daa

Capital Investment Programme (CIP) Proposals
2015 – 2019

Proposed
daa/CIP15

Contents

Foreword

daa is pleased to present in this document its Capital Investment Programme (CIP) Proposals 2015-2019. This programme has been developed through a rigorous process of project appraisal and prioritisation and in consultation with our airline customers and other stakeholders. The projects in this CIP will provide the facilities required by our airline customers and passengers at the appropriate time and allow Dublin Airport to maintain its ranking in the top 5 European Airports[1] for service quality, which has been achieved in 7 of the last 9 quarters.

daa's CIP 2010-2014, which was submitted in 2009, recognised that the previously anticipated growth in passenger numbers would not transpire in the short term and a reduced capital programme was presented. This programme focussed on the spend necessary in the short term to replace and upgrade life-expired assets and to maintain customer service levels. It also incorporated *trigger projects* to enable Dublin Airport to expand to facilitate growth in traffic when conditions improved and to comply with regulatory requirements.
CIP 2010-2014 was divided into three tranches as follows;

Tranche 1 - Operational Projects
Tranche 2 – Service Delivery
Tranche 3 – *Trigger* projects

Key asset replacements and upgrades carried out in this 5-year period include;

- Overlay of Runway 10-28 with a Thin Porous Friction Course (TPFC) extending the operational life of the runway to c.2017.
- An ongoing programme of apron reconstruction, based on a business critical pavement evaluation methodology, which has delivered c. 50,000sqm of rehabilitated concrete pavement to date in CIP 2010-2014.
- Category I stopbars were installed on Runway 16-34 providing a further control to reduce runway incursions.
- 2 new airfield generators have been installed providing critical resilience and greater operational efficiency.
- Airfield drainage works are on-going and will be completed in 2014.
- Investment in pollution control tanks has been optimised in current period through investment in alternative pollution control measures, notably reduction at source following the previous severe winters in 2010 and 2011.
- The Life Safety Systems upgrade in T1 has been completed, replacing a substantial amount of life expired equipment and delivering a horizontal evacuation strategy, thereby minimising the impact on operations.
- The existing Terminal 1 Multi Storey Car Park is currently being refurbished to extend the asset life and is expected to be complete in Q2 2014.
- Retail refurbishments in Terminal 1 are ongoing and are expected to be substantially complete in 2014.

Overall, over 100 projects have been completed over the course of this CIP. Our accident frequency ratio (AFR) during this CIP is 0.17[2] and over 5.1 million man-hours have been worked to date. This compares very favourably with the overall Irish Construction Industry average of circa 1.5.

We are proud to have delivered such significant improvements to facilities at Dublin Airport during a period of economic austerity. We wish to acknowledge both the support of capital investment and

[1] ACI ASQ participating airports 5-25 mppa

[2] January 2010 – February 2014. AFR is the ratio of reportable accidents to programme hours worked.

co-operation with necessary operational restrictions by airlines, without which these achievements could not have been brought to fruition. We look forward to the continued improvement of Dublin Airport – for and with our airline customers – through the adoption of CIP Proposals 2015-2019.

The Irish government, which is the sole shareholder of the daa, has stated that it is vital that Ireland, both as an island and as one of the most open trading economies in the world, has the airport infrastructure required to enable effective competition with other economies[3]. The Department of Transport, Tourism and Sport recognises that air transport requires a level of airport infrastructure, both in terms of capacity and quality to facilitate the optimum level of air services[4]. Given the proportion of aviation activity in Ireland accounted for by Dublin Airport, and the wide network of routes served, Dublin Airport is the logical choice for the delivery of this key infrastructure.

daa is also mindful of the need to make minimal funding requirement on airlines given the current fragile economic environment. Therefore, the projects that are included in this proposed Capital Investment Programme result from the most thorough examination possible (given the stage of project development) of all of the options available to daa. Projects are proposed because they fulfil one or more of the following criteria:

- A safety or regulatory requirement is driving the investment
- Current assets require repair or replacement as best asset management principles
- There is an absolute new requirement as current assets are already being fully utilised or a commercial opportunity exists.

As projects are proposed and developed in response to identified needs, not all project proposals are at the same level of development at the current time. daa will continue to explore new and improved options over the course of the CIP. This approach, combined with necessarily changing emergent circumstances and needs, can and does result in changing project specifications between the time of capex approval and implementation, leading to a necessary level of capex flexibility to optimise the return on capex invested. We will return to the topic of project cost maturity and capex flexibility in Section 9.

