger Numbers: 0.63

Costs per FTE for Passenger Operations were derived from analysis of salary surveys and wage levels for comparable roles

Staff Category	Basic Market Salary	Cost Per FTE
Operations Control Staff	€28k	€40,003
Flow Management Staff	€23k	€32,860
CIP Lounge Staff and Information Desk	€25k	€35,717
Trolley Operatives	€23k	€32,860
Taxi Marshalls and Forecourt	€21.9k	€31,287
Average cost per FTE		*€34,797*

Market Salary Data Sources (non exhaustive)

- Basic salary derived from IBEC Salary Survey 2008
- Review of BAA Stansted employment costs for the UK Competition Commission
- Shift premiums derived from 2004 IBEC study
- Confidential information related to customer service salaries in private 'service industry' companies (Dublin based)

Salaries for Ops Control, Flow Management and Trolley operatives are average across the function, i.e. some staff will be more senior and above average compensated for by lower than average salaries for junior staff

Cost per FTE Assumptions

- 3% Overtime assumption, allowing efficient use of Overtime instead of additional FTEs
- Overtime paid at 1.5x hourly rate and non consolidated rate
- 18% shift premium
- 10.75% PRSI for staff earning more than €18.5k p.a.
- 7.2% Employer's pension contribution
- No increment long service pay awards

Our analysis gives a total cost of €2.63m for Passenger Operations in 2011

Passenger Operations Conclusions

- The bottom-up construction of Passengers Operations while based on a well defined operating structure does not presume demarcated working practices
- An efficient operator will be able to deploy efficient working practices across functional boundaries with staff (particularly in times of disruption) working cross functionally to ensure customer service levels are maintained
- Customer Border Protection process is not fully defined and extra resources above those indicated may be required to assist in swing gate and boarding gate clearance processes. Changes in security protocols might also have an impact on resources assisting in passenger security preparation
- FTE numbers were generated with an allowance of 20% for leave, sickness, training and offline activity. The operator would be expected through attendance management not to incur absenteeism above industry averages, therefore protecting training spend to deliver excellent customer service
- A proportion of the training budget would be spent on staff development and 'upskilling', e.g. a proportion of passenger services staff might be security trained in order to provide contingency for any change in security protocols and associated workload increase
- Overtime practices would be flexible and designed to deal particularly with times of operational disruption or short periods of peak passenger numbers, e.g. special events

Forecast Passenger Operations Costs at T2

	2010	2011	2012	2013	2014
Cost (€)	950,430	2,627,305	2,705,685	2,803,632	2,922,977

Airport Security represents the largest operating cost item and the most complex in terms of resource allocation

Definition

The primary components of Airport Security comprise:
▪ Passenger Central Search
▪ Transfer Passenger Search
▪ Staff Search
▪ Security Points (Customs Arrivals)
▪ Patrol of the Terminal by Airport Police (considered to be a campus wide activity and staffed from Terminal 1 Airport Police resources)
  ▪ Check-in/Baggage Hall
  ▪ Departures
  ▪ Arrivals
  ▪ Roads/Forecourt

Indicative Security Configuration		
Passenger Central Search	▪ 7 Boarding pass desks ▪ 7 WTMDs ▪ 14 Cabin baggage X-ray machines	▪ 5 staff per X-ray unit and 1 WTMD ▪ or 10 staff per 2 X-ray units and 1 WTMD
Transfer Search	▪ 1 WTMD ▪ 2 Cabin baggage X-ray machines	▪ 3-4 staff per X-ray unit ▪ or 6-8 staff per 2 X-ray units and 1 WTMD
Staff Search (Departures level)	▪ 1 Staff ID post ▪ 1 WTMD ▪ 1 X-ray machine	▪ 3-4 staff per X-ray unit and 1 WTMD
Staff Search (Arrivals level)	▪ 1 Staff ID post ▪ 1 WTMD ▪ 1 X-ray machine	▪ 3-4 staff per X-ray unit and 1 WTMD
Arrivals	▪ 1 Manned security desk to prevent re-entry to baggage hall	▪ 1 staff member

WTMD: Walk Through Metal Detector

We developed a set of assumptions for Security resourcing to inform our model

Resourcing Assumptions	Booz Commentary
• **Passenger Search:** 0330-0400 to 2200 typically – extended hours as required	▪ Last flights depart before 22:00 with no need for passenger central search thereafter ▪ Booz model assumes Central Search closes after last flight
• **Transfer Search:** 18 hour operational day	▪ Some flights arrive between 00:00 and 02:00 during peak season, potentially carrying transfer pax, hence requirement for 18hr average operational day
• **Departures Staff Search:** 24/7 operation	▪ Demand for 2 staff search points to match workload. Flexibility to revert to single Staff search or use staff searches as passenger overflows
• **Arrivals Staff Search:** 18 hour operational day, 7 days a week	▪ As above
• **Customs Arrivals**: 24/7 operation	▪ Off-peak season has few if any night flight arrivals ▪ Resourcing can reduce to max 20hrs per day during this time

Security Workload Drivers

- X-ray machine demand is driven by passenger throughput rate of 200 per X-ray machine per hour
- Average 2 trays per pax is a robust estimate but highly dependent on airline policies and security protocols
- WTMD demand is assumed driven by 400 passengers per hour
- Queuing time for Passenger Search as appropriate for IATA Standard C facility – rosters to be sufficiently flexible to meet prescribed standards within reasonable boundaries
- Cabin baggage and passenger search ratios as per current protocols
- Liquids testing and shoe scanning as per current protocols

Our Security FTE costs have been derived from several sources including airport security contractors and other market data

Staff Category	Basic Market Salary	Cost per FTE
Security Planner/Trainer*	€32k	€37,744
Security Supervisor	€32k	€46,072
Security Team Leader	€29k	€41,753
Security Officer	€26k	€37,434
Average cost per FTE		*€38,236*

*Security Planners/Trainers are not shift workers and are not expected to incur overtime payments

Cost per FTE Assumptions

- 3% Overtime assumption, allowing efficient use of Overtime instead of additional FTEs
- Overtime paid at 1.5x hourly rate and at the non consolidated rate
- 18% shift premium
- 10.75% PRSI for staff earning more than €18.5k p.a.
- 7.2% Employer's pension contribution
- No increment long service pay awards

Market Salary Data Sources (non exhaustive)

- Basic salary derived from IBEC Salary Survey 2008,
- Review of BAA Stansted employment costs for the UK Competition Commission
- Additional benchmarking with two UK airports with contracted-out security and one Dublin security firm
- Shift premiums derived from 2004 IBEC study

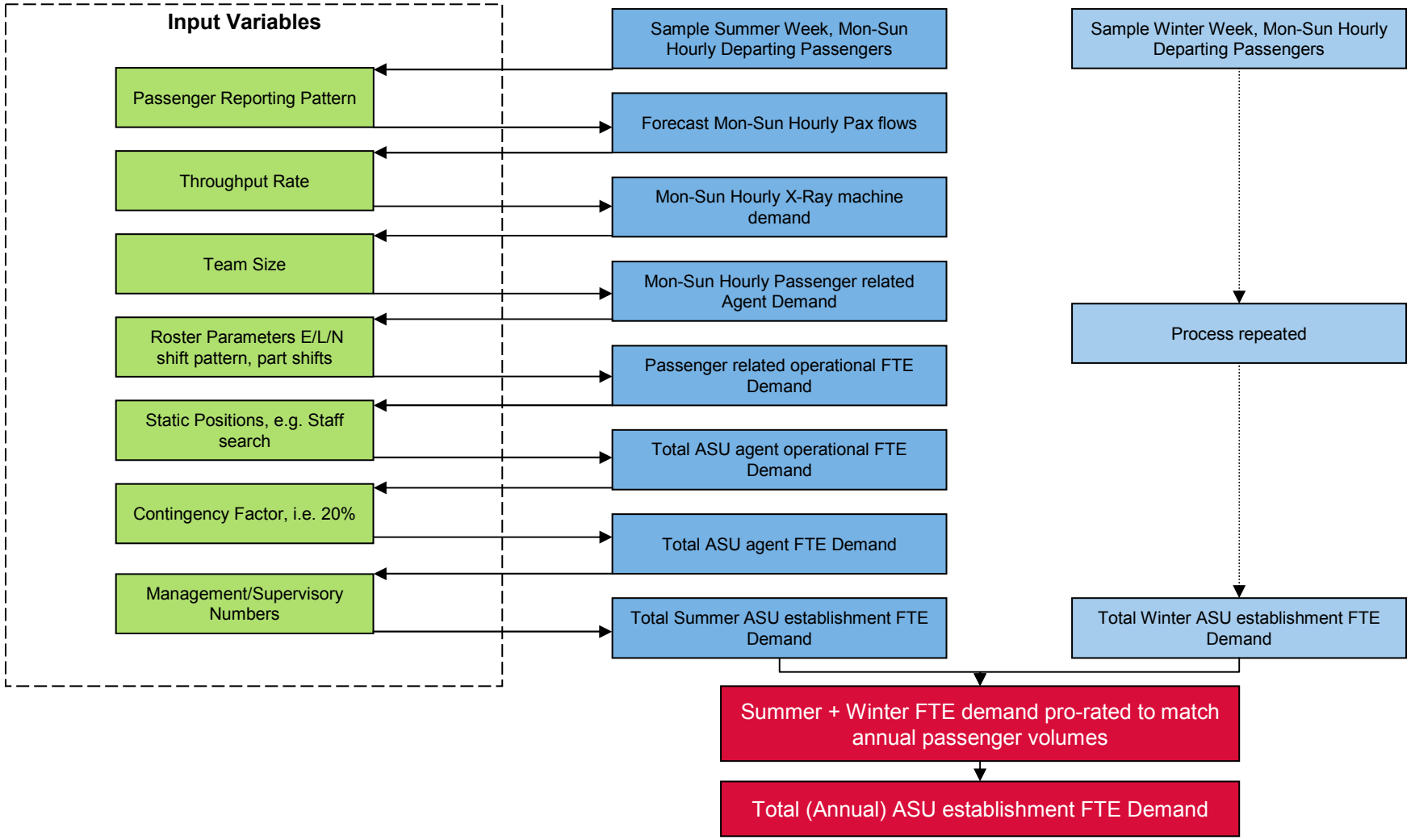
Whilst some Security costs are fixed, the major manpower component is driven by passenger numbers

Security Resource Category	Driver	Elasticity
Passenger Search	▪ Passenger Numbers	▪ 0.64
Transfer Passenger Search	▪ Fixed	
Staff Search	▪ Fixed	
Customs Arrival	▪ Fixed	

- Departure Passenger Search represents 64% of total Airport Security Resources
- Figure predicated on no change in security protocols. New mandatory processes would require a reassessment of the drivers given such changes are likely to be exogenous

Fixed: Static positions for which manning is not considered variable during timeframe 2010-2014

Our bottom-up methodology for determining ASU FTEs combines modelling assumptions with passenger throughput data



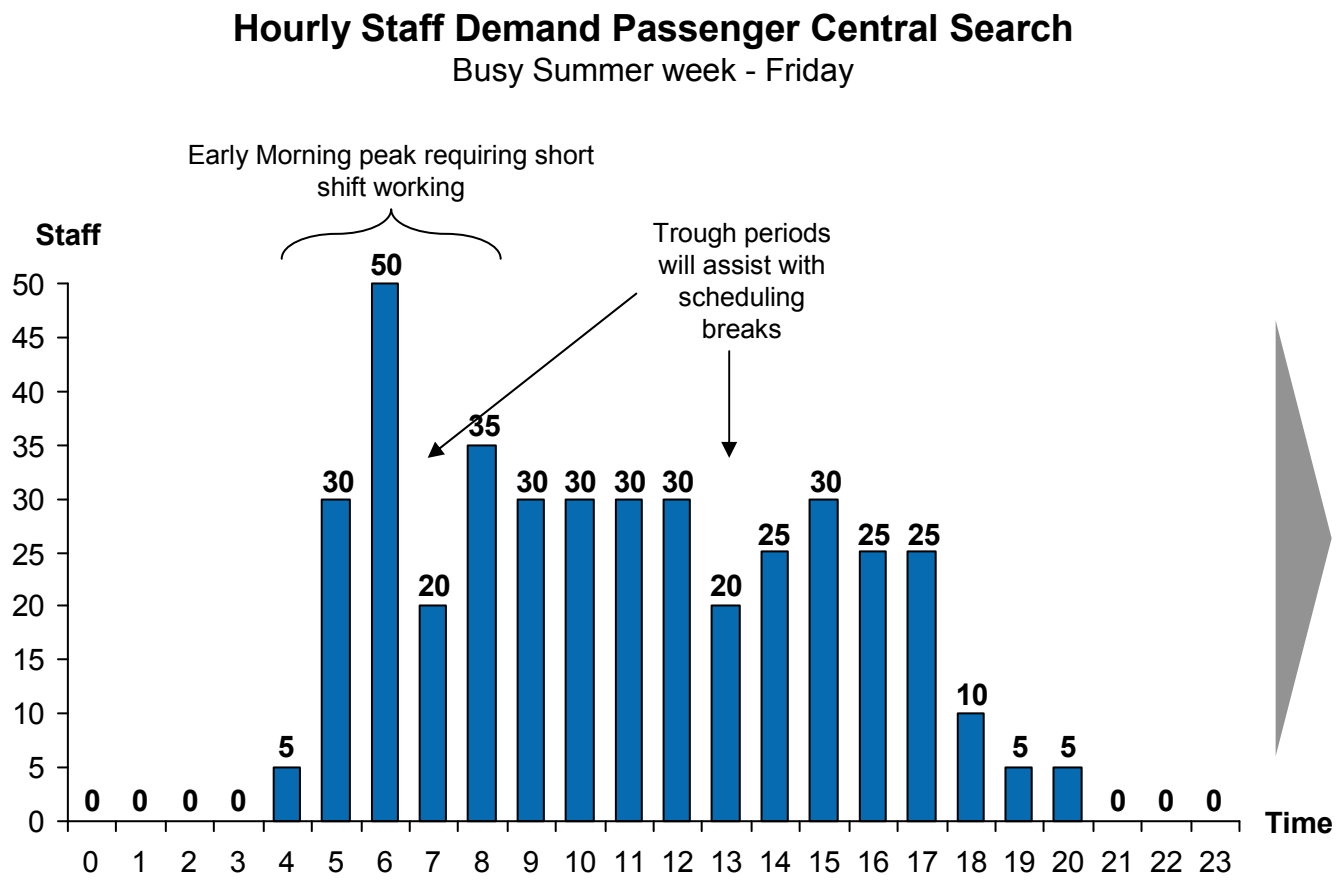
Modelling assumptions have been further tested to find efficiencies, e.g. by adjusting numbers of staff per search comb

Workload Drivers

- The key drivers in Departure Passenger Search are throughput rates for X-ray machines and WTMD's
- The bottom-up assessment inputs 200 passengers per hour per X-ray machine and assumes a work practice of combining every two X-ray machines with a single WTMD with the process capability of 400 passengers per hour for the WTMD
- Manning assumptions are that each X-ray unit will be staffed by a team of 5 personnel, with each combination of two X-ray machines, one WTMD being staffed by 10 security operatives
  - Pre-loader
  - X-ray screener
  - 2 Off-loaders/bag searchers
  - Each team of 5 contributes one staff member for hand searches of passengers, i.e. two staff per WTMD for hand searches (1 male, 1 female)
- Given the criticality of the throughput rates and staff ratios, our input assumptions were compared to other (UK) airports for the purposes of benchmarking. This sensitivity analysis showed that while higher passenger throughput rates are achieved in other airports, this was accomplished by use of larger team sizes (extra staff being deployed in advance of the X-ray units to assist in passenger preparation)
- The outcome of this sensitivity analysis was that there were no material differences in FTE levels associated with choosing one workload method over the other; i.e. efficiency of higher throughput rates was negated by the extra manning required to achieve this
- While this may become a factor when Central Search starts approaching capacity constraints, with 14 X-rays units available and our assessment of peak demand for summer 2011 showing a requirement for 10 machines, our assessment is that the choice of one work method over another is not material given the time period (2010-2014) of this determination

WTMD: Walk Through Metal Detector

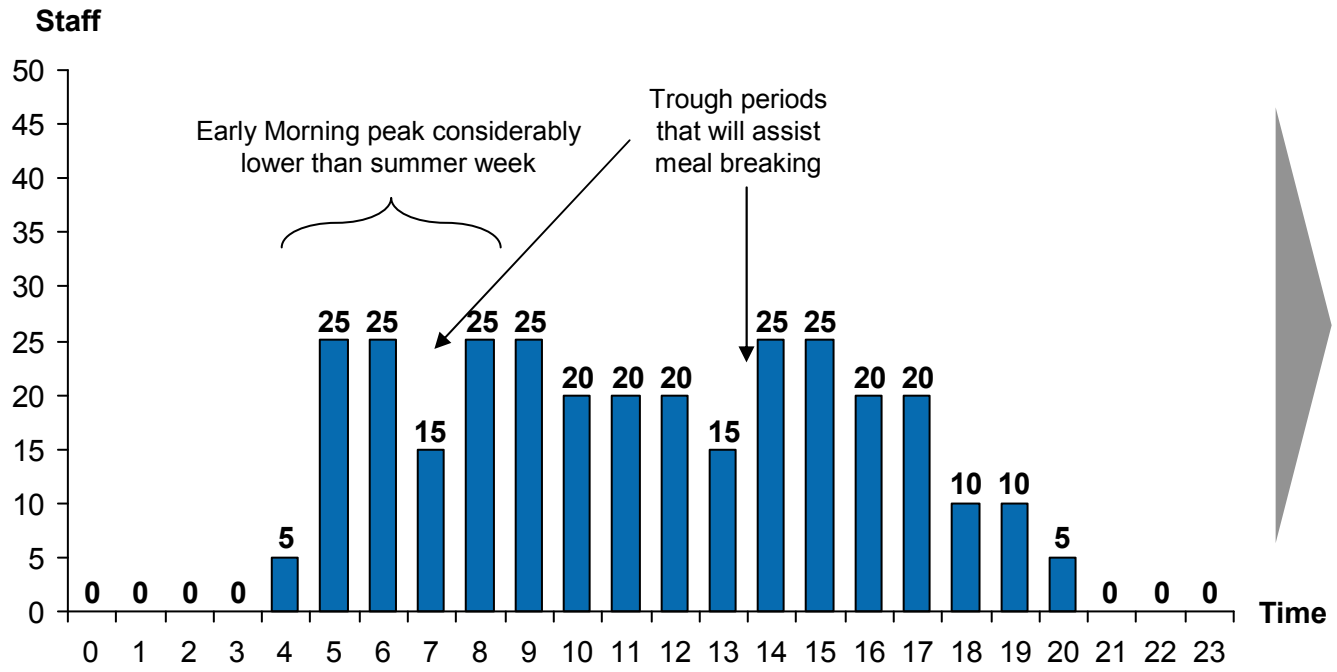
Our approach generated a workload demand for Central Search, with busy weeks resulting in a large morning peak…