[3] 'Varadkar announces plans for national aviation policy' 3/12/12 www.transport.ie
[4] An Integrated Irish Aviation Policy**:** Issues Paper for Consultation. Department of Transport, Tourism and Sport, February 2013

1 Introduction

This Capital Investment Programme (CIP) presents daa proposals for capital investment at Dublin Airport for the period 2015-2019. These proposals have been reviewed by our airline customers in an extensive programme of consultation (details provided in Section 6). Every effort has been made to develop the projects within this CIP in line with the principles of efficient capital expenditure and daa welcomes CAR's decision to appoint an independent consultant to review the cost profile of our proposals.

This CIP supports daa's objective of being airport industry leaders – growing our business by delivering great service and value to airlines, passengers and business partners. Delivery of this goal drives three key business priorities for daa:

- Sustainable traffic growth
- Improved customer experience
- Growth of net commercial revenues

We aim to deliver just-in-time and hence cost effective airport infrastructure to handle the forecasted volume and profile of traffic. This will allow sustainable traffic growth at the airport, meeting the capacity requirements of current and prospective users. Service quality measurement on a wide range of metrics is used to identify areas for potential improvement – helping us deliver the quality of service our passengers and business partners desire, and underpinning our position as a top service quality performer. Finally, through building in flexibility and adaptability in how we plan and develop airport infrastructure, we seek to enable the growth of net commercial revenues.

To ensure these key business priorities shape all our actions at daa we use the 'Three Pillars' approach to airport development:

- Embedding strong foundations of safety, security and compliance
- Maximising performance for airlines, passengers and partners
- Maximising opportunity and capacity for growth

Projects which do not incorporate these three pillars are not considered optimal to provide our customer requirements and are not proposed for capex funding.

Operations and development at Dublin Airport are planned and monitored to ensure consistency with our key business priorities and the three pillars approach is fundamental to their achievement. These planning, development and operation functions are performed within a framework of legislative and regulatory requirements with which we must comply. In some cases, compliance is a necessary condition for Dublin Airport to be allowed continue in operation.

Traffic volume and profile are key drivers of project planning and development and hugely significant to operational delivery of service quality; our current traffic forecast for the next regulatory period is contained in Section 2. The forecast consists of a 'high' and 'low' traffic forecast to 2019 with capacity planning for the airport in total based on a 'core' forecast within that range.

The annual passenger number is a clear and easy to understand measure of activity at Dublin Airport, however it is of limited use in capacity planning. It is how this annual passenger number can be accommodated by the current capacity of each of the process areas within the airport on an hourly basis (and particularly in the peak hour) that underpins capacity planning and drives the selection of capacity improving/increasing projects. At the most fundamental level the airport is a system of processors e.g. security, baggage out, immigration etc. and the overall capacity of the airport is constrained by the capacity of the weakest processor. A graphical representation of the process chain for arriving and departing passengers is provided in Section 3. As will be seen from Figure 5 there are common processors in the arriving and departing passenger chains. Other

processors are specific to only one passenger processing chain (e.g. baggage out is only within the arriving passenger process chain and check-in is only within the departing passenger processor chain).

The capacity of each processor within the chain for arriving and departing passengers is calculated on the basis of throughput capacity – i.e. the transaction times for the process based on dwell times/physical layout (IATA Level of Service C)/maximum queue lengths, as appropriate. This gives a theoretical peak hour capacity for each processor which can be benchmarked against other airports. Such benchmarking can indicate whether sufficient capacity is available to accommodate forecast traffic or whether additional investment is required to increase capacity. The objective in planning capacity-increasing projects is to get a balanced across-the-board similar peak hour capacity for all processors. Section 3 also details the current peak-hour capacity of each of the airport processors and the projects proposed to optimally align these processes for arriving and departing passengers to maintain and improve the current passenger experience.

Capacity alignment is one means of maintaining and improving service quality to our customers. Maintenance of existing assets is also important in providing the level of service our customers require. Section 4 discusses service quality at Dublin Airport and provides a rationale for all proposed investment to maintain and improve service quality through capacity increase or asset maintenance. A summary of customer views of service quality at Dublin Airport is included in this section to provide context to this discussion.