Workload Implications for Rostering

- The large early morning peak requires the use of 4 hour part-time shifts
- There is a significant 'flat 'core' of work (including the need to cover staff meal breaks) that will be covered by full shift working
- Efficient rostering would result in a downtime in the region of 7-8%

…while quiet weeks follow a similar though less peaky profile



Workload Implications for Rostering

- The variances in peak workload both by day of the week and seasonally will demand a high proportion of part-time work (up to 40%) including short shift working, annualised hours. Part-time staff would not incur overtime payment until they had completed more than 40 hours working
- Core full time staff would be maintained at a minimum of 60% of FTEs and grow to 70% as passenger numbers grow
- Overtime practices would be designed to deal with operational disruption and short periods of peak working, e.g. special events. Overtime would be paid on the basis of time worked, i.e. not rostered
- Annual leave and training would be actively managed to coincide with quieter operational periods – leave and training exclusion period would be in place during peak periods

Bottom-up assessment of Airport Security FTEs has found a requirement for 152 staff in the first full year of operation

Category	Summer	Winter	Year Average	Comments
Maximum X-ray machine demand	10	6		Capacity of Central Search is 14 X-ray units
Staff Demand (5 staff per X-ray) and Passenger Presentation	80	55	67	Assumes two 5 person teams for every two X-ray machines / single Walk through Metal Detector (WTMD) Manning of entry to Central Search – passenger documentation check, passenger preparation
Staff Demand with Meal breaks incorporated	90	62	76	Allowance of 12.5% equates to 1 hour per 8 hours worked, i.e. 30 minute meal break and 2 15 minute tea breaks
Required Operational Staff (roster efficiency incorporated)	96	66	81	Rosters will not be able to match workload shape with 100% efficiency – assumes 7.5% downtime
Total Passenger Search Staff	116	80	98	Uplift of 20% to cater for leave, sickness, training, offline
Static Points	45	45	45	Manning of transfer passenger search, staff search / landside return and customs arrivals point
Management Staff	9	9	9	Duty/ Supervisory Management, Security functional management, administration, planning and standards
Total ASU Requirement	170	134	**152**	Total staff complement for Passenger Search, Static Positions and Management

Our analysis gives a total of 152 ASU FTEs at a payroll cost of €5.8m in 2011

Security Operations Conclusions

- The resource structure is designed to deliver maximum efficiency of staff levels and cost structure while still maintaining the opportunity for advancement of staff through promotion with four levels - operative, working team leader (i.e. part of the security screening teams), supervisor and some specialist roles for co-ordination and training
- FTE's were developed to deliver service levels appropriate for an operator delivering security processes to attain delivery equivalent to IATA standard C
- Rostering practices are assumed to incorporate best practice with no legacy work methods
- The operator will be able to deploy resources in a facility with no congestion / facility design overheads and equivalent 'best in class' security equipment
- Management practices will be both thorough and flexible, designed to deliver high quality human resource management with a clear focus on service delivery

Forecast APFS Costs at T2

	2010	2011	2012	2013	2014
Cost (€)	2,835,166	5,819,755	5,995,139	6,214,589	6,482,272

Repairs & Maintenance resource requirements are driven by a number of factors relating to terminal design and use

Maintenance Drivers
Dublin Airport T2 & Pier E

- Terminal Capacity
- Terminal Design
- Functionality & Specialist Equipment
- Level of Service
- Level of Use

T2 Capacity and General Facilities

- T2 & Pier E is a large building complex that covers around 90,000 m^2 in operational capacity
- It includes a number of general facilities and airport infrastructure that require ongoing planned and unplanned maintenance activities to meet service level objectives, including:
  - 164 toilets
  - 56 lifts, 36 escalators 2 travelators
  - 11 air bridges
  - 56 check-in desks + 1 out of gauge and 1 super out of gauge check-in facility
  - 6 baggage belts

Other Specialist Systems

- T2 and Pier E also requires the ongoing maintenance of an array of specialist equipment and mechanical systems where service level targets will need to be met, including:
  - Baggage systems
  - Security threat detection systems (X-ray)
  - Air handling units
  - Building management systems
  - General IT and telecommunications systems
  - Fire alarm systems
  - Lighting control systems
  - Cleaning equipment

Other Factors

- The secure environment airside presents maintenance challenge that adds to costs - taking tools, liquid / propellant lubricants, manpower and vehicles into the airside zone is costly event before work can commence.
- The cost of reactive maintenance to repair breakdown is of greatest uncertainty - whilst planned maintenance of each installed system can be very accurately programmed and costed around component manufacturer's advisory data, it is the unplanned breakdown that is the unknown
- Terminal 2 as a brand new terminal is likely to suffer teething problems in the first year to 18 months of operation, which will tend to balance the fact that all systems are "new":
  - Many of the building engineering systems (heating, lighting, cooling) will in any case have been operating for many months prior to a successful construction handover, so planned maintenance needs to be ready to commence immediately
  - An example of a teething problem at a new UK terminal was the regular breaking of some panels of glazing due to incorrect positioning of passenger trolley guard rails. The maintenance team were challenged with regularly fixing broken glass until the guard rails could be extended.

The efficient organisation of planned and reactive activities requires a mix of in-house labour and contracted skills

Airport Maintenance Organisation

- Airport maintenance typically involves the planned and reactive activities to ensure the upkeep and repair of terminal facilities and specialist equipment according to service level targets set forth by management
- For airport terminals such as T2, maintenance will be occurring 24 hours a day:
  - Reactive maintenance will be ongoing when the building is in full use and demand for it will be greatest at peak time (busy hour for departures, arrivals etc) when spare capacity is limited and there is an immediate need to get systems back up and running following a breakdown
  - Planned maintenance meanwhile will regularly require the isolation of systems and equipment so will be more effectively undertaken “out of hours”, when systems can be shut down without disrupting airport operation.
- Maintenance demands in the Terminal will cover a vast range from the relatively simple (changing a broken tap in a toilet) to the highly complex (a full rebuild of an escalator’s power train) - the maintenance regime set up needs to be able to respond across the whole range
- Whilst it is possible and desirable to have multi-skilled personnel, who can turn their hands to many tasks, some of the systems are so specialised that this is not always possible and contracted skills and services will be required

In-house Team

- An in-house team or directly employed labour force (DEL) will be required to perform front-line reactive maintenance
- It is expected that the DEL will need to work to provide 24 hour coverage, and be able to cover essential airport maintenance functions and roles, including:
  - Electricians
  - Mechanical fitters
  - Baggage system technicians
  - Plumbers
  - Technical Services
  - Airport Development
  - Managerial

Contracted Labour

- Contracted labour will be required on a permanent and planned basis to provide the planned maintenance of systems and to support the frontline maintenance team
- The support team will also need to provide 24 hour coverage, although it is envisaged that planned maintenance activities will be carried out overnight when access to systems during downtime is available

An in-house maintenance team has been developed based on applying experience elsewhere to the T2 environment

T2 & Pier E Maintenance Team

Maintenance Assumptions
▪ Continental shift pattern with 4 persons to provide one person continuous cover over 24hour operation ▪ Essential cover of the following roles is provided at all times: – 2 x Electricians – 2 x Mechanical Fitters – 2 x Baggage – 1 x Plumber – 1 x Technical Services Personnel – 2 x Manager / Supervisor ▪ No support available from other terminals through sharing arrangements ▪ All landside and airside facilities are maintained by the same team ▪ The payroll maintenance team is a DEL (directly employed labour force) providing front line reactive maintenance only. This team is supported by the planned maintenance team, who are operating a similar shift pattern and funded from the non payroll maintenance costs ▪ The 2010 build-up of staff envisages a gradual increase in maintenance staff over the year

Job Title	2010	2011
Electricians	6	11
Plumbing	4	8
Mechanical	6	11
Carpentry	1	2
Baggage	6	11
Technical Services	1	2
Airport Development	1	1
Landside Facilities	Included above	Included above
Managers	5	8
Total	**30**	**54**

Note: The manning of the Maintenance of Landside facilities has been identified by the DAA as a role that requires considerable FTEs. However, without further information on actual roles and responsibilities, it has been assumed that these roles can be covered in the other FTE roles identified above

Forecast maintenance staff costs were estimated using resources and appropriate wage cost information

Maintenance Staff Costs per FTE

Job Title	Base Salary (€)	Cost per FTE (€)
Electricians	35,000	50,391
Plumbing	35,000	50,391
Mechanical	35,000	50,391
Carpentry	35,000	50,391
Baggage	40,000	57,590
Technical Services	35,000	50,391
Airport Development	45,000	53,077
Managers	55,000	64,872

Source for Salaries: Brightwater Recruitment Specialists Professions Salary Survey (2009)
Airport benchmarks

FTE Analysis

- Fully-loaded costs include pension and PRSI
- All staff receive employer pension contributions of 7.2% on basic pay
- Shift allowances (19%) are assumed for all staff except airport developers and managers
- Minor allowances are made for overtime work (3%), including wages paid at penalty rates (+50%)
- Salaries derived from industry surveys and have been validated using airport benchmark data and professional judgement
- Growth in maintenance FTEs in T2 is linked to passenger growth, with an assumed correlation of 0.3 based on experience in airports elsewhere

Forecast Maintenance Expenditure at T2

	2010	2011	2012	2013	2014
Cost (€)	1,635,163	2,922,859	2,980,810	3,048,947	3,127,887

Cleaning services are driven mainly by passenger numbers, though certain elements will remain fixed over time

Definition

- The schedule of cleaning services covers the following areas:
  - Building fabrics
  - Exterior of buildings (landside and airside)
  - Landside pedestrian forecourt, including adjacent landscape and smoking areas
  - Public areas including furniture, fixtures and fittings
  - Common user areas, e.g. corridors, lifts
  - Check-in and boarding gate desks
  - Passenger and staff seat areas
  - Baggage halls
  - Boarding gates and lounges
  - CIP (commercially important passenger) lounges
  - Passenger boarding bridges (interiors)
  - Swing gates
  - Link bridges
  - Toilets
  - Terminal 2 operator offices
  - DAA's retail outlets
- Waste Disposal is outsourced and covered separately in Non-Payroll Costs. Other non-payroll costs include cleaning materials, towels and mats
- Pest control is assumed to be undertaken more efficiently by a specialised contractor

FTE Drivers

- The level of effort required to achieve standards of cleanliness and levels of service is linked to the number of passengers using the terminal
- A proportion of cleaning staff costs can be considered fixed, irrespective of the number of passengers. This fixed element is related to infrastructure capacity (floor sqm, windows, toilets, etc.)

Source: T2 Facilities Management tender documentation; Booz & Company Analysis
Assumption: DAA will operate 1,700sqm retail space

Our cleaning services regime is based on assumptions for required cleaning activities and staffing levels

Key Assumptions in Our Model

- Cleaning activities are carried out 24 hours a day:
  - 1 early and 1 late day shift of 8 hours each
  - 1 night shift of 8 hours
- Day staff are nominally allocated to particular areas of the building
- Night time staff are tasked with deep clean activities more easily performed while the terminal is vacant
- Window cleaning is carried out by a separate team; pest control is contracted out
- Cleaning area is assumed to be 80,000sqm:
  - Terminal operational area (66,000sqm)
  - Pier E operational area (23,000sqm)
  - Deductions for non-DAA retail (7,100sqm)
  - Deductions non-DAA retail back-offices and airline offices (c.2000sqm)
- WC and shower facilities make up c.2,200sqm of the cleaning area
- Levels of service are equivalent to those in T1

Cost Estimation Approach

- Cleaning costs at other airports are normally embedded within other contracted services and therefore do not provide an insight into FTEs and costs
- We have reviewed the T2 infrastructure to determine as far as possible routine cleaning activities, deep clean requirements, windows, and specialist cleaning
- We have reviewed the list of equipment being procured to support cleaning activities
- Cleaning costs at two UK airports have been examined to inform our review
- External sources including BCIS and other benchmarks have been consulted to determine appropriate salary rates

Source: IBEC Salary Survey 2008; British Chartered Institute of Surveyors Occupancy Costs

We have determined a level of cleaning FTEs required to perform routine and specialist tasks

Booz Analysis of Cleaning Staff Requirement

Daytime Cleaning Staff Positions		
T2 Departures (Check-in & Security) Floors	2	
T2 Departures Toilets	3	
Retail Common Areas	3	
CIP (commercially important passengers)	1	
Pier E: Floors and Airbridges	3	
Pier E: Toilets	4	
CBP	1	
Baggage Hall	2	
Baggage Make-Up Area	1	
T2 Arrivals including Floors, Toilets, VCA	4	
Forecourt Cleaning (Outdoor)	2	
Total	**26**	**87 FTEs**

87 FTEs are required to staff 26 posts (16hrs/day, 7 days/week), allowing 20% for leave, sickness and training

Other Cleaning Staff Positions		
Administrator	1	Office hours role
Supervisors	3	24hrs cover requires 15 FTEs
Night Staff	20	8-hour shifts, 7 days a week
Window Cleaner	12	8-hour shifts, 5 days a week
Total	**39**	**56 FTEs**

56 FTEs are required to staff various management, supervision and night-time cleaning roles

Salaries for cleaning staff have been derived from analysis of benchmarks from airports and other comparable industries

Cleaning Staff Roles	Salary	Cost	Comments
Administrator	€25,000	€29,488	Office hours
Supervisor	€30,000	€35,385	No shift premium
Daytime cleaner	€21,840	€25,760	€10.50 hourly rate
Night-time cleaner	€28,392	€31,444	30% night shift premium
Window Cleaner	€28,000	€33,250	
Average across cleaning category	**€24,940**	**€28,800**	

FTE Analysis

- Fully-loaded costs include pension and PRSI
- All staff receive employer pension contributions of 7.2% on basic pay. For night-time workers, basic pay is assumed to include shift allowance
- All staff costs subject to 10.75% PRSI
- Shift allowances paid to Daytime staff but no overtime is assumed
- Salaries derived from IBEC 2008 survey and airport benchmark data
- Cleaning staff assumed to be above minimum wage due to use of blended rate; higher reliability and quality required; and security background checks to be completed
- Some rotation of staff between night time and day time shifts is anticipated without impact on overall costs

Forecast Cleaning Costs at T2

	2010	2011	2012	2013	2014
Cost (€)	1,602,002	4,745,360	4,839,444	4,950,067	5,078,229

Source: IBEC Salary Survey 2008; BCIS Occupancy Costs

Airport management and support covers on the ground management of T2 along with facilities management contracts

T2 Airport Management and Support

- T2 will require management and support staff to manage operational activities throughout the terminal along with the supervision of facilities management contracts
- Terminal management and support roles include:
  - Overall terminal operations and facilities management
  - Operational and planning information managers
  - Terminal duty managers including VIP's and customer services
  - Taxi ground management and trolley management
- The roles are not related to head office management and only cover staff specifically involved in on the ground management of terminal operations

Facilities Management Contract Context

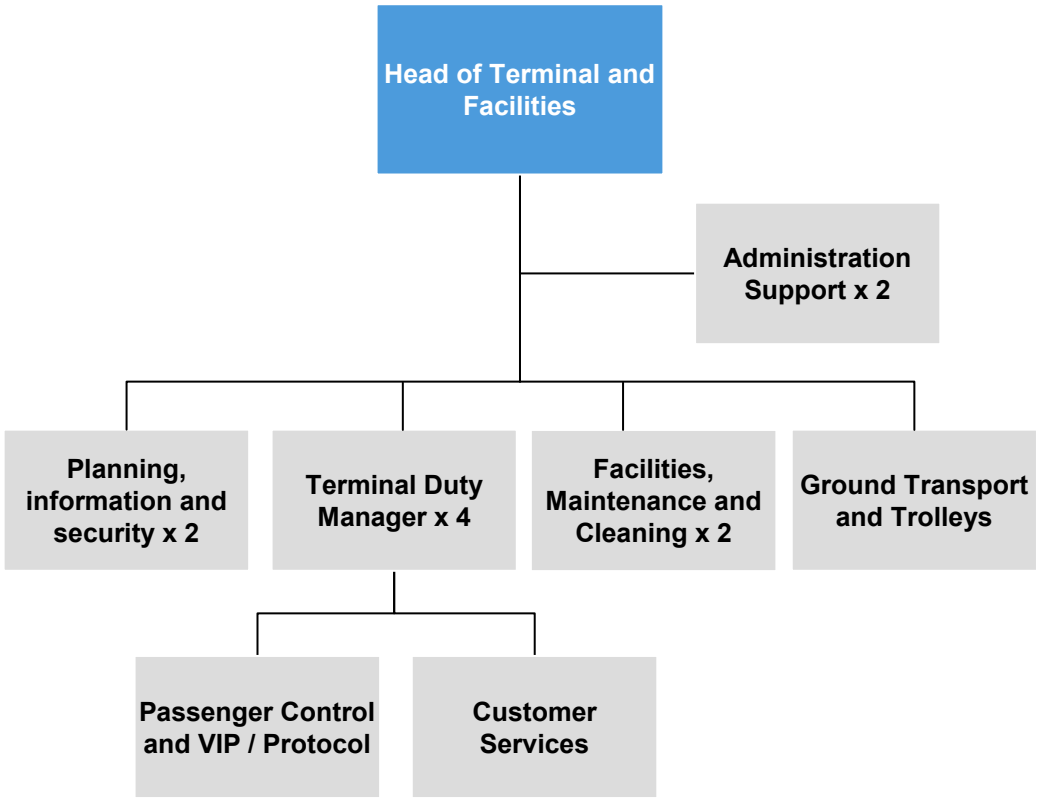
- It is planned that a facilities management contractor will be appointed to be responsible for a significant proportion of key functions and staff in T2
- The scope of the contract will include a wide range of functions within the terminal, such as:
  - Provision and coordination of security screening
  - Maintenance, cleaning and passenger operations services within T2 and on the forecourt
- Irrespective of the outcome of the procurement process and the successful bidder (e.g. DAA or another party), we have assumed that T2 management and support will be required
- Importantly during our analysis we have analysed the resourcing requirements to avoid double counting of management and staff within the management contract

The structure of the team is assumed to cover overall management of T2 totalling 13 FTEs per annum

Airport Management and Support Resources Rationale

- Detailed comparable resource benchmarks of staff by specific functions for terminal management staff are limited given different approaches to managing terminal operations, e.g. internal management versus outsourcing
- We have therefore developed our terminal management requirements utilising a bottom-up approach, estimating the staff resource requirements by functions
- Based on our bottom-up analysis we estimate:
  - 2011-2014: 13 FTEs
  - 2010: 5 FTEs, allowing for terminal preparation prior to opening in November 2010

Airport Management and Support Structure



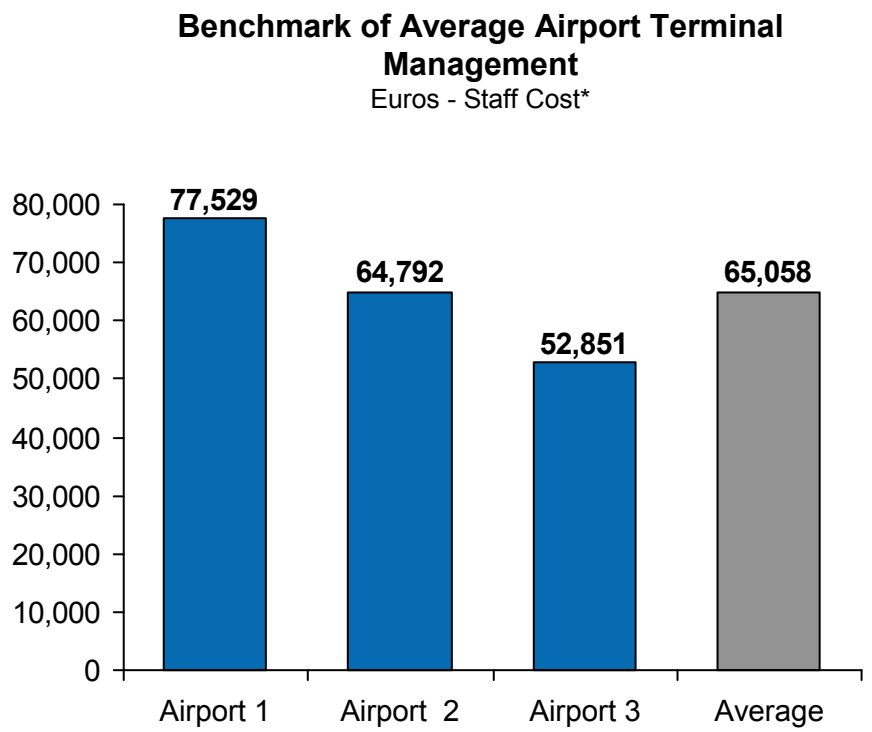
Specific roles would be linked to passenger handling and facilities management to ensure smooth operation of the terminal

Role	Description
Head of Terminal and Facilities + Support	▪ Overall head of terminal and facilities and senior interface / manager for contracted facilities management and associated services with to ensure compliance and service levels in line with contract ▪ Support staff provide administration and back up to head of terminal and facilities and to other terminal management staff
Planning, Information and Security	▪ Two managers responsible for planning / information and for security to ensure compliance and service levels in line with management contract for terminal users ▪ Planning and information covering control centre, crisis and contingency planning and response along with public address information services ▪ Security manager ensuring smooth operation of passenger and staff screening
Terminal Duty Management	▪ Four terminal duty managers to cover terminal 24 hours per day 7 days per week ▪ Responsible for overall terminal and passenger flows ▪ Supported by 1 additional junior manager who is responsible for customer services / information services, special events, VIPs, PRMs and swing gate operations
Facilities Management, Maintenance and Cleaning	▪ To ensure compliance with service level agreements with facilities, maintenance and cleaning ▪ Monitoring of building and energy management systems along with associated management ▪ Ensuring terminal areas are clean and maintained in line with service level agreements
Ground Transport and Trolleys	▪ Management of the provision of trolleys and throughout the site and ground transport in line with service level agreements ▪ Trolley management for the terminal and forecourt ▪ Forecourt management and taxi queue

Based on the roles of staff we have estimated annual staff costs via comparing with other airport terminal management staff

Staff Cost Estimates

- Based on our internal knowledge base we selected comparable airports data on airport terminal management
- In terms airport size:
  - Airport 1 currently has 3 million pax
  - Airport 2 currently has 6 million pax
  - Airport 3 currently has 20 million pax
- Staff costs include payroll and related costs such as pensions, over time, shift work, etc.
- Staff roles covered director of terminal operations, duty managers and facilities managers - it did cover staff performing functions such as security, cleaning and maintenance
- Average salaries for comparable airports are €65k



* Data confidential and airports cannot be identified; staff costs cover payroll and add on costs such as, pensions, social security, over time and shift work

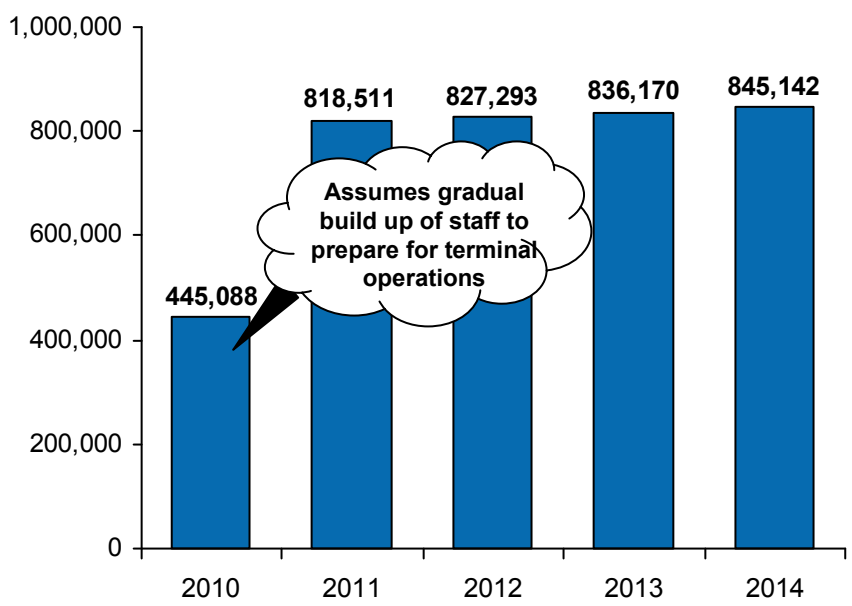
Based on the estimated resources and benchmark staff costs we calculated costs for management & support from 2010 to 2014

Estimated Cost

- Based on the estimated resourcing and associated staff costs we developed costs from 2010 to 2014
- The cost profile assumes that the terminal begins operation from the beginning of November with all 13 FTE staff working at that time
- Costs for 2010 amount to €445,088 (gradual build up of staff to prepare for terminal operations) and growing to €818,511 in the first full year of operation

Booz & Company Airport Terminal Management and Support Costs

Euros - 2010 to 2014*



Forecast Management & Support Costs at T2

	2010	2011	2012	2013	2014
Cost (€)	445,088	818,511	827,293	836,170	845,142

* Staff costs cover payroll and add on costs such as, pensions, over time and shift work

DAA intends to have its own retail operations in Terminal 2 airside, alongside concession operated retail and F&B outlets

Definition

- The retail operations at T2 cover only Duty Free retail shops
- All other retail will be provided through concessions
- Employees engaged in retail related activities only, not including management or cleaning

FTE Drivers

- Retail costs comprise both a fixed and a variable element
- A base level of staffing will be required, with additional staffing dependent on passenger numbers and optimised to cope with peaks and troughs

Key Assumptions

- DAA will operate some Duty Free shops in T2
- Retail operations from 5am to 9pm, 7 days per week
- Average wage of all retail employees taken, no separation of positions
- The allocation of retail space in T2 is as follows:

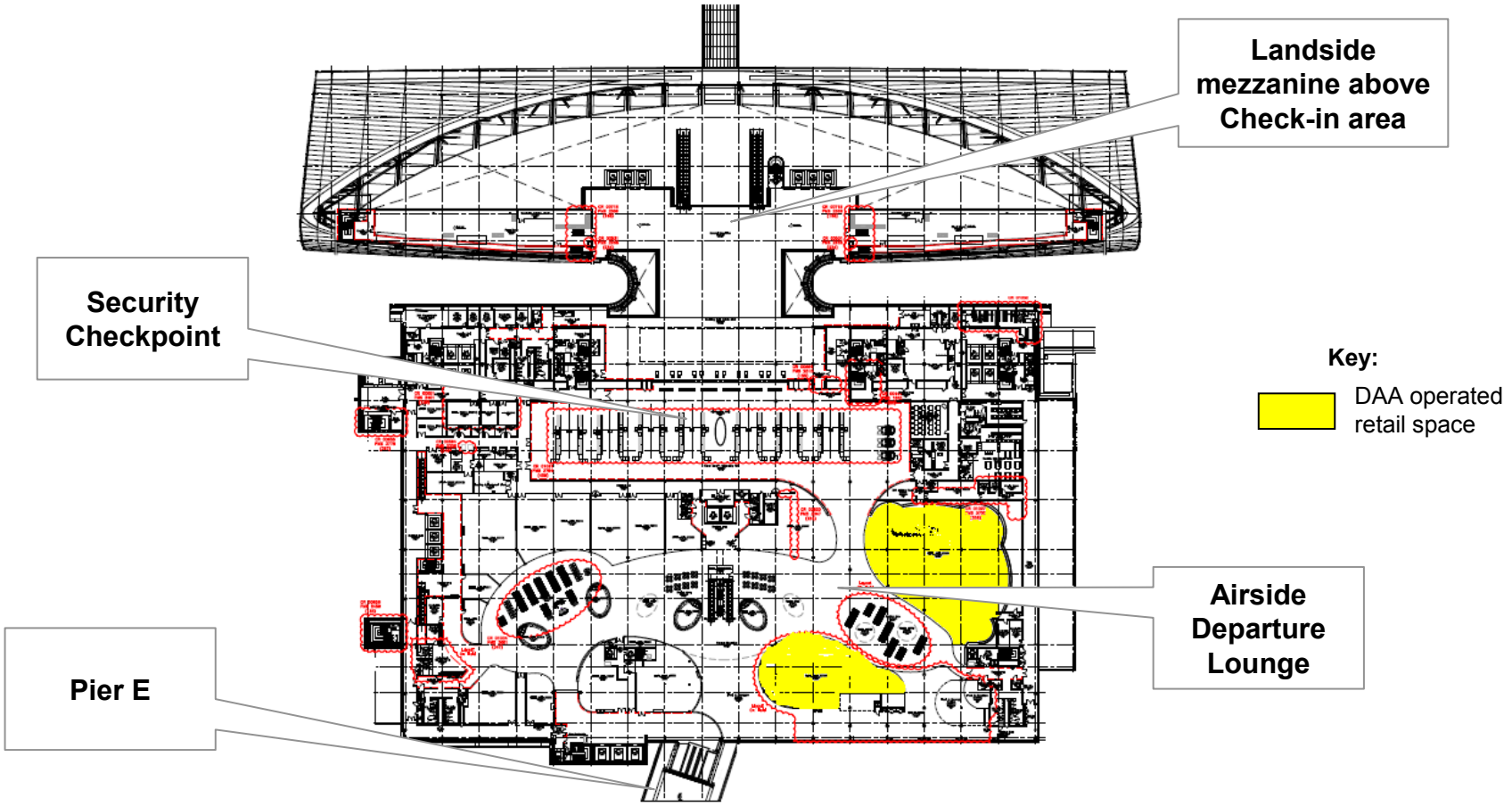
DAA Retail	1,400sqm	16.5%
Concessions	7,100sqm	83.5%
Total	8,500sqm	100%

Cost Estimation Approach

- Retail salary benchmarks are based on CSO data for retail employees in Ireland
- Number of staff per square metre of floor space is based on international shopping centre data
- The Airport Retail Study, Moodie 2006/7 also provided benchmark data on international duty free operators
- 8 hour shifts with staggered start times are assumed to be sufficient to cover the 16 hours of operation, with some 4 hour part-time shifts to increase staff utilisation

The retail floor space operated by DAA comprises 1,400m2 and is limited to the areas highlighted in yellow below

Terminal 2: DAA operated retail floor space



Some retail specific considerations should be borne in mind when determining the number of staff needed for DAA's airside shops

Factors impacting on staffing levels

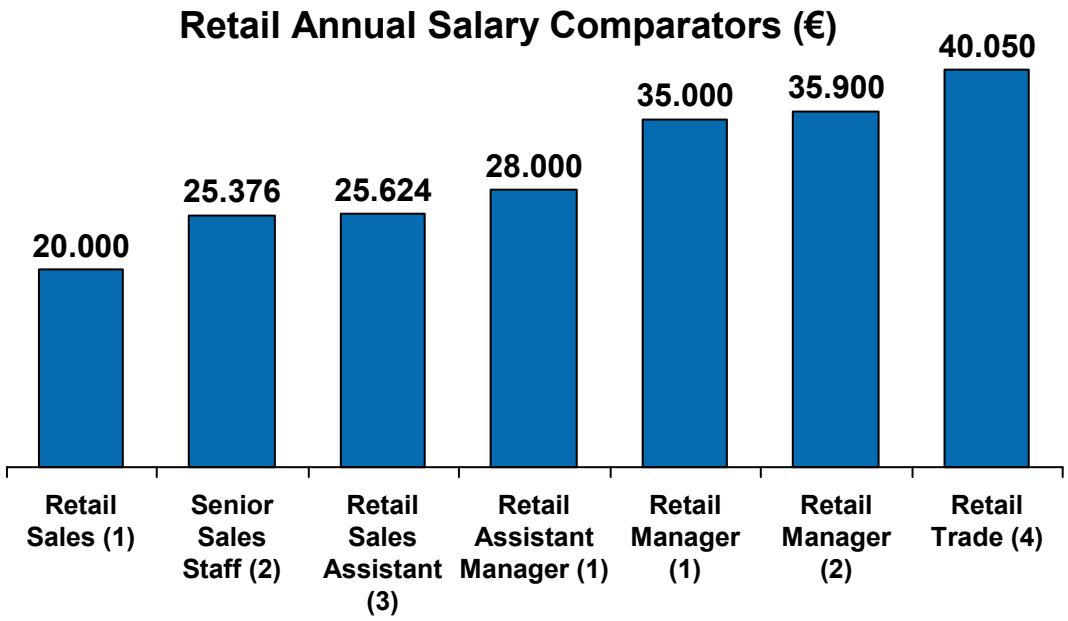
	Description	Driver of staff levels on T2
Size	▪ A single-floor retail unit will need fewer staff than a multi-floor unit of the same size	▪ DAA's T2 retail is divided between two areas on the same floor and in proximity to each other
Product mix	▪ The higher the price and complexity of the product, the more personal selling is required. More personal selling means more people	▪ Duty Free type stores stock a broad range of products including speciality/luxury items (e.g. perfumes, cosmetics, spirits) requiring trained and knowledgeable staff in order to maximise sales
Opening hours	▪ The number of work days and the hours of business may require shifts and flexible work times. Seasonality and passenger mix will also affect staffing	▪ Early morning peak requires sufficient staffing to maximise sales, achieved through layering part time and full time shifts
Patterns of trade	▪ The concentration of sales at certain times of the day or on certain days of the week will affect staffing needs	▪ Peak passenger numbers are at 6am, steady between 9am and 6pm, falling away after 6pm, suggesting some morning part-time shifts could be used efficiently
Additional roles	▪ In some shops, staff may be required to undertake a variety of roles including re-stocking shelves, managing warehousing and cleaning the store	▪ DAA retail staff will be responsible for: providing sales advice to customers; promoting products; re-stocking shelves; customer transactions; and preventing pilferage of stock

FTE estimates

- Our analysis has examined the maximum and minimum levels of staffing for DAA's T2 retail
- 24 staff required during busy periods
  - Equivalent to 58sqm/FTE
  - Average for US indoor shopping mall is 93sqm/FTE
- No fewer than 10 staff at any time that the stores are open
- Quiet periods used for majority of re-stocking activity
- Some part-time shifts used to manage peak demand
- Shifts staggered to cover full working day and maximise staffing during peak periods
- 20% allowance for leave, absence and training
- **Total FTEs: 70**

Source: Booz & Company analysis

Forecast retail staff costs were estimated using appropriate wage cost information, adapted for the airport retail environment



Analysis

- Comparator data illustrated to show large variation
- Airport retail rates attract premiums over national rates and are often in line with prime capital city rates
- Rates take account of any bonuses paid and allowances for out of hours travel
- A blended rate is used to include management and supervision staff, assumed to be paid at higher rates

- Our blended retail FTE cost comprises:
  - €35,000 base salary
  - 15% shift premium
  - 10.75% PRSI
  - 7.2% Employer pension contribution
  - **Average Cost/FTE: €47,474**

Forecast Retail Costs at T2

	2010	2011	2012	2013	2014
Cost (€)	893,559	3,419,047	3,486,835	3,566,540	3,658,881

1) www.manpower.ie; 2007 data; Dublin rates
2) www.retailexcellence.ie; 2009 forecast made in 2008; Dublin rates
3) www.payscale.ie; 2009 data; Dublin rates
4) www.cso.ie; 2008 data; Ireland

Terminal 2 Non-Payroll cost summary

Total Non-Staff Operating Costs at Terminal 2
(Booz estimate)

Non-Staff Costs (€)	2010	2011
Repairs and Maintenance Costs	3,580,000	4,340,000
Rents and Rates	2,672,792	3,899,950
Energy Costs	1,949,279	2,061,603
Technology Operating Costs	424,256	1,704,508
Insurance	3,294,477	3,947,262
Cleaning Contracts & Materials	252,619	1,014,933
CUTE Operating Lease Costs	126,318	507,500
Fees and Professional Services	933,056	566,386
Marketing & Promotional Costs	125,198	135,601
Telephone Print and Stationery	64,175	125,344
Employee Related Overheads	182,820	401,318
Other Overheads	1,570,000	300,000
Travel & Subsistence	233,333	1,400,000
Total	**15,807,054**	**20,455,374**

Note: Costs are expressed in nominal terms unless otherwise stated

Non-payroll repairs & maintenance expenditure for T2 has been derived from alternative airport terminal benchmarks

Definition

- Includes contracted maintenance services, management and overheads, spare parts and contingencies
- This includes the planned maintenance team, who are operating a similar shift pattern to the DEL

Assumptions

- The T2 Energy Centre is maintained under a separate budget line
- Spare parts / consumables are purchased under this head of charge, and are not free issue
- DAA operated retail also requires repairs and maintenance
- No savings from shared contracts or resources with Terminal 1 or the Energy Centre
- Hand-over of completed T2 takes place in April 2010
- 5% Contingency included in years 2010, 2011,& 2012
- 7.5% Contingency included in year 2013
- 10% Contingency included in year 2014

Comparative Cost Information

- Cost data derived from competitively tendered maintenance contracts for terminals of similar size and area within the UK was used to underpin the assessment
- This cost data comprises:
  - Management costs
  - Labour costs
  - Specialist contractors costs
  - Overheads
- To which is added an assessment of cost of spares, contingencies and expected real cost inflation
- 2010 costs are reduced as this is a part year for maintenance, not a full year

Forecast Maintenance Expenditure at T2

	2010	2011	2012	2013	2014
Cost (€)	3,580,000	4,340,000	4,426,047	4,527,221	4,644,435

Rent and Rates includes local authority rates which are outside DAA's control…

Definition

- Rent and Rates covers building rates paid to the local authority and water rates (detailed on subsequent slides)

Assumptions and Operating Concept

- Building rates are determined on the basis of rateable value, as determined by the local authority

Cost Drivers

- Costs are exogenous, determined and periodically reviewed by the local authority

Cost Estimation Approach

- DAA's costs have been accepted and are anticipated to be passed through outside of the price determination
- Our view is that the building will become subject to rates upon completion, with rates being due from April 2010

DAA Cost Estimate

- DAA has calculated that 66,000sqm of the 75,000sqm T2 is operational and therefore rateable

- Local Authority Rate estimates are:
- €27.54/sqm for Terminal area
- €61.76/sqm for Pier E
- …with assumed rises of 4% p.a.