This CIP recognises that we remain in a difficult and uncertain economic environment – while passenger numbers have returned to growth, such growth was sluggish from 2010-2012, increasing thereafter, and as of 2013 passenger numbers have not returned to peak levels (2008 23.5m, 2013 outturn 20.2m). Whilst the economic circumstances have improved somewhat since the submission of CIP 2010-2014, the nature of the economic recovery is fragile and subject to significant downside risks. The programme that we are submitting is therefore a prudent one, which focuses on the short-term capex consistent with long-run optimal asset cost and establishes triggers for larger-scale investments where any uncertainty exists as to their requirement prior to the end of 2019. Section 5 details the capital rationing system utilised to ensure that the projects proposed in this CIP are timely and necessary to balance the cost, risk and performance of the assets required to provide services at the airport over the period 2015-2019. Further, an explanation of the International Standard for Asset Management ISO 55000 and how the daa capital rationing system is being aligned with this standard is set out in this section.

The aim of this CIP is to develop Dublin Airport so that it provides the necessary facilities and level of service to our airline customers to allow them to operate efficiently and grow sustainably at the airport. To ensure that airline requirements were comprehensively reflected in this CIP daa engaged in a number of consultations with airlines prior to the development of the CIP to identify these requirements. daa then incorporated the results of these consultations into the Capex Proposals for Dublin Airport 2015-2019 which was again subject to consultation with airlines in January-March 2014. A summary of these consultations is provided in section 6.

This CIP contains daa's proposals on airport maintenance, improvement and growth for the period 2015-2019 and the capital spend required to achieve these outcomes. Whilst current economic conditions require a high degree of prudence in proposed capital expenditure, short/medium term economic uncertainty cannot be allowed drive long-term economically sub-optimal outcomes in asset care or become a barrier to achieving an efficient modern aviation gateway for Ireland. The infrastructure capable of handling long term forecasted traffic volumes has a long lead-time between initiation and delivery and planning for such infrastructure must take account of this lag. For this reason, the proposed programme also contains key enabling projects which will facilitate future growth in traffic and economic activity, the timing of which is determined by a set of triggers.

Projects have been grouped as follows:

Tranche 1 : Capital Maintenance
Tranche 2 : Business Development
Tranche 3 : Contingent Projects (Expected to Trigger)
Other

Table 1 : Summary of CIP Proposals 2015-2019 Capex*

Project Type	CIP Proposals 2015-20919 Amount (€m)	Total Project Cost (€m)
Tranche 1: Capital Maintenance	**186**	**192**
Tranche 2: Business Development	**183**	**184**
Tranche 3: Contingent	**86**	**86**
Other	**22**	**22**
Total	**477**	**484**

*Figures have been rounded to the nearest million

This document also discusses four additional trigger projects the capex for which is not included in Table 1 above as it is not expected that capex for these projects will be required in the period 2015-2019. Table 2 details these four projects.

Table 2 : Contingent Projects – Not Expected to Trigger

Project Type	Value (€m)	Trigger Proposed	Inclusion in CIP Proposals 2015-2019
Fuel Farm	25+[5]	Occurrence of a technical, legal or commercial impediment to the tendering process to appoint a DFBOT operator for the fuel farm, of such significance that no operator can be appointed.	Not expected to trigger
Runway 10-28 Extension	55	Project allowed if trigger for Northern Runway set > 23.5m passengers in a 12 month period	Not expected to trigger; Not the preferred development option
Runway 10-28 Extension and Addition of Line-up Points[6]	74	Project allowed if trigger for Northern Runway set > 23.5m passengers in a 12 month period	Not expected to trigger; In the event of Northern Runway trigger of > 23.5m, this project represents an efficient development option
Northern Runway	245	23.5m passengers in a 12 month period	Trigger event expected circa 2019 with release of capex allowance in the following year

*Figures have been rounded to the nearest million

Details of the projects within the three tranches of proposed capital investment are provided in Section 7, grouped by envelope of capex flexibility.

[5] €25m is the cost of providing 3 x 5 million litre tanks, with an airside into-plane unit and connection of the fuel hydrant system on Pier 4. Additional costs would be incurred to provide fuel hydrant systems on Piers 1-3, as appropriate.

[6] Additional line-up points for Runway 10/28 is a stand-alone trigger project within the 'Contingent – Expected' total in Table 1 above, i.e. comprising €30m of the €86m. Their inclusion in 'Contingent - Not Expected' projects is due to the fact that there is an economy of circa €10m from undertaking this project in conjunction with the runway extension, if the latter is the selected development option.