- Total 2011 estimate is **€3,367k**

- Our calculation assumes that rates will not be due for January-March 2010

- Our 2011-2014 forecast is shown on the next page

…and water rates, which contain a fixed component driven by cleaning and a variable component dependent on pax demand

Definition

- Water rates are paid to the local authority and are understood to include water supply and sewerage charges

Assumptions and Operating Concept

- Principal water users at T2 are catering, WCs, and cleaning
- A certain proportion can be recharged from concessionaires

Cost Drivers

- Water consumption (and therefore sewerage) is partly fixed and partly variable
- T2's increased facilities (e.g. catering, WCs and cleaning) will increase fixed costs
- Passenger numbers are the principal driver however, demanding more water from catering and other facilities

Cost Estimation Approach

- Primarily an exogenous cost, largely outside DAA's control

Analysis

- DAA has forecast water rates for T2 on the basis of a per square metre charge derived from T1, since it considers capacity to be the principal driver. This does not correspond with DAA's own analysis in its CIP that water consumption is primarily driven by passenger numbers
- DAA has estimated its per square metre charge on the full T2 and Pier E area, including areas deemed non-operational; our estimates use the operational area of 89,000sqm
- Though there will be some water demand for cleaning prior to the opening of T2, we do not anticipate a full year's demand for 2010
- Our 2010 costs are estimated on 7 months of 50% consumption and 2 months at 100% consumption

Forecast Rates Costs at T2

	2010	2011	2012	2013	2014
Local Authority Rates	2,428,500	3,367,000	3,502,000	3,643,000	3,789,000
Water Rates	244,292	532,950	559,300	587,350	616,250
Total Cost (€)	2,672,792	3,899,950	4,061,300	4,230,350	4,405,250

Source: DAA CIP 9.007

T2 Energy Consumption, as calculated by DAA's designers in 2006, is higher than 2008 benchmarks

T2 Energy Consumption Forecasts (kWh/m² pa)

Arup on behalf of DAA, 2006

	Baseline	With Energy Conservation Measures	With Energy Conservation Measures and CHP
Electricity	16,220,000	13,769,000	8,334,637
Natural Gas	35,000,000	28,139,000	36,052,167
Total	51,220,000	41,908,000	44,386,804

Based on DAA information, we assume that all the energy conservation measures are included in the design and that CHP is also included

Benchmark Energy Consumption (kWh/m2 pa)

Assumptions

- Floor area: 91,000 m²
  - Operational area of T2 (66,000 m²) + Pier E (25,000 m²)
- CIBSE TM46: 2008 Energy Benchmarks, Category 25 Terminals:
  - Electricity: 75 kWh/ m²
  - Fossil Fuel (Natural Gas): 200 kWh/ m²
- CIBSE building energy benchmarks provide representative values for common building types against which a building's actual or forecasts performance can be compared

	2008 Energy Benchmark
Electricity	6,825,000
Natural Gas	18,200,000
Total	25,025,000

Terminal 2 was designed some time ago and would not be expected to achieve the highest standards of energy efficiency, nevertheless it is notable that its forecast consumptions is significantly higher than the benchmark

Assumed future energy prices and recharge rates were applied to the energy consumption forecasts to produce energy cost estimates

Assumptions

- 2009 electricity prices €0.14/kWh
- 2009 gas rates are as reported by Sustainable Energy Ireland (SEI) in July 2009 for a medium-sized operator with a 10% Large Energy User discount, i.e. €0.04/kWh
- Both electricity and gas prices increase at 12% pa until 2012 and 4% pa thereafter
- 30% of energy is recharged to tenants (this is a typical rate of recharge, e.g. Manchester Airport, Dublin Airport Terminal 1)

Forecast Energy Costs at T2

	2010	2011	2012	2013	2014
Electricity (€)	936,033	1,048,357	1,174,160	1,221,127	1,269,972
Gas (€)	1,013,246	1,013,246	1,013,246	1,013,246	1,013,246
Total Cost (€)	**1,949,279**	**2,061,603**	**2,187,406**	**2,234,373**	**2,283,218**

Technology Operating Costs relate to software and hardware support for a range of equipment installed in T2

Definition

- Terminal 2 has been specified with a number of up-to-date technologies to enable efficient airport operations and enhance passenger facilitation
- Technology operating costs are those costs that relate to software & hardware support for key airport operations systems

Technology	Function
▪ Airport Operation System	Software to support airport management activities
▪ Flight/Gate Information Display	Supervisory system software, servers, and display screens throughout terminal
▪ CCTV	Cameras, data recording and video display equipment for safety, security and operational monitoring
▪ WLAN/ LAN	IT network infrastructure
▪ Security Search Systems	Cabin baggage X-ray machines, Archway metal detectors, and handheld metal detectors
▪ Access Control Systems	Card readers, magnetic door locks and associated IT hardware and software
▪ Cellular Radio	Two-way radio equipment

Assumptions and Operating Concept

- Software and hardware support contracts were not entered into by DAA when new technology equipment was purchased for T2 so as to ensure that the most competitive market rates could be achieved by T2's eventual operator
- Costs relate primarily to licenses and support contracts rather than repairs and maintenance (budgeted for separately)
- Technology operating costs are driven through:
  - Software licensing agreements
  - Legal obligations to ensure security screening technology is operating within require parameters
  - High equipment reliability to minimise risk of costly disruption
- Some costs for retail technology are also assumed to be included
- CUTE fees are excluded and covered separately

Cost Estimation Approach

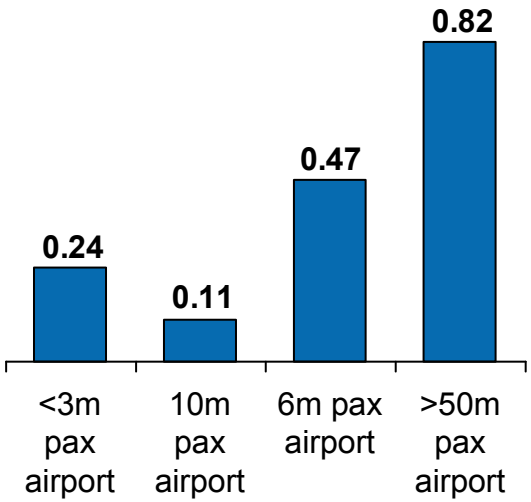
- Evaluation of the types of technology specified for T2
- Comparisons where possible with costs for similar equipment in other airports, typically 'IT/Communications Costs'
- Top-down cost analysis where comparable data is not available

Cost Drivers

- Fixed cost related to infrastructure rather than passenger numbers

Technology/IT operating costs at airports vary considerably, depending on the equipment installed and how costs are allocated

IT Spend per Passenger (€)



IT Operating Cost Analysis

- Benchmark data are presented to illustrate the variety of operating costs borne by airports for IT, communications and other technology
- Two categories often included are:
  - Back office IT support (few desktop PC's requiring support in T2)
  - Provision of desktop PC equipment (treated as T2 capex)
- A review has been conducted, considering the categories of technologies being deployed and the items excluded (e.g. extensive office desktop computers and support), and that maintenance and repair activities are budgeted for separately
- A cost of €1.7m for 2011 is considered reasonable

Forecast Technology Operating Costs at T2

	2010	2011	2012	2013	2014
Cost (€)	424,256	1,704,508	1,746,344	1,788,318	1,828,666

Insurance costs form nearly 20% of non-payroll costs and comprise a small variable element driven by passenger numbers

Definition

- Insurance comprises buildings insurance, public liability, and employee liability

Assumptions and Operating Concept

- Insurance cost is largely outside of DAA's control though attempts to renegotiate more favourable prices should be encouraged

Cost Drivers

- Insurance costs contain fixed and variable components
- Approx. 80% is fixed
  - Cost of reinstating the terminal building and equipment
  - Employee liability, dependent on number of staff and risk level
- Approx. 20% is variable:
  - Public liability (passengers)

Cost Estimation Approach

- Primarily an exogenous cost, largely outside DAA's control

Analysis

- DAA has forecast insurance costs for T2 based on costs for T1
- A variable component of c.20% is related to passenger numbers
- Our forecast uses CAR's traffic forecast to drive the variable component at €0.09 per passenger
- For 2010 we have assumed cover commences in April; employer's liability scales up through the year; and pax liability commences in November

Cost Forecast

- Insurance cost components:
  - Public liability: €0.09 per pax
  - Building: 0.4% building reinstatement value @ €690m (fixed)
  - Employers liability & misc: €441k (fixed)

Forecast Insurance Costs at T2

	2010	2011	2012	2013	2014
Cost (€)	3,294,477	3,947,262	4,012,749	4,087,916	4,173,971

Cleaning Contracts & Materials provide opportunity for efficient utilisation of resources based on negotiated contracts

Definition

- Cleaning costs and materials typically includes any outsourced cleaning contract costs and all necessary supplies and consumables used for the purposes of cleaning across the terminal building

Assumptions and Operating Concept

- The assumption is that the majority of cleaning activities are carried out by in house DAA employees using the required consumables
- Outsourcing is used for certain activities including waste disposal, pest control, and any specialist cleaning activity that is beyond the capability provided by the in-house staff
- Outsourced contract cleaning services are assumed to purchase their own consumables and so this cost is embedded within the Cleaning Contracts figure

Cost Drivers

- Cleaning contract and material costs are not directly a function of passenger numbers

Analysis

- Benchmark data was scarce as cleaning materials are usually embedded within the sub-contractors costs.
  - However, estimated cost for outsourced cleaning is approximately €15 per Square Meter
  - This figure covers both manpower and material costs
- Largely fixed element in relation to passenger numbers; those activities that require the most cleaning materials are carried out regardless of passenger numbers
- The fabric of the building has an impact on the type and quantity of materials required, hand towels are all but eliminated from passenger toilet facilities as hand dryers have been specified, thus resulting in a lower consumables overhead
- Efficient use of contracted staff so as to minimise overnight premiums can be utilised to minimise costs

Forecast Cleaning Materials & Services Costs at T2

	2010	2011	2012	2013	2014
Cost (€)	252,619	1,014,933	1,073,416	1,144,558	1,219,562

CUTE costs are relatively small compared to other overheads and are normally driven by number of check-in desks not passengers

Definition

- CUTE costs normally cover a fee to SITA or ARINC for provision of equipment, software, and data connectivity

Assumptions and Operating Concept

- The assumption is that CUTE costs are fixed and related to licence fees along with rental payment for specialist equipment
- Fees will be payable to cover the costs associated with the provision of 56 check-in desks at T2

Cost Drivers

- The primary cost driver is the number of check-in desks being used

Analysis

- There is no specific benchmark data for this line item, however this cost represents only 1% of the overall operating cost therefore it does not have a significant impact on operating costs
- Given the number of check-in desks planned, a cost of under €9,000 per desk does not appear unreasonable

Forecast CUTE costs at T2

	2010	2011	2012	2013	2014
Cost (€)	126,318	507,500	517,650	528,003	538,563

Fees & Professional Services include some costs for the opening of T2 and a large amount associated with retail activity

Definition

- DAA has not confirmed the definition of Fees & Professional Services but states that it includes one-off costs associated with the opening of T2
- We would expect consultancy and other professional services such as legal, environmental and planning to also be included

Assumptions and Operating Concept

- Certain professional services are procured from time to time concerning legal and other specialist advice, though some of these services would be expected to be covered at the DAA corporate level
- Some fees are related to retail, believed to comprise financial transaction services

Cost Drivers

- Small correlation with passenger numbers

Cost Estimation Approach

- Review of benchmark data to determine costs at other airports
- Qualitative assessment to determine if costs lie within expected range

Analysis

- Fees & Professional Services includes a one-off cost of €580k for Operational readiness which is evaluated separately in this document
- Regulatory, planning, and environmental consultancy fees are accounted for elsewhere in DAA's budgets
- A 2.2m pax airport spends between £175k and £280k annually on Fees and Professional services
- For this terminal we believe c.€570,000 p.a. is a reasonable estimate to fees to cover operations and retail activities

Forecast Professional Fees & Services Costs at T2

	2010	2011	2012	2013	2014
Cost (€)	933,056	566,386	603,582	642,624	682,319

Other overheads include some costs for the opening of T2 and the PRM contract cost

Definition

- Other Overheads includes a one-off cost for the operational readiness programme and contract costs for the Passengers with Reduced Mobility (PRM) service

Cost Drivers

- PRM contract cost is understood to be related to passenger numbers, being based on the utilisation of the service and a fixed minimum charge

Assumptions and Operating Concept

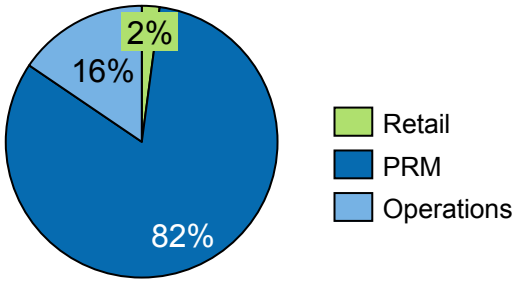
- PRM costs are assumed to increase in 2011, the first full year of operation, with a corresponding decrease in T1 costs
- Some costs are also attributable to Operations and Retail activities
- Retail other overheads are transferred from T1
- Except for operational readiness costs, PRM, retail and other costs are expected to commence in November 2010 when T2 opens

Cost Estimation Approach

- Review of benchmark data where available to determine costs at other airports
- Qualitative assessment to determine if costs lie within expected range
- Operational Readiness costs are evaluated in more detail elsewhere in this document
- Review of PRM costs is out of scope since the scope of the current contract includes provision of services in T2
- Assessment of operational readiness costs included in Other Overheads, is detailed separately in this report

T2 Other Overheads

DAA estimates for T2 in 2011



Forecast Other Overheads Costs at T2

	2010	2011	2012	2013	2014
Cost (€)	1,803,333	1,700,000	1,800,000	1,900,000	2,000,000

Minor operational costs involving general administration and marketing represent a small component of non-payroll costs

Administration and Marketing Costs

- General administration costs for airports generally cover office costs such as telephone, printing and stationery
- Marketing costs* cover airport promotional costs, events and airport publicity, for example, marketing the airport offer, its serviced and promoting the use of the airport
- These types of administration costs are generally small and are often immaterial with percentage increases having only a minimum impact on the cost base
- A bottom-up approach is difficult given the nature of the costs and therefore for this cost item we have undertaken a comparison analysis to estimate the cost level focusing in these costs as a percentage of overall cost

Assumptions and Analysis

- Based on review of small sample of airports (3 airports) we have been able to identify and break down some minor operational costs
- On average office costs for telephone, printing and stationery represent around 1% of operational costs for the selected airports
- For marketing costs, on average these costs represented around 3% of operational costs
- Given that these benchmarks represent total costs for individual airports and that based on our traffic assumptions 40% of the passengers are proposed to use T2, we therefore estimate:
  - 0.4% of operational costs are allocated to office administration
  - 1.2% of operational costs are allocated to marketing

Forecast Other Non-Payroll Costs at T2

	2010	2011	2012	2013	2014
Cost (€)	272,043	577,631	717,596	737,283	761,983

* Excludes marketing and / or promotion to airlines and / or discounts on charges

Note: Excludes CAR costs and Allocations of Materials & Services

The successful opening of Terminal 2 requires a comprehensive commissioning, handover and operational readiness programme

- Prior to commencing operations at Terminal 2, there is an essential set of activities to be undertaken to ensure that all of the systems and processes are fully tested and all staff trained and familiarised in the new terminal
- Almost all recent major airport terminal openings have resulted in disruption of some sort, including Hong Kong (1998), Kuala Lumpur (1997), and most recently Heathrow Terminal 5 (2008), through a combination of baggage handling system problems and a lack of staff familiarity
- At LHR T5, British Airways staff were given a three-day training programme, mainly focused on the layout of buildings rather than hands-on activity. The building was still a construction site
- BAA trialled LHR T5 using 15,000 volunteers, within 66 trials, with 50,000 'passenger profiles'; 40,000 bags were tested through the baggage handling system
- The operational readiness programme was scheduled to take 6 months but was curtailed due to building delays

Findings from House of Commons Transport Committee Report on the opening of Heathrow Terminal 5

- Training and familiarisation for staff should not be compromised if the construction timeline is delayed
- Testing of the baggage system should include a diverse range of baggage types
- Live monitoring of the baggage system performance is required
- Close co-operation between the airline and the airport operator is necessary at management and operational levels
- Staff search and control posts should be over-resourced in the initial days of opening

Source: House of Commons Transport Committee Report on the opening of Heathrow Terminal 5

Whilst commissioning and testing are usually treated as Capex, the operational readiness programme is considered to be Opex

	Description	
Commissioning & Testing	▪ Contractor and suppliers' responsibility to commission and test their systems ▪ Suppliers required to demonstrate the performance and reliability of their system and integration with other systems where applicable	Capital Expenditure
Operational Readiness	▪ Training of DAA staff by contractors/suppliers (i.e. maintenance personnel, facilities managers)	Capital Expenditure
	▪ Staff training for DAA personnel ▪ Staff training for airline and ground handling personnel ▪ Operational trials involving members of the public, etc.	Operating Expenditure

DAA's Operational Readiness Plan

1. Facilities readiness
2. Process readiness
3. Personnel readiness
4. Contingency readiness
5. Stakeholder readiness
6. Ready-for use trialling
7. Transitioning

- Our assessment of Items 1 & 2 suggests that these might be Capex activities since they relate principally to the readiness of the infrastructure
- All others activities are legitimate Operating Expenditure

Source: TPS Consultancy
DAA Response to Booz information request 08 October 2009

A significant number of trials will be necessary to demonstrate operational readiness, with one-off costs of €2.15m in 2010

Operational Readiness Activities

- A core team is required from April 2010 to November 2010 to plan and deliver a wide range of activities
- Facilities and Stakeholder teams would be in place for March to November 2010
  - DAA and terminal operator costs for these have been included in the 2010 costs within each payroll category
  - Stakeholder cost have not been considered in this report
- A team is required to be responsible for Process, Personnel, and further Stakeholder Readiness areas in Airlines, Handlers, Retail, Government and Agencies, Contingency, Ready-for use trialling and Transitioning from April to November 2010
- The core project team will also plan and deliver a large number of trials involving the DAA and airline users, primarily Aer Lingus
- 30-40 trials may be required (DAA only and DA/Airlines combined) to prove fully the operational readiness of the terminal

Operational Trials

- Terminal Flows (4-6 including trials using volunteers from the Public)
- Passenger Queue Management
- Wayfinding
- VIP & CIP treatment
- Passengers with Reduced Mobility
- Meet & Assist
- Unaccompanied Minors
- Crew
- Baggage (4 trials)
- Retail Ops
- Security
- Facilities
- Fire scenarios (Terminal, Pier E and Immigration at peak time)
- First & Last Impressions
- Taxi operations
- Control Authorities
- Multiple Aircraft Ramp System (MARS) boarding,
- Aircraft returning to stand with a technical fault
- Staff routes
- FIDS failure
- Opening day contingency plan

Fees and Professional Services

- A full-time Fire Systems specialist will be required over the period March to May, returning full-time in September and October
- A full-time Baggage specialist will be required from March to November
- Specialist Check-in support will be available part-time from April to July and full-time from August to November, available in support of the DAA Operational Readiness testing team

Summary

- Given very limited visibility of DAA's full operational readiness and test programme, our assessment is based on the activities that would be required at a new terminal to ensure the operator and all stakeholders and control authorities are fully prepared for operations to commence
- A total estimate of **€2.15m** comprises €580k for contractor costs within Fees & Professional Services and €1.57m which have been included within Other Overheads as a one-off cost in 2010

Booz & Company has identified opportunities to reduce operating costs at Terminal 1 as a result of the opening of Terminal 2

Total Operating FTEs and Costs at Terminal 1
(Booz estimate)

Staff Category	2010		2011	
	FTE	Cost (€)	FTE	Cost (€)
Airfield Services & Facilities	52	4,180,725	52	4,199,162
Terminals	187	10,996,679	144	8,508,279
Airport Police Fire Service	572	35,761,856	486	30,549,507
Maintenance	210	13,102,411	196	12,305,249
Cleaning	237	12,284,090	208	10,834,602
Airport Management	60	4,572,432	57	4,338,861
Car Parks	48	3,123,440	46	3,006,497
Commercial	35	5,110,839	34	4,886,161
Retail	224	12,814,665	199	11,415,192
Support Services	14	1,287,892	14	1,293,572
Total	**1,639**	**103,235,029**	**1,436**	**91,337,082**

Note: Costs are expressed in nominal terms unless otherwise stated

We have assessed the impact of opening of T2 on the Terminals function in T1

Key assumptions

- The base for Terminal T1 FTEs is as per CAR's draft determination of airport charges at Dublin airport
- No further efficiencies are estimated beyond those already incorporated in CAR's base FTE figures
- Passenger driven Terminal activity is driven by DAA's existing work practices and roster parameters
- Terminal sub functions in Terminal 1 will remain unchanged unless directly impacted by the opening of Terminal 2
- Certain elements of Terminals T1 sub functions provide 'campus' based activities covering both T1 and T2 operations
- Cost/FTE will only be impacted by the percentage reduction of Terminal staff as a result of passenger traffic moving to Terminal 2 i.e. base salaries and uplift assumptions to full cost/FTE will be as detailed in CAR's draft assessment

Methodology

- CAR baseline for Terminals is broken down with efficiencies and elasticity included into the Terminal sub functions
- Each sub function is identified by the impact of key resource drivers, e.g. passenger volumes, facility related
- The impact of the opening of T2 operations on these drivers is calculated to determine a new resource requirement for T1 Terminal operations in the first full year of operation of T2 in 2011
- Terminal T1 resources are pro-rated to take account of part year operation of T2 in 2010
- Cost/FTE is reappraised to consider any changes as a result of the new established resource numbers for Terminals T1
- Elasticity is reappraised to determine any changes on resource drivers for the standalone Terminal operation in T1

The assessment was based on a set of assumptions concerning operating practices for T1 and certain 'campus-wide' activities

Sub Function	2011 Standalone Assessment explanations	2011 Total FTE
Duty Landside / Customer Services / Terminal Services Office (TSO)	Reduction of work would be expected due to realignment of duties between Duty Landside, Customer Services and Terminal Services Office – given smaller functional size of Terminals post T2 recommendation is amalgamation of the three sub functions to achieve synergies	14
Protocol	Campus wide activity relating to VIP passengers therefore left unchanged	13
Information Centre	Reductions related to lower requirement for passenger flow management (pink t-shirt staff) due to reduction in passenger volumes and no congestion	42.5
Landside Services	Assumes Baggage Services and Taxi Marshalling included in these duties	20
Trolley Services	25% of staff considered to be static and delivering a campus wide service of collection and reconciliation of trolleys to T1 and T2. Remaining 75% are passenger related and reduced to account for reduction in passenger numbers in T1	45
Executive Lounges	Unchanged given facility driven and relatively low resources	10
Terminals Total		**144.5**

The assessment of the T1 Terminals function for a full year of operation post T2 opening gave an overall reduction of 51.5 FTEs

Sub Function	2008 Base	Resource Driver	2011 adjusted base – CAR Efficiencies/ Elasticity	2011 assessment T1 standalone	Commentary
Duty Landside / Customer Services / Terminal Services Office	*	Facilities	21	14	Incorporate work from Terminal Services (TSO), Duty Landside and Customer Services into an amalgamated sub function
Protocol^	*	Passengers	13	13	VIP – volumes unpredictable
Information Centre^	*	Passengers & Facilities	65	42.5	Includes passenger flow management – 'pink T-shirts'
Landside Services	*	Passengers	23	20	Includes Taxi marshals
Trolley Services^	*	Passengers & Facilities	64	45	Will deliver trolleys to T2 as well as T1 – 25% considered static manning
Executive Lounges	*	Facilities	10	10	Facility based small functional size
Terminals Total	*		**196**	**144.5**	

* Redacted for confidentiality reasons

^ Includes Campus activity, i.e. functions that relate to Terminals 1 and 2

Terminals costs for T1 in 2011, the first full year in which the impact of T2 is seen, are estimated to be €8.5m

Category	2008	2009	2010	2011	Comments
CAR DD	*	*	196	196	As per CAR Draft Determination figures
Terminals T1 assessment	*	*	187.4^	144.5	^CAR's DD FTE 10 months of the year, Booz assessment for final two months
Difference to CAR DD	0	0	-8.6	-51.5	This represents a 26% reduction in Terminals T1 in the first full year of operation as a result of T2 opening
Revised Elasticity	0.6	0.6	0.6	0.6	The figure was derived by determining the larger sub-functions of Information Centre, Trolleys and Landside services as being c.90% elastic to passenger volumes

Summary Conclusions

In our analysis we found several variations in categorisation of Terminals sub-functions between DAA responses to the Draft Determination and responses to our own queries. The sub-function breakdown will therefore not represent an exact match to DAA operations in T1, but our analysis was directed to define overall FTE levels that are adequate to manage a T1 standalone operation with certain campus-wide activities as previously discussed

Forecast Terminals Costs at T1

	2010	2011	2012	2013	2014
Cost (€)	10,996,679	8,508,279	8,754,365	9,060,658	9,432,615

We have assessed the impact of the opening of T2 on Airport Police Fire & Security (APFS) resource levels in Terminal 1

Key assumptions

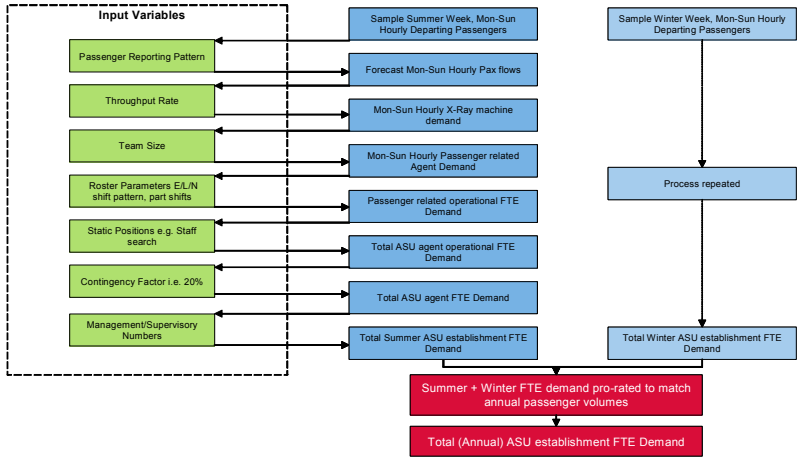
- The base for APFS FTEs was as detailed in CAR's Draft Determination of airport charges at Dublin airport
- No further efficiencies are estimated beyond those already incorporated in CAR's base FTE figures unless related to the opening of Terminal 2
- Passenger driven security requirements are driven by DAA's existing work practices and roster parameters
- Static positions in Terminal 1 will remain unchanged unless directly impacted by the opening of Terminal 2
- The patrol of Terminal 2 by Airport Police is a campus wide activity and manned from the Terminal 1 APFS
- Cost/FTE will only be impacted by the percentage reduction of ASU staff as a result of passenger traffic moving to Terminal 2, i.e. base salaries and uplift assumptions to full cost/FTE will be as detailed in CAR's Draft Determination

Methodology

- Breakdown of AFPS FTE between Police, Fire and Airport security unit (ASU) is as detailed in Indecon Jacobs report on operational efficiency prior (2008 figures)
- Passenger driven demand for ASU resources was assessed bottom-up using Booz & Company methodology as developed for the T2 assessment, with DAA resource parameters inputted (e.g. 39 hour working week)
- Static positions were reviewed for any potential impact of Terminal 2 opening and a T1 only demand established
- Management/supervisory/trainers numbers were re-assessed given the smaller staff unit size required post the opening of T2
- Additional resources for patrol of T2 by airport police were added to T1 airport police resources
- A revised cost/FTE was established for T1 APFS, factoring in a reduction in lower cost ASU staff numbers and an increase in more expensive airport police FTEs
- A new elasticity was established for the new T1 APFS resource numbers

The bottom-up assessment of T1 APFS resources resulted in a requirement for 486 FTEs in 2011

- Using the Booz model as detailed previously, parameters were adjusted to match DAA working practices, i.e. 39hr working week, expected meal break allowances, typical roster efficiency, etc. to generate a (full year) resource demand for T1 post T2 opening
- ASU security staff search and security posts, Police and Fire are normally considered invariant to Passenger numbers other than due to step changes. Given the large change of passenger numbers (downturn and opening of T2) that would occur by 2011 we considered that 30% of ASU static points and Police activity should be considered elastic in these particular circumstances



Staff Category	2011 Booz	Comments
Passenger Search	144	▪ Passenger Search units T1 including entrance points modelling analysis based on DAA working practices
Static Points	116	▪ 30% of static points considered elastic to passenger numbers. Reduced activity would enable greater flexibility in manning across points and consideration of partial closures
Management / Supervision / Training	15	▪ These numbers scaled down by 25% to take account of smaller functional size.
Total ASU	**275**	
Police	98	▪ 30% of Police activity considered elastic to step change in passenger volumes. ▪ 20 FTEs added after reductions for T2 patrolling
Fire	113	▪ Considered inelastic to Passenger volumes
Total APFS	**486**	

An increase in Police FTEs is forecast to cover campus-wide patrols, whilst Fire unit resources will remain constant

Category	2008^	2009	2010^^	2011	Comments
CAR DD	668	664	591	602	▪ As per latest Draft Determination figures
Police	*	*	90	98	▪ +20 FTE for T2 patrol (prorated in 2010) ▪ -10 FTE on 2008 figure (30% of activity considered elastic due to step change in passenger volumes) ▪ Given step up in Police numbers for T2 patrol elasticity saving of -10 FTE not achieved until T2 opening
Fire	*	*	113	113	▪ Considered inelastic to passenger volumes
ASU	*	*	378	275	▪ 2010 assumes * FTEs for 10 months and 275 FTEs for two months
Total APFS	660	638	581	486	
Difference to CAR DD	-8	-26	-10	-116	Differences impacted by: ▪ Actual vs. budget 2008, 2009 ▪ Impact of capitalisation of posts 2008-2010 ▪ Impact of T2 opening Nov 2010 onwards

* Redacted for confidentiality reasons

^ Breakdown as per Indecon Jacobs report

^^ 2 months proration of standalone T1 in 2010

Whilst overall APFS costs reduce, costs per FTE will increase as staffing proportions change

Key assumptions

- The net decrease by 2011 of 116 FTE will be in lower paid ASU staff (i.e. lower pay rates than Police and Fire)
- The net increase of 20 FTE Police required for Patrol of T2 is offset by elasticity reductions of 10 FTE given the step change in passenger volumes
- Existing cost/FTE Data for ASU standalone and APFS cost/FTE were used to generate a revised cost/FTE for the standalone T1 APFS
- The ratio of passenger related ASU work to static positions and management/supervisory numbers in the new T1 standalone numbers determines a new elasticity factor for T1 ASU
- This was combined with Police and Fire numbers (considered inelastic post T2 opening) to develop a passenger driver value for APFS standalone

Category	2011	Comments
Cost/FTE	€58,672	This equates to a 7% increase on the Cost/FTE in CAR's DD due to the change in proportion of higher paid Police and Fire in the standalone T1 unit
Passenger Driver (CAR)	1.0	As per Draft Determination
Passenger Driver (Booz) *ASU only*	0.52	Smaller size Passenger Search unit with lower proportionate reduction in Static points
Passenger Driver (Booz) *APFS*	0.33*	Assimilates ASU-only factor into APFS; Police and Fire assumed to be invariant to passenger numbers post T2 opening

*Booz recommends the Commission considers the implications of adopting the Passenger Driver of 0.33 for a T1 APFS standalone operation

- A significant number of T1 security FTEs have been capitalised during the development of T2 and our assessment is based on the assumption that no further spend is required above 116 FTEs to accommodate the security posts operation after the opening of T2
- The functional split of FTEs across Police, Fire and ASU at the beginning of 2010 is unlikely to match the breakdown detailed on the previous page as this has been distorted by the capitalisation of security posts. Police elasticity savings of 10 FTEs are assumed not to be delivered until opening of T2

Forecast APFS Costs at T1

	2010	2011	2012	2013	2014
Cost (€)	35,761,856	30,549,507	31,182,989	31,933,614	32,808,820

T1 maintenance will see a small reduction in FTEs when T2 opens, with the impact constrained by the nature of the facility

T1 Maintenance

- T1 maintenance is understood to include all of the functions that have been defined for T2, but also includes the maintenance of airfield services
- These roles are carried out by a mix of in-house employees and outsourced contracts
- Reports prepared for this Determination note that contracted services typically include duties such as painting and equipment maintenance
- In-house duties therefore relates to mostly reactive maintenance and general facilities management, such as plumbing, electrics, mechanics, carpentry, baggage, airport development and managerial/supervisor roles
- No further efficiencies are estimated beyond those already incorporated in CAR's base FTE figures

Analysis

- As noted, airport maintenance is driven by a number of factors relating to airport design, the meeting of service level targets, and the level of use
- However, due to the age of the terminal, and the inherited limitations in its design, the level of staffing will not be as variable as if it was a new or younger facility - not recognising these issues could jeopardise the ability of the operator to meet service level targets
- The correlation between passenger traffic and FTEs has been set at 0.15, 50% of the correlation that has been assumed for T2
- A passenger driven correlation has been assumed since the large reduction in passenger numbers will result in less wear and tear of the building fabric and equipment, fewer incidents of damage, and easier maintenance access due to reduced congestion

Forecast Maintenance Payroll Costs at T1

	2010	2011	2012	2013	2014
FTEs	210	196	193	190	187
Cost (€)	13,102,411	12,305,249	12,244,955	12,181,951	12,116,185

We have assessed the impact of the opening of T2 on Cleaning FTEs in Terminal 1

Key assumptions

- Certain activities such as window cleaning, management, and pest control are driven by infrastructure (capacity) rather than passenger numbers
- No further efficiencies are estimated beyond those already incorporated in CAR's base FTE figures
- Day staff, night staff, and supervisors work in shifts
- No changes to salaries are anticipated

Methodology

- The Terminal 1 FTEs detailed in CAR's draft determination and DAA's roster were used as a base for evaluating the impact of opening T2 on cleaning staff
- Passenger driven demand for Cleaning staff was assessed and then bottom-up validation was carried out using Booz & Company methodology as developed for the T2 assessment
- Cleaning staff numbers were re-assessed for 2011 before calculating 2010 and subsequent years
- A revised cost/FTE was established for T1 cleaning staff
- A driver based on passenger numbers was developed for subsequent years