An envelope approach to capex allowances is consistent with the risk assessment methodology underpinning ISO 55000. With such an approach, allowed capex can be allocated to projects within the envelope based on their priority. As individual projects can move up or down the priority list over time, based on changing incremental risk, it is more appropriate to provide a capex allowance for a project type rather than to individual projects so that investment is targeted at the most urgent requirements. A more complete rationale, including a comprehensive set of factors underpinning the utility of an envelope approach to capital allowance, is presented in Section 8. In its 2009 Determination, the CAR supported this approach to capital allowance stating:

'*…the efficient and economic development of the airport and the interests of current and prospective users are best served by grouping items in a CIP and providing an overall budget for delivery of an agreed set of outputs. This then leaves daa with the discretion to adapt its plans as appropriate subject to respecting the overall budget allowed for that grouping*.'

daa has welcomed this support for an envelope approach to capex investment and anticipates its continuation in CIP 2015-2019. daa has grouped projects in this CIP Proposals 2015-2019 into 6 envelopes of capex investment, and proposes capex flexibility be applied at this level rather than at the overall CIP level. Trigger projects have not been grouped into an envelope and daa proposes that project outturn reconciliation be at the project level for such projects as trigger during the period.

Section 9 of this document sets out the approach to programme management adopted by daa for the successful delivery of previous capital investment programmes and which will be employed to deliver CIP 2015-2019 also.

An individual project sheet for each project in CIP Proposals 2015-2019 contained in section 10 completes this CIP Proposals document.

2 Forecasted Traffic Volume at Dublin Airport

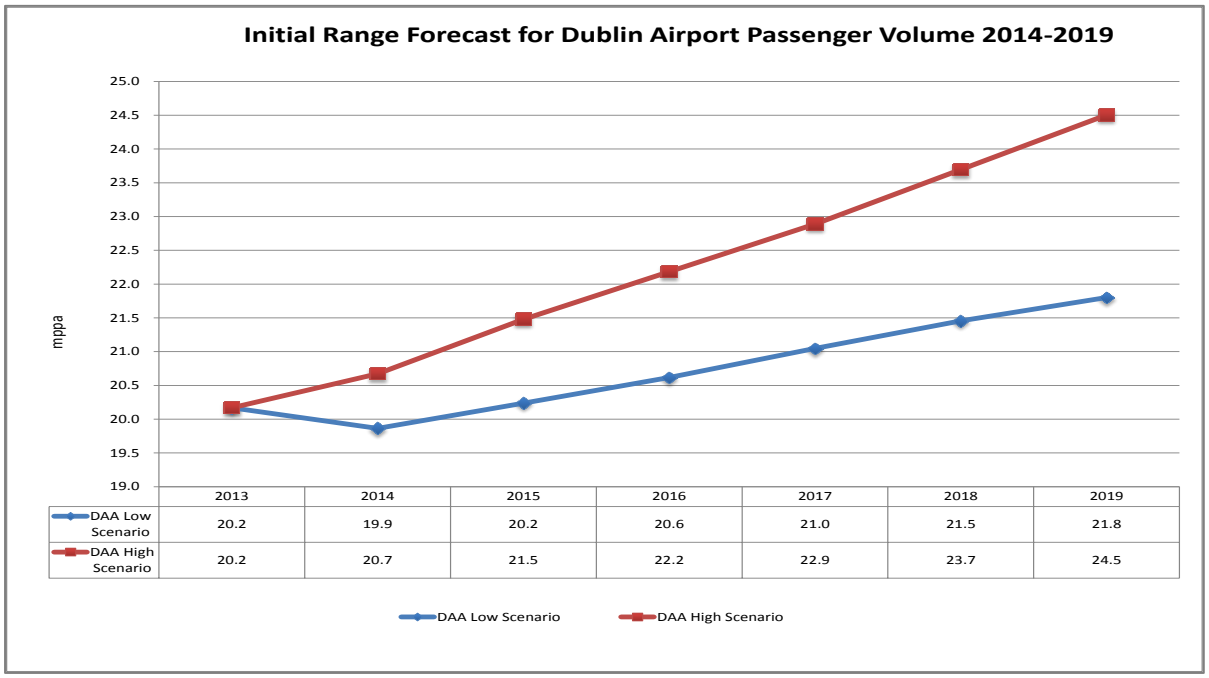
As the traffic volume at Dublin Airport is an important driver of commercial and aeronautical revenues as well as being a key determinate of when capacity constraints are reached (and hence the timing of capex investments) considerable resources are employed by daa in developing a traffic volume forecast. daa also holds the volume risk in the current price-cap mechanism and this adds a further incentive to invest resources in this area. Our aim in forecasting traffic volume is to incorporate relevant variables (which in statistical tests of historical data have shown significant correlation with passenger numbers) together with relevant market intelligence relating to planned schedule & capacity changes by airlines.