The impact on FTEs in the second year of opening T2 could be further reduced by 11% beyond CAR's Draft Determination

Staff Category	2011 Booz	2011 CAR	FTE Diff.	% Dif.	Comments
Day Staff	129.6	144.8	-15.27	-10.54%	A decrease in FTEs can be achieved without a reduction in cleaning standards
Night Staff	51.2	54.12	-2.9	-5.4%	No significant reduction foreseen since night time activities (e.g. deep clean) are mainly capacity driven
Management/ Adm/Supervisors	10	12	-2	-16.67%	Management and Administrative positions remain the same. Supervisors will be reduced by 16% in line with the reduction in day and night staff
Window Cleaning	12.8	14	-1.2	-8.57%	Small reduction in FTEs associated with the closure of TBG
Pest Control	1	1	0	0%	No change to CAR's figure
Total	**204.6**	**230**	**-25.4**	**-11.04%**	A further 11% reduction from CAR's forecasted figures is possible

FTE Analysis

- The opening of T2 allows cleaning FTEs in T1 to be reduced by 11% from CAR's baseline without decreasing standards
- CAR figures forecasted a reduction of 10% by 2011; therefore with our proposed reductions a total decrease of 20% from DAA's forecasts is achievable by 2011
- FTEs are expected to increase again from 2012, with a 30% correlation with passenger numbers
- Average salary will remain constant as FTEs are removed across the function

Forecast Cleaning Costs at T1

	2010	2011	2012	2013	2014
Cost (€)	12,284,090	10,834,602	11,049,415	11,301,991	11,594,611

Airport Management & Support FTEs will see a small reduction as development activities associated with T2 cease

T1 Management & Support

- T1 Management is understood to include the following roles:
  - Airport development
  - Environment
  - Operations planning
  - Contingency planning
  - Communications
  - Marketing
  - Business data
  - IT&T
  - Finance
  - Health & Safety
  - General Management
  - Transport Administration
- A number of support roles are also understood to exist

Analysis

- Terminal management roles for T2 have been accommodated within T2 budgets and therefore no increase in T1 FTEs is anticipated
- Certain activities are expected to be campus-wide and conducted from within the T1 workforce (e.g. contingency planning), however without any change in workload requiring additional personnel
- Rather, Terminal 1 Management would expect to see a decrease in FTEs since activities concerned with the development of Terminal 2 will cease
- A reduction of four Management FTEs beyond CAR's Draft Determination is therefore expected once the development work associated with T2 is complete in 2011

Forecast Management & Support at T1

	2010	2011	2012	2013	2014
Management FTEs	61	57	57	57	57
Cost (€)	4,572,432	4,338,861	4,385,417	4,432,473	4,480,033
Support FTEs	14	14	14	14	14
Cost (€)	1,287,892	1,293,572	1,307,452	1,321,481	1,335,660

Resources and costs for Car Parks and Commercial categories of staff are not expected to be impacted by the opening of Terminal 2

Car Parks

- No additional car parks will be constructed as part of T2 and they are therefore considered a campus-wide facility resourced from Terminal 1
- Staff resources and costs are not expected to change beyond the reductions proposed within CAR's Draft Determination

Forecast Car Park Costs at T1

	2010	2011	2012	2013	2014
FTEs	**48**	**46**	**44**	**42**	**40**
Cost (€)	3,123,440	3,006,497	2,906,637	2,804,288	2,699,407

Commercial & Head Office

- Commercial activity concerns property management, development and strategy, revenue management for concessions and other non-aeronautical activities, marketing of commercial and retail operations, and commercial legal services
- Head Office includes a range of campus-wide functions such as HR, corporate services, regulatory communication and business support
- Campus-wide activities will not reduce with the opening of T2; however certain roles understood to be related to the development of Terminal 2 would be expected to disappear
- Whilst no specific reductions in FTEs or costs have been identified beyond those proposed within CAR's Draft Determination, it is expected that the reductions could be made more swiftly once T2 is commissioned and in operation. It is also expected that the highest cost roles within the Commercial category were related to the T2 development and therefore this is where the greatest savings would be made

Forecast Commercial & Head Office Costs at T1

	2010	2011	2012	2013	2014
FTEs	250	238	227	215	204
Cost (€)	24,824,449	23,727,475	22,637,125	21,553,912	20,478,577

Retail FTE costs for T1 will reduce given the expected sales decline at T1 Retail as passengers migrate and space is reallocated

Definition

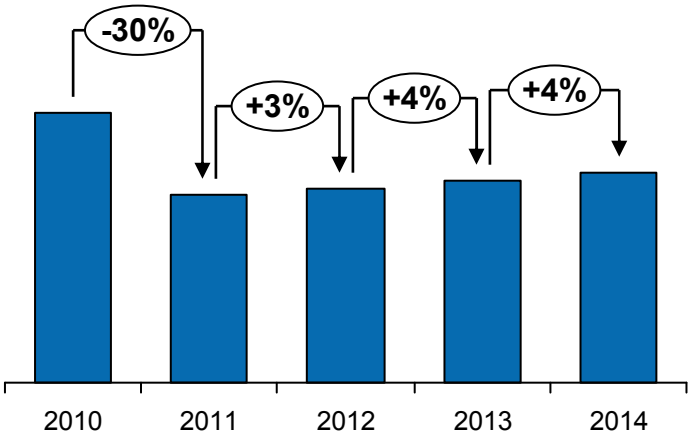
- The retail operations at T1 cover Duty Free shops and tax paid outlets in the piers and in the main airside retailing concourse selling a wide variety of products
- Employees are engaged in retail related activities, including store management, merchandising and re-stocking shelves but not cleaning
- Certain buying, warehousing and logistics activities are also included

Analysis

- When T2 opens, T1 retail footfall will reduce by approx. 40%
- Shops will continue to operate existing opening hours and a certain proportion of staff numbers are fixed
- DAA intends to reduce the number of stores it operates inT1 and to offer concessions for that space
- Given the reduction in space, a further reduction in FTEs independent of the reduction related to T2 can be expected
- We assume a 30% reduction in FTE requirement at T1 post opening of T2 given retail re-allocations and reduced footfall
- Some efficiency gains given reduction in floor space per FTE are assumed at T1 post T2 opening
- No further efficiencies are estimated beyond those already incorporated in CAR's base FTE figures

T1 Retail Sales

DAA forecast for 2010 - 2014



Forecast Retail Costs at T1

	2010	2011	2012	2013	2014
FTEs	253	177	177	177	177
Cost (€)	12,814,665	11,415,192	11,424,089	11,463,435	11,535,832

Terminal 1 Non-Payroll cost summary

Total Operating FTEs and Costs at Terminal 1
(Booz estimate)

Non-Staff Costs (€)	2010	2011
Repairs and Maintenance Costs	10,377,465	9,896,804
Rents and Rates	13,790,920	13,520,348
Energy Costs	4,889,893	4,948,275
Technology Operating Costs	2,089,683	2,098,898
Insurance	4,603,957	3,958,939
Cleaning Contracts & Materials	1,976,437	1,985,153
CUTE Operating Lease Costs	900,477	748,509
Fees and Professional Services	4,315,849	4,334,882
Marketing & Promotional Costs	4,308,321	4,327,321
Aviation Customer Support	316,017	323,402
Telephone Print and Stationery	550,948	484,728
Employee Related Overheads	2,199,883	1,935,475
Other Overheads	1,980,848	1,742,766
Other Overheads	3,529,766	2,279,142
Travel & Subsistence	258,320	227,272
Car Park Direct Overheads	3,480,758	3,566,031
CAR Costs	2,590,526	2,601,950
Allocations of Mat'ls & Services	1,465,529	1,084,631
Total (excl. Allocations)	**62,160,069**	**58,979,897**

Note: Costs are expressed in nominal terms unless otherwise stated

Repairs & maintenance costs for T1 are principally linked to the infrastructure, with the opening of T2 allowing limited savings

Definition

- Non-payroll repairs and maintenance costs Include contracted maintenance services, management and overheads, and spare parts

Assumptions

- Scope of services includes Terminal 1 infrastructure (including Piers A, B & D), airfield and apron, car parks, and retail units within the terminal and piers
- Areas understood to be mothballed or demolished include Temporary Boarding Gates and Area 14
- No other areas or physical equipment are expected to be closed

Analysis

- With the exception of T1 areas expected to be closed, the scope of maintenance activities is broadly unchanged
- The operating window (and therefore maintenance window) for the terminal is also unchanged, though reduced building occupancy will facilitate contractors undertaking certain maintenance tasks
- Reduction in passenger numbers will result in less building wear and tear; however, major technical systems and services (electricity, water, HVAC) are relatively fixed
- Increased capacity levels relative to passenger numbers will enable certain repairs to be made with less urgency, without negative impact on quality of service
- Savings are constrained by the age of parts of the infrastructure and aspects of the inherited design

Forecast Maintenance Costs at T1

	2010	2011	2012	2013	2014
Cost (€)	10,377,465	9,896,804	10,002,997	10,110,329	10,218,813

Rent and Rates in Terminal 1 are largely outside of DAA's control, but some reduction in water consumption will lead to reduced cost

Definition: Local Authority Rates

- Rent and Rates covers building rates paid to the local authority and water rates (detailed on subsequent slides)

Definition: Water Rates

- Water rates are paid to the local authority and are understood to include water supply and sewerage charges

Assumptions and Operating Concept

- Building rates are determined on the basis of rateable value, as determined by the local authority
- The rateable value of T1 may change as a result of the closure of the Temporary Boarding Gates and potentially Area 14
- Higher rates are assumed at T1 because of the relative proportions between terminal and piers; rates per square metre for piers are 2.24 times the level for the terminal

Assumptions and Operating Concept

- Principle water users at T1 are catering, WCs, and cleaning
- A certain proportion can be recharged from concessionaires (DAA assumes 15%)
- DAA has assumed a 93% increase in consumption in 2010 due to 'review and additional facilities'; however, Pier D would only account for an increase of €110k according to DAA's per sqm rate and no other new water consuming facilities have been identified

Cost Estimation Approach

- Costs are exogenous, determined and periodically reviewed by the local authority
- DAA's costs have been accepted and are anticipated to be passed through outside of the price determination
- Our view is that the building will become subject to rates upon completion, with rates being due from April 2010
- A 4%p.a. price increase has been allowed

Cost Estimation Approach

- Water consumption (and therefore sewerage) is partly fixed and partly variable. Passenger numbers are the principal driver, but whereas water consumption from washroom facilities would correlate highly, catering facility consumption is fixed to a greater degree
- Some cost is therefore expected to transfer with passengers to T2
- Booz forecasts allow a 5%p.a. increase in water rates

Forecast Rent & Rates Costs at T1

	2010	2011	2012	2013	2014
Cost (€)	13,790,920	13,520,348	13,938,730	14,370,059	14,814,734

Limited reductions in T1 energy costs are afforded by the opening of T2, primarily through closure of TBG and potentially Area 14

Definition

- Energy costs include Electricity, Gas and Oil for T1, Piers A to D, Landside, Airside & Airfield

Assumptions and Operating Concept

- Energy cost has previously been treated as exogenous but consumption is to some extent within the control of DAA
- 30% energy costs can be recharged to tenants and retail concessions
- Area 14 and Temporary Boarding Gates (TBG) will be closed

Cost Drivers

- Energy costs are a factor of consumption and price
  - Consumption may be affected by building load and judicious use of heating and lighting, e.g. in unoccupied areas of the building
  - Fluctuations in price have previously been controlled by DAA through hedging and variabilising use of the Combined Heat and Power (CHP) plant

Cost Estimation Approach

- 2009 expected consumption has been used as a base
- Decreases in some areas are expected where infrastructure is closed or operating hours are shortened
- Annual increases in energy prices are assumed (12% in 2010, 8% in 2011 ,4% thereafter)

Analysis

- DAA forecast assumes no increase in electricity or gas consumption during the period; however, an increase in cost for 'Other (including oil)' is assumed
- DAA states that closing the TBG would save c.€100k per annum
- Area 14 is c.1000sqm and its closure would result in small energy savings
- Gate requirements throughout T1 are likely to mean that no single area can be powered-down earlier than the others
- Lower building occupancy may produce savings in cooling during the summer but increased heating cost during the winter
- Energy costs from the airfield, apron, lighting, computers, baggage handing infrastructure, maintenance, and shops can be considered fixed
- Booz energy forecast assumes a 2% decrease in consumption due to closure of TBG and Area 14 and opportunities for efficiencies due to lower building occupancy

Forecast Energy Costs at T1

	2010	2011	2012	2013	2014
Cost (€)	4,889,893	4,948,275	5,099,436	5,255,215	5,415,753

Technology Operating Costs for T1 are primarily in Operations, with notable cost reductions associated with retail changes

Definition

- Technology Operating Costs comprise software and hardware support and are assumed to include various equipment license fees

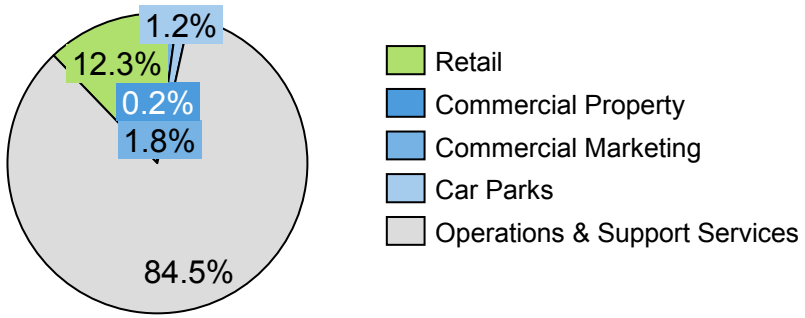
Analysis

- Technology Operating Costs are understood to be fixed, independent of passenger numbers, and are therefore not expected to decrease when T2 opens
- Terminal 1 costs include a relatively large proportion from Retail due to the number of shops DAA operates
- Costs also include car park technology costs (assumed to be for revenue collection systems) and commercial (assumed to be for various software licenses and support)
- Costs should not increase in real terms
- A considerable cost decrease is forecast associated with retail technology costs as DAA reduces the number of shops it operates itself, other IT costs rise marginally

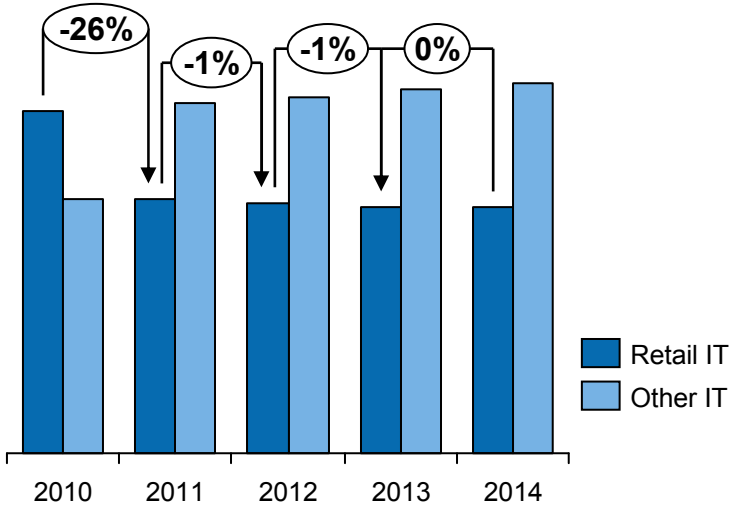
Forecast Technology Operating Costs at T1

	2010	2011	2012	2013	2014
Cost (€)	2,089,683	2,098,898	2,121,419	2,144,182	2,167,189

T1 Technology Operating Costs
DAA forecast for 2011



T1 Retail & Other Technology Operating Costs
DAA forecast for 2010 - 2014



Insurance costs, whilst exogenous, are forecast to decrease once T2 opens as public liability will transfer with passenger numbers

Definition

- Insurance comprises buildings insurance, public liability, and employee liability

Assumptions and Operating Concept

- Insurance cost is largely outside of DAA's control though attempts to renegotiate more favourable prices should be encouraged

Cost Drivers

- Insurance costs contain fixed and variable components
- DAA's forecast assumes that 50% of the insurance cost for T1 is fixed

Cost Estimation Approach

- Primarily an exogenous cost, largely outside DAA's control
- DAA assumes a price increase of 5% p.a.
- Booz analysis has not included an independent assessment of the cost of reinstating the Terminal 1 building

Analysis

- Our forecast uses CAR's traffic forecast to drive the variable component
- For 2010 we have assumed a reduction in passenger numbers (and therefore public liability) from November 2010
- DAA's forecast assumes 50% insurance cost is always fixed; however, when 40% of the passenger liability cost is removed when T2 opens, the fixed element related to building reinstatement will increase as a proportion of the total; this fact is not incorporated in DAA's calculations for subsequent years
- Booz forecast assumes no insurance premium price increase in 2010

Forecast Insurance Costs at T1

	2010	2011	2012	2013	2014
Cost (€)	4,603,957	3,958,939	4,119,107	4,285,755	4,459,146

Cleaning Contracts & Materials variable costs are reduced by 20% in line with the passenger numbers transferred to T2

Definition

- Cleaning contracts and materials include the outsourced cleaning contract costs, plus the cleaning materials costs
- There are three outsourced contracts:
  - Waste Disposal contract
  - Cleaning Mezzanine & Common areas
  - Lounge Contract (Edina ltd) Service contract

Assumptions and Operating Concept

- The waste disposal costs are driven by passenger numbers
- Cleaning of mezzanine common areas and the lounge contract are fixed costs, driven by cleaning space
- Cleaning materials are also fixed costs as they are predominantly infrastructure driven rather than passenger numbers driven

Analysis

- As per our assumptions we have focused our analysis on the variable cost: waste disposal. The 20% reduction in line with passenger numbers corresponds almost exclusively to the waste disposal contract
- Using passenger numbers as drivers we recalculated the overall cleaning contracts and materials
- Contracts cover periods of up to three years. Although some reduction should be sought when contracts are revisited, it is possible that resources cannot reasonably be reduced without lowering standards, particularly in the F&B mezzanine area

Forecast Cleaning Materials & Services Costs at T1

	2010	2011	2012	2013	2014
Cost (€)	1,976,437	1,985,153	2,006,454	2,027,983	2,049,743

CUTE operating lease costs at T1 may provide scope for reduction once surplus check-in desks are closed

Definition

- These are the costs associated with the lease of the CUTE (Common User Terminal Equipment) facility
- CUTE costs normally cover a fee to SITA or ARINC for provision of equipment, software, and data connectivity

Assumptions and Operating Concept

- These costs are linked to infrastructure, more specifically to the number of check-in desks
- Opportunity exists to reduce the number of check-in desks in 2010 in line with the transfer of passenger numbers to T2; potentially from 165 to c.132
- 30 of these desks reductions are as a result of the closure of Area 14; the remainder through a reorganisation of the check-in hall
- Ryanair will be the principal user of T1, with a very low requirement for desks in comparison to other airlines

Analysis

- CUTE costs are expected to be renegotiated once surplus check-in desks are closed
- Comparison with available data from other airports suggests that the overall cost per desk and per passenger is high
- Our analysis suggests that check-in desks in T1 should be reduced by at least 20% with a corresponding decrease in CUTE costs

Forecast CUTE Operating Lease Costs at T1

	2010	2011	2012	2013	2014
Check-in Desks T1	165*	132	132	132	132
Cost (€)	900,477	748,509	756,541	764,658	772,863

* 165 desks until October 2010, then 132

Fees & Professional Services are not affected by the opening of T2, though a reduction is seen in line with DAA changes to T1 retail

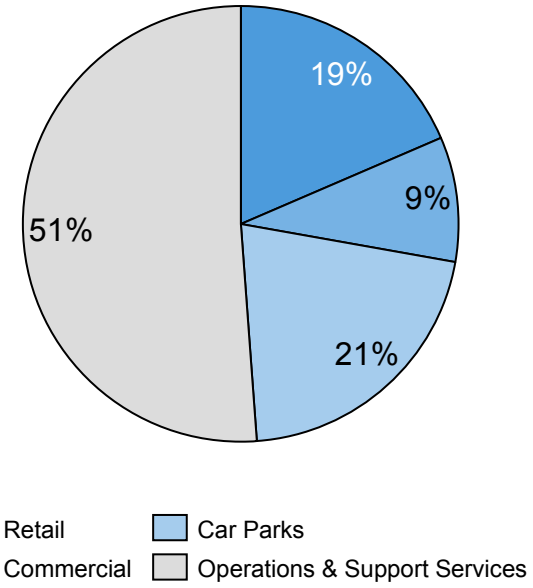
Definition

- Fees & Professional Services may include consultancy and other professional services such as legal, finance, environmental and planning

Analysis

- Fees & Professional Services comprise costs in several categories across the business.
- Costs in Retail are forecast to decrease, understood to be in line with DAA's move towards operating fewer T1 shops itself
- Costs in Operations are significantly higher than in T2 and are therefore understood to cover campus-wide activities
- At other airports, such categories cover fees associated with back-office services for online and telephone car park bookings
- No specific reductions beyond those in Retail are anticipated as a result of the opening of T2

T1 Fees & Professional Services Operating Costs
DAA forecast for 2011



Forecast Fees & Professional Services Costs at T1

	2010	2011	2012	2013	2014
Cost (€)	4,315,849	4,334,882	4,381,395	4,428,407	4,475,924

Other Non-Payroll Costs comprise a mixture of fixed costs and those related to FTEs with some reductions

Marketing & Promotion

- Marketing and promotion is considered a predominantly campus-wide activity with no further reductions as a result of T2 opening
- Driver: Fixed

Aviation Customer Support

- Aviation Customer Support is a campus-wide activity which will require liaison with airline representatives in both terminals. No change as a result of T2 opening
- Driver: Fixed

Telephone, Print & Stationery

- Telephone, print and stationery is linked to FTEs and is anticipated to decrease accordingly
- Driver: FTEs

Car Park Direct Overheads

- There is no change to car parking arrangements and therefore no change in cost expected
- Driver: Fixed

Employee Related Overheads

- Employee related overheads are expected to decrease in relation to FTEs
- Driver: FTEs

Other Overheads

- Other Overheads includes PRM costs which are linked to passenger numbers. 40% of PRM costs will therefore transfer to T2 upon opening
- Driver: PRM costs are passenger driven; other costs are FTE driven

Travel & Subsistence

- Travel & Subsistence is linked to FTEs and is anticipated to decrease accordingly
- Driver: FTEs

Other Non-Payroll Costs at T1

	2010	2011	2012	2013	2014
Cost (€)	6,615,080	4,829,354	5,107,214	5,445,263	5,850,518

Note: Excludes CAR Costs and Allocations of Materials & Services

Terms of Reference & Scope

Summary of Work Programme

Overview of Terminal 2 Opex

Dublin Airport Traffic Analysis

Terminal 2 Operating Concept

Terminal 2 Operating Costs

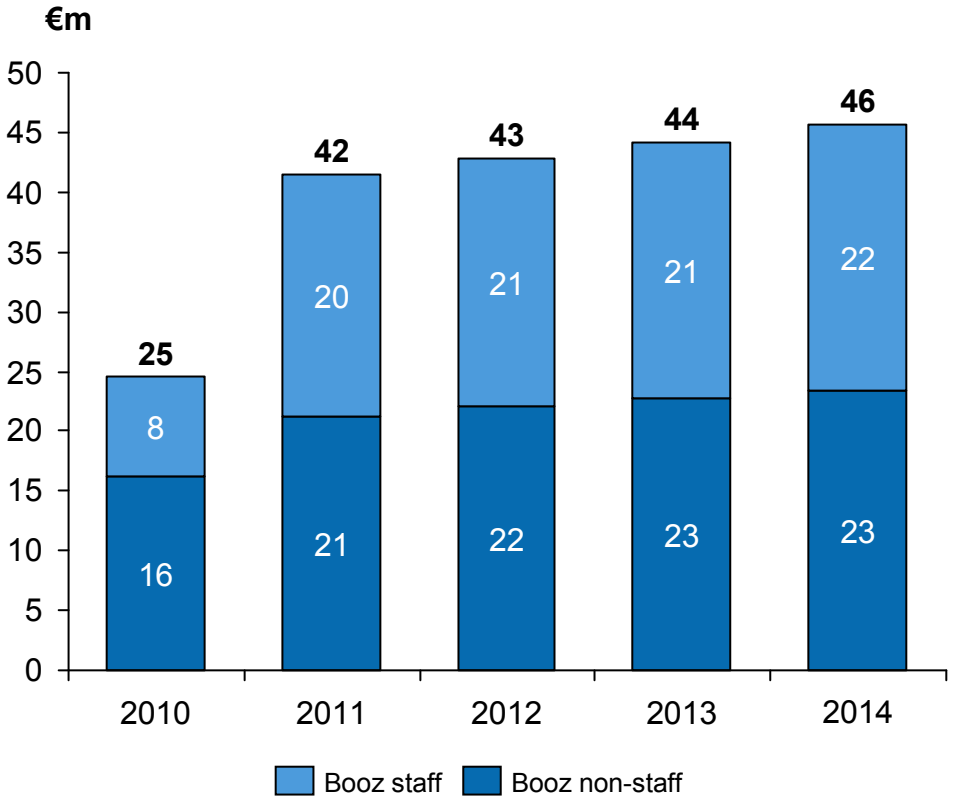
Terminal 1 Cost Impact

Overall Summary

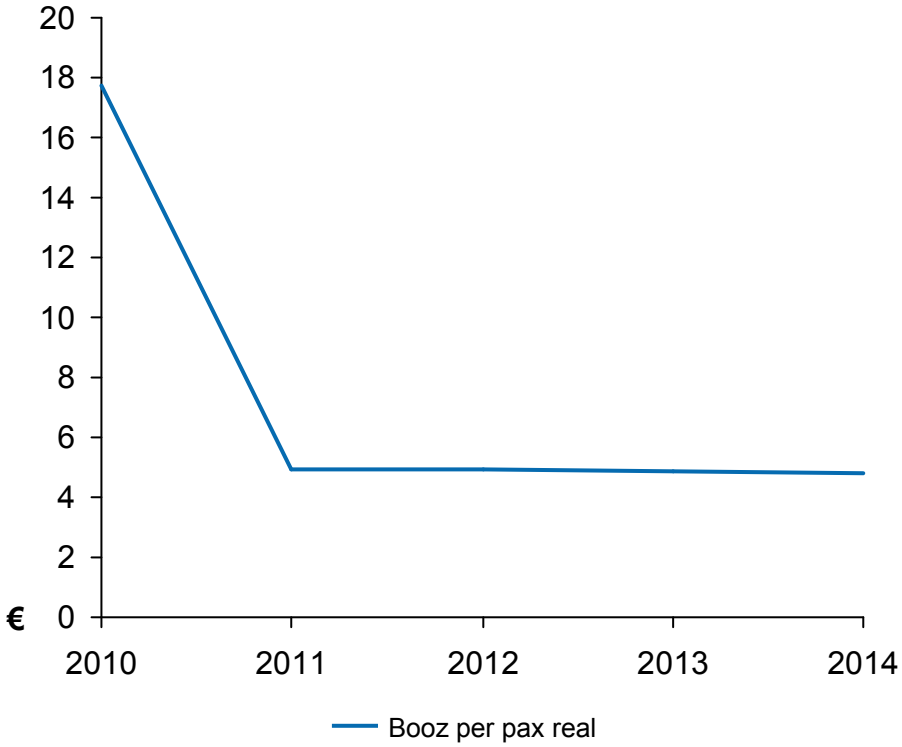
Appendix

Terminal 2 Operating Expenditure Summary

Staff and Non-Staff Costs
2010 to 2014; nominal

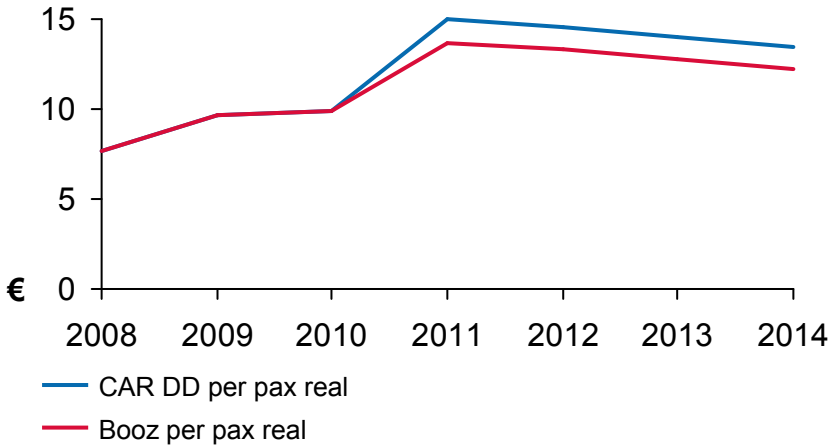


Operating Expenditure per Passenger
real prices

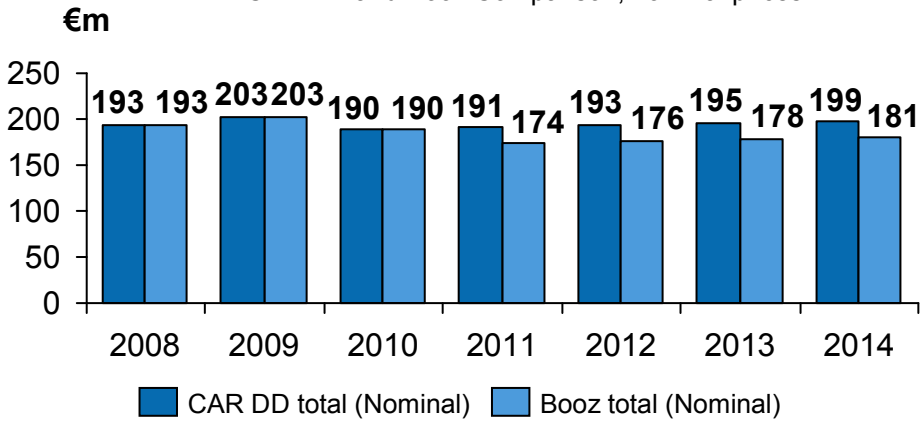


Terminal 1 Operating Expenditure Summary

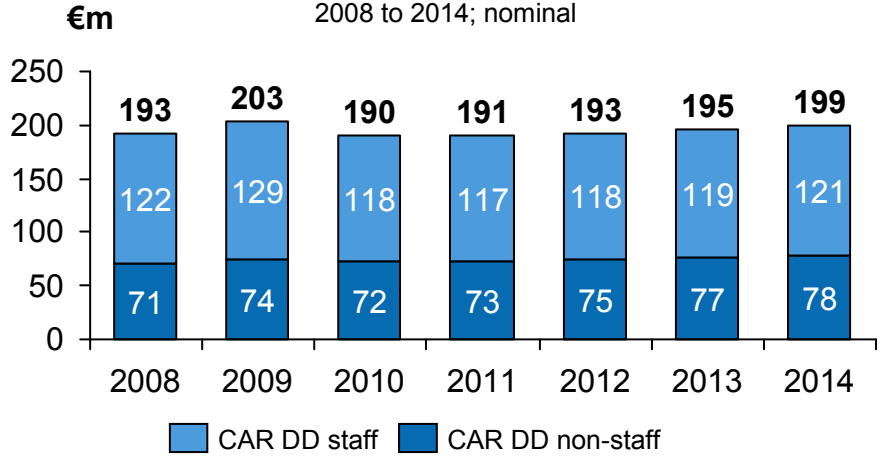
Operating Expenditure per Passenger
CAR DD and Booz Comparison; real prices



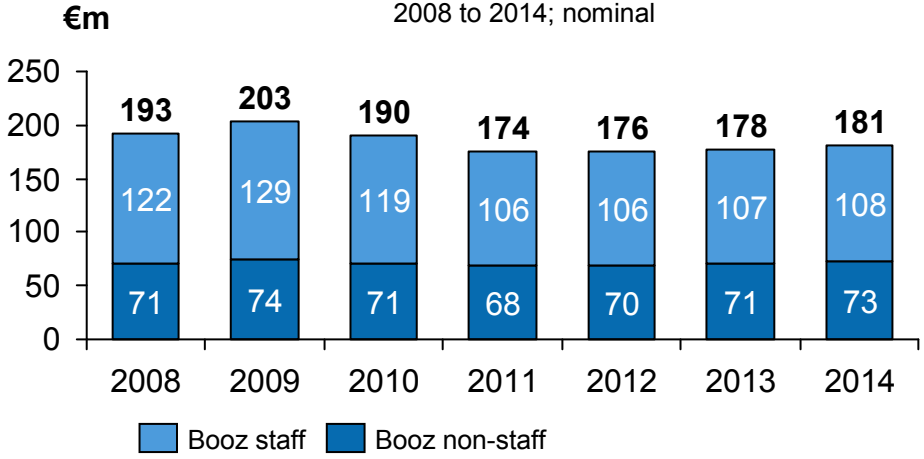
Operating Expenditure
CAR DD and Booz Comparison; nominal prices



CAR DD Staff and Non-Staff Costs
2008 to 2014; nominal

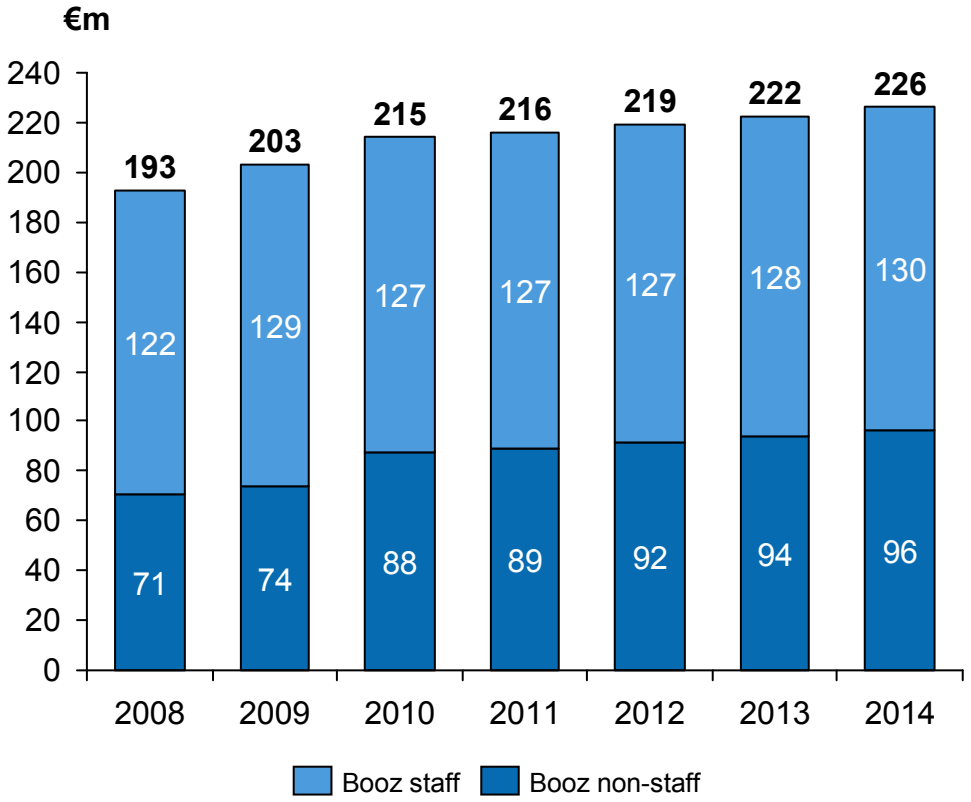


Booz Staff and Non-Staff Costs
2008 to 2014; nominal

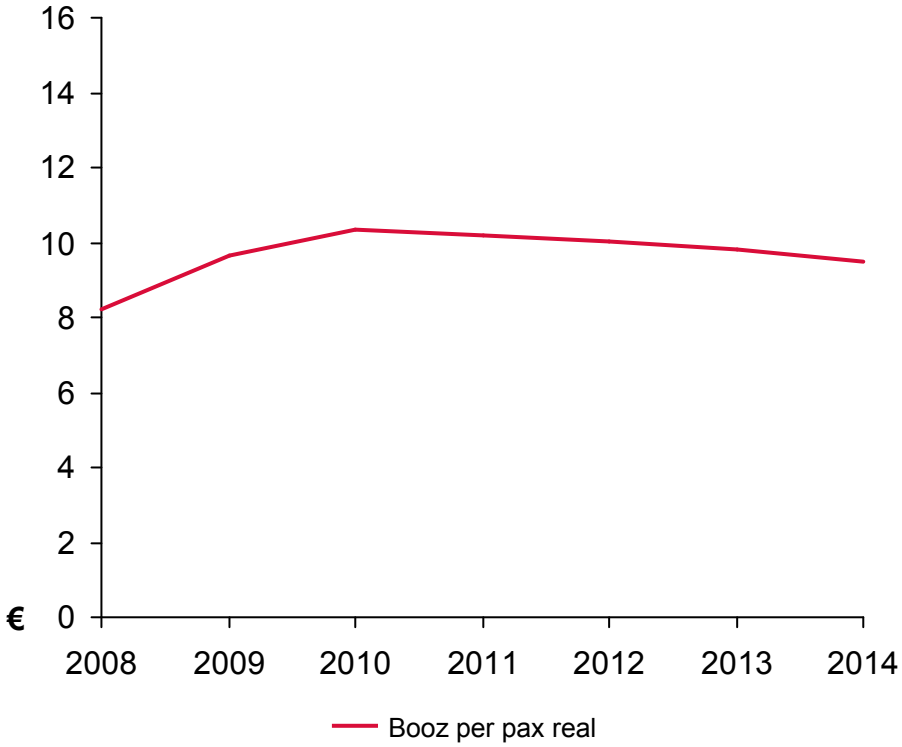


Combined Terminal 1 & 2 Operating Expenditure

Staff and Non-Staff Costs
2010 to 2014; nominal



Operating Expenditure per Passenger
real prices



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Issues relating to possible operating scenarios

CAR asked Booz & Company to assist in determining the operating costs under alternative scenarios for Terminal 2

Alternative Operating Scenarios

- CAR had a requirement to study alternative operating scenarios for Terminal 2 and Pier E, specifically the operating costs if T2 was:
  - Fully opened to passengers as currently planned;
  - Not opened to passengers (i.e. mothballed) – CAR assume some minimum level of operating costs must be incurred by DAA just to maintain the building; or
  - Only opened to passengers on the airside.

Booz & Co. Approach

- The alternative operating scenarios for T2 were discussed in meetings with Aer Lingus, DACC and DAA
- The high-level operating and cost implications of the scenarios have been thought through, as set out in this paper

This document sets out Booz & Company's preliminary findings concerning the Commission's Scenarios 2 & 3

Document objectives

- Set out our preliminary findings on Scenarios 2 & 3
  - This document provides a headline overview of Scenario 1 but does not discuss it in further detail
- Describe the challenges and issues faced with implementing these scenarios - this was undertaken with no input from DAA as they have not considered either scenario
- Provide a qualitative evaluation of the relevant costs of each scenario - this was also undertaken with no input from DAA
- Set out the tasks that the Commission would need to undertake if it wished to explore these scenarios further

Issues outside of current document scope

- Evaluation of detailed costs
- Detailed evaluation of Capital Expenditure impacts
- Analysis of contracts to determine liabilities and penalties
- Recommendations on preferred scenarios

Overview of Scenarios

Scenario 1

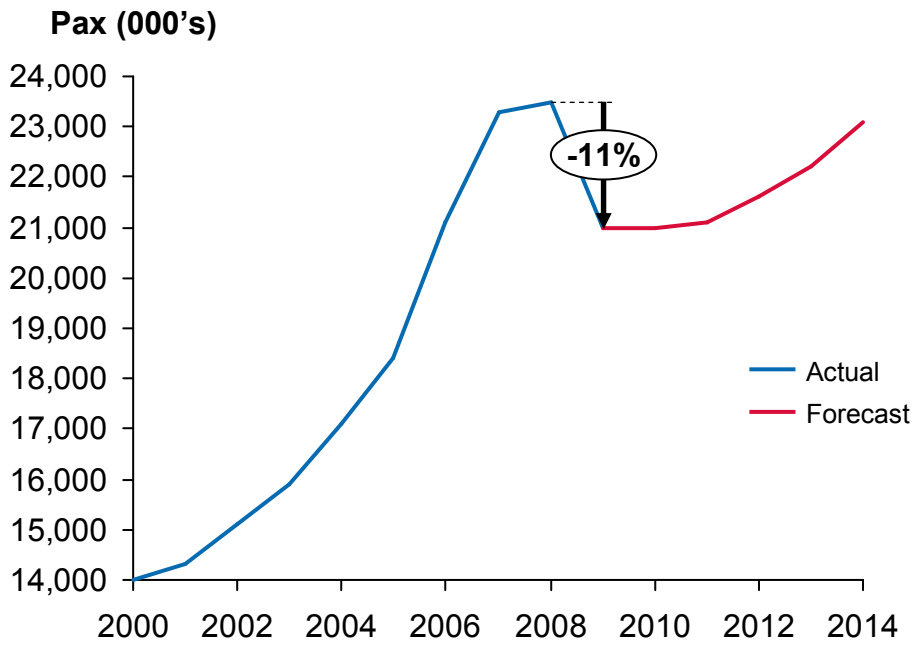
Scenario 2

Scenario 3

Passenger traffic at Dublin Airport is in decline, forcing an urgent review of the options concerning opening the new Terminal 2

- Passenger numbers have declined in recent months, with Dublin worse affected than many other comparable airports in north-west Europe
- Passenger traffic is not forecast to return for several years
- Terminal 1 capacity is 20m passengers, with some airport users claiming that 30m could be accommodated
- Terminal 2 was designed to accommodate 15M passengers

Dublin Airport Passenger Numbers
Actual Data and Current Forecast



Recent traffic levels have resulted in some scenarios for Terminal 2 that had not previously been foreseen

Booz & Company's analysis has considered three scenarios for the operation of Terminal 2, as requested by the Commission

Scenario	Description
Scenario 1: Base Case	▪ Terminal 2 is opened in April 2010 for commissioning activity, with flights commencing in November 2010 ▪ Principal operators are Aer Lingus and long-haul routes operated by other carriers ▪ Flights are transferred from Terminal 1 from November 2010 onwards
Scenario 2: Terminal 2 mothballed	▪ Terminal 2 is not opened to travelling passengers and instead mothballed ▪ The terminal building is maintained by Dublin Airport Authority to avoid dilapidation
Scenario 3: Terminal 2 open airside only	▪ Terminal 2 airside only and Pier E are open to passengers ▪ Terminal 2 landside is mothballed ▪ Passengers are security screened in Terminal 1 and transfer to Pier E ▪ Arriving passengers are processed in Terminal 1

- This document focuses on the practical feasibility of Scenarios 2 & 3 and the issues that may require additional analysis
- There is a risk that revealing Scenarios 2 & 3 to the market could jeopardise the legality of the T2 operations tender process

Overview of Scenarios

Scenario 1

Scenario 2

Scenario 3

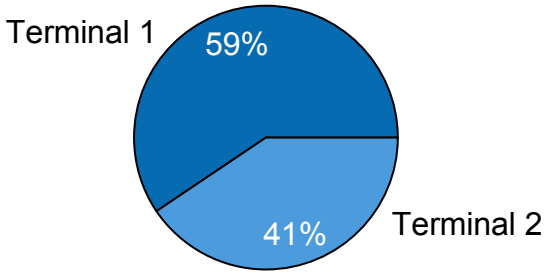
Scenario 1 is based on a set of assumptions on the operating concept and the airlines allocated to Terminal 2

Airline Assumptions

- Aer Lingus as Terminal 2 anchor tenant
- Other long-haul carriers also operating from Terminal 2
- All other airlines including Ryanair continue to operate from Terminal 1

Passenger Terminal Split

Based on current airline allocation assumptions and July & August 2009 pax data



Operating Assumptions

- Security staff in T2 are entirely separate from those in T1
- Cleaning staff in T2 are entirely separate from those in T1
- Retail and management staff may move between terminals
- Passenger facilitation ('pink t-shirt') staff will not be required in T1 or T2 once T2 has bedded-in

Terminal 2 Airlines

- Aer Lingus (Anchor Tenant)
- Contintental Airlines
- Delta Air Lines
- Air Canada
- Air Transat
- Etihad Airways
- FlyGlobeSpan
- US Airways

Overview of Scenarios

Scenario 1

Scenario 2

Scenario 3

Scenario 2 considers mothballing T2 until traffic or other factors justify its operation; one option is to do this before commissioning

Our analysis has considered 3 options depending on the extent to which T2 is completed prior to mothballing

Option	Description	Considerations	Costs	Upsides
1.	▪ Do minimum ▪ Complete building shell (make weatherproof) ▪ Establish all necessary equipment and services to minimise building degradation, infestations etc. and leave building in safe and secure state	▪ Penalties for termination of contracts: – Building contractor – Equipment suppliers – Retail concessions – Other service providers ▪ Treatment of capex: – Valuation of completed work versus total capex – Re-evaluation of remaining capex prior to eventual completion ▪ Building contractor's liabilities and warranties may expire ▪ Potential VAT or other tax implications ▪ Liability in respect of future change in building regulations and energy standards ▪ Potential shortage of aircraft stands	▪ Contract termination penalties ▪ Capex completion costs – Re-design work to accommodate latest specification equipment – Building works ▪ Contract re-tendering process ▪ Re-commissioning fees and operational testing ▪ Site security patrols ▪ Routine monitoring of building condition ▪ Energy for building conditioning systems (ventilation, heating) ▪ Routine and preventative maintenance activity ▪ Insurance (dependent on value of reinstating building) ▪ Potential business rates liability if building is deemed occupiable ▪ Lengthy lead time to complete and commission building	▪ Major payroll-related opex items are eliminated : – Passenger operations – Retail ▪ Or reduced: – Security staff – Cleaning staff – Maintenance ▪ Some large fixed and variable non-payroll costs are eliminated or reduced: – Repairs and maintenance – Energy – Technology operating costs – Cleaning costs and materials – Rates (if building is deemed not occupiable) ▪ Opportunity to fit latest technology and adjust building configuration to meet future requirements

A second mothballing option is to complete infrastructure works but not technology fit-out

Option	Description	Considerations	Costs	Upsides
2.	Complete infrastructure works but not technology fit-out	▪ All considerations as in Option 1 above, plus: – Risk of completed infrastructure being obsolete, not meeting future requirements or regulations, and needing re-design and work – Deep clean of finished surfaces required as part of re-commissioning work	▪ All costs as above, with the following changes: – Potentially reduced contract termination fees – Increased security patrols since building may be more attractive to thieves, vandals and squatters – More finished surfaces requiring cleaning and maintenance to prevent degradation – Significantly greater energy demand to maintain building environmental condition (ventilation, heating) – Increased insurance premiums reflecting greater value of building reinstatement – Increased probability of being liable for business rates if building is deemed occupiable	▪ Major payroll-related opex items are eliminated or significantly reduced: – Security staff – Cleaning staff – Passenger operations – Maintenance – Retail ▪ Some large fixed and variable non-payroll costs are eliminated or significantly reduced: – Repairs and maintenance – Technology operating costs – Cleaning costs and materials ▪ Opportunity to fit latest technology and adjust building configuration to meet future requirements

A third option is to fully complete T2, test it and then decommission it before mothballing

Option	Description	Considerations	Costs	Upsides
3.	Full T2 completion, testing and de-commissioning	▪ Terminal will not be subjected to full operational testing before de-commissioning ▪ Technology suppliers may not accept liability for their systems working post-re-commissioning ▪ Technology will require more rigorous control of the building environmental conditioning ▪ Risk of installed technology being obsolete and needing replacement once building is re-commissioned	▪ Concessionaire and service contract penalties ▪ Maintenance contracts for mothballed equipment ▪ Cleaning to prevent decay and damage to finished surfaces and facilities ▪ Energy costs for equipment, heating and building environment conditioning ▪ Commissioning and testing, decommissioning, and re-commissioning costs ▪ Increased insurance premiums (potentially 75% of premium for fully operational terminal) ▪ Strong probability of liability for full business rates	▪ Major payroll-related opex items are eliminated or significantly reduced: –Security staff –Passenger operations –Retail ▪ Some large fixed and variable non-payroll costs are reduced: –Repairs and maintenance –Technology operating costs –Cleaning costs and materials ▪ Lead time to bring building into service is reduced

Overview of Scenarios

Scenario 1

Scenario 2

Scenario 3

Scenario 3 considers using only Terminal 2 airside and Pier E, with landside check-in, security and arrivals areas being mothballed

Concept of operation

- T2 airside and Pier E would effectively be used as an extension pier of Terminal 1
- All passengers and staff would be processed and security screened through Terminal 1, with hold baggage handled through the existing T1 system
- New infrastructure would be required to enable segregation of arriving and departing passengers using Pier E
- CBP processes could not be operated in the form currently intended since bag photo capture and passenger segregation requirements may not be met
- The remote location of Pier E and the level changes within T2 may create difficulties for airline staff in moving between check-in desk and gate

Extent of completion

- T2 airside and Pier E buildings would be complete and fully commissioned
- A decision on the level of completion for T1 landside prior to mothballing would need to be made based on the same considerations highlighted for Scenario 2
- Likely that heating, ventilation, lighting, services, escalators and lifts would need to be installed.
- Building contractor's liabilities may expire before any defects are identified during later commissioning

Technology

- Decisions would need to be made over the timing of installation of major technical equipment (baggage handling system, cabin baggage screening, HBS, CUTE, self-service check-in kiosks, and communications equipment)
  - Installing the equipment exposes it to deterioration through lack of use
  - Installed equipment would not be operationally tested before being mothballed
  - Installed equipment may be superseded without ever being used
  - Equipment will require routine operation and maintenance
  - Not installing the equipment might lead to contractual penalties with suppliers
  - Some equipment may need to be installed before construction works are completed or before T2 airside and Pier E are commissioned
  - Suppliers' warranties may expire before the equipment has been fully tested

Insurance, rates and other costs

- Likely that the full insurance premium would be liable, with potential savings if high value technology items are not installed
- Rates are likely to be assessed based on usable space, potentially saving c.25% on rates if T2 landside is not considered occupiable
- Energy costs would be reduced (heating and lighting for unoccupied areas and energy for technical equipment) but operated as required to maintain the building environment and prevent degradation

Scenario 3 considers using only Terminal 2 airside and Pier E, with landside check-in, security and arrivals areas being mothballed

Security

- All passengers and staff would be screened through Terminal 1, thus eliminating opex related to security screening in Terminal 2
- While T2 landside is mothballed, any period of heightened security measures would be like to affect passenger service levels through search combs, requiring both capital and operating expenditure to achieve throughput targets; with T2 fully operational, the spare capacity in T1 and T2 search combs would mean that service levels could be achieved more readily while additional security measures are in place
- The Restricted Zone boundary of T2 would need to be physically closed and any impact on safety (safe evacuation) addressed in the building design

Cleaning and maintenance

- Operational areas of T2 and Pier E would require a full standard of cleaning, with a potential saving if passenger traffic through the Pier were lower than in Scenario 1
- Non-operational areas of T2 would require routine cleaning to prevent degradation
- All services and equipment throughout T2 would require routine operation and maintenance to prevent degradation through lack of use (air conditioning system inspection, lubrication, checking for infestations etc)

Passenger Operations and Retail

- Some reduction in passenger operations staff would be anticipated since this could be staffed predominantly from existing T1 resources
- Retail concessionaires in T2 airside and Pier E may be disadvantaged due to less traffic flow and reduced passenger dwell time

Completion and commissioning

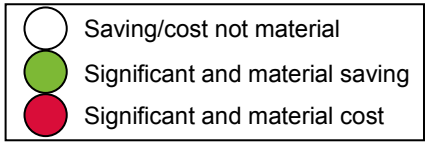
- Completion and commissioning of Terminal 2 may be triggered by passenger numbers, economic viability or other reasons. Subsequent activities would include:
  - Completing any outstanding construction work
  - Specifying and re-tendering for the supply and installation of technical equipment
  - Re-design and construction work to meet any new requirements (e.g. airline requirements, check-in process, security regulations, passenger behaviour, health & safety or other building regulations)
  - Operational readiness and technical trials
  - Staff training

Stakeholders have varied views on the scenarios

Some Stakeholder Views on Scenarios 2 and 3

	Scenario 2	Scenario 3
DAA	▪ Not willing to consider this scenario. Believe the additional gates are essential ▪ Concern that bidder confidence would be undermined if market hears that this scenario is under consideration	▪ Not willing to consider this scenario. Believe it to be physically impossible without capital expenditure ▪ Concern that bidder confidence would be undermined if market hears that this scenario is under consideration
DACC	▪ Ryanair, along with Siptu, is calling for mothballing on the basis that T1 provides adequate capacity for the foreseeable future	▪ Had not considered this scenario
Aer Lingus	▪ If Aer Lingus conditions for moving to T2 are not met, DAA will inevitably have to consider mothballing	▪ Interested - this scenario would meet operational requirements and overcome their issues about T1/T2 connectivity and CBP processes

Further analysis would be needed to assess if there is any overall (capital and operational) cost saving associated with these options



Summary of High-Level Implications

Indicative savings / costs shown in relation to Scenario 1

	Scenario 2		Scenario 3	
Opex Implications	▪ Major operating costs would fall away (security, passenger operations) ▪ Some specialist cleaning and maintenance activity would be required		▪ Major operating costs would reduce significantly; only cleaning and building maintenance required ▪ Some specialist cleaning and maintenance activity would be required in T2 landside	
	▪ Energy costs would depend on conditions required by equipment and building fabric (no natural heating from building occupants)		▪ Energy costs may provide some savings, primarily the operation of baggage systems and other technology	
	▪ Commissioning, handover and operational readiness costs would be deferred until T2 opening. Some of these costs may be incurred twice (where mothballed equipment has to be re-commissioned)		▪ Some commissioning and operational costs would be deferred (and in some cases duplicated), with check-in and baggage systems being the most complex element of new terminals	
	▪ Some contract penalties may be incurred		▪ Some contract penalties may be incurred	
	▪ Business rates may be eliminated but impact on insurance costs depends on a number of factors		▪ Business rates and insurance costs are less likely to provide a material saving	
Capex Implications	▪ Some capex could be deferred with associated contract penalities requiring assessment		▪ Some capex could be deferred with associated contract penalties requiring assessment	
	▪ Some re-design work of T2 landside would inevitably be conducted to meet airport users' changing requirements		▪ Some re-design work of T2 landside would inevitably be conducted to meet airport users' changing requirements	
	▪ Technical equipment may incur additional costs to bring it into service		▪ Technical equipment may incur additional costs to bring it into service	
			▪ Construction of segregated walkway from T1 to T2/Pier E