2.1 Dublin Airport Passenger Forecast 2015 – 2019

In August 2013 daa set out its forecasting methodology for traffic volumes at Dublin Airport and invited commentary from airlines on this methodology and also requested that airlines provide a forecast for their own airline's traffic at Dublin Airport to end 2019. While one airline disagreed that econometric modelling of traffic volumes was worthwhile, the feedback from other responding airlines supported the methodology and sources of input values for variables used in the model.

Following this consultation, in October 2013 daa issued an index based traffic range forecast to the airlines with indexation based on 2013=100. Substituting the 2013 outturn of 20.2m passengers into this index-based traffic range forecast generates the passenger numbers shown in Figure 1.

Figure 1 : Passenger Forecast for Dublin Airport 2014-2019*



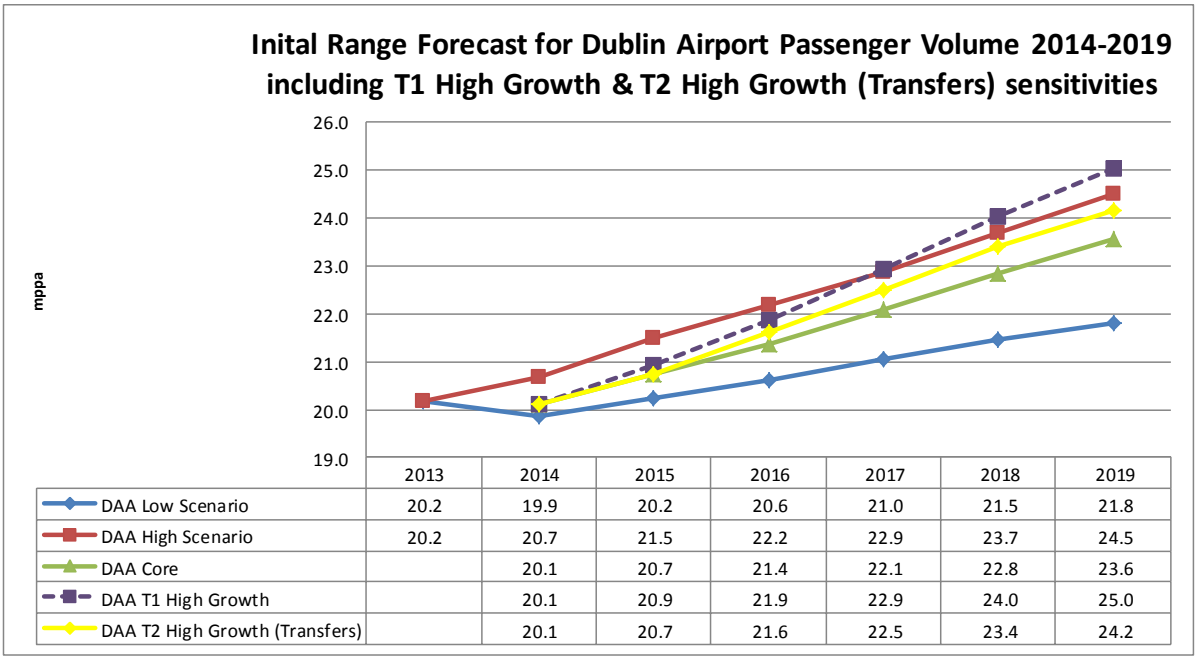
	2013	2014	2015	2016	2017	2018	2019
DAA Low Scenario	20.2	19.9	20.2	20.6	21.0	21.5	21.8
DAA High Scenario	20.2	20.7	21.5	22.2	22.9	23.7	24.5

*based on 2013 outturn of 20.2m

Airlines were invited to comment on the output of the forecasting task and no negative comments were received.

In the first week of consultation on capex proposals 2015-2019 in January 2014, daa again presented its forecasting methodology and the initial range traffic forecast to end 2019 showing the core forecast on which capacity analysis was based. Additionally, daa presented two traffic sensitivities – T1 High Growth and T2 High Growth (Transfers) which were used in the analysis of the T1 check-in and Security project, the T2 transfers project and for the interrelated group of runway projects. These scenarios are presented in Figure 2 below.

Figure 2 : Traffic Sensitivity Analyses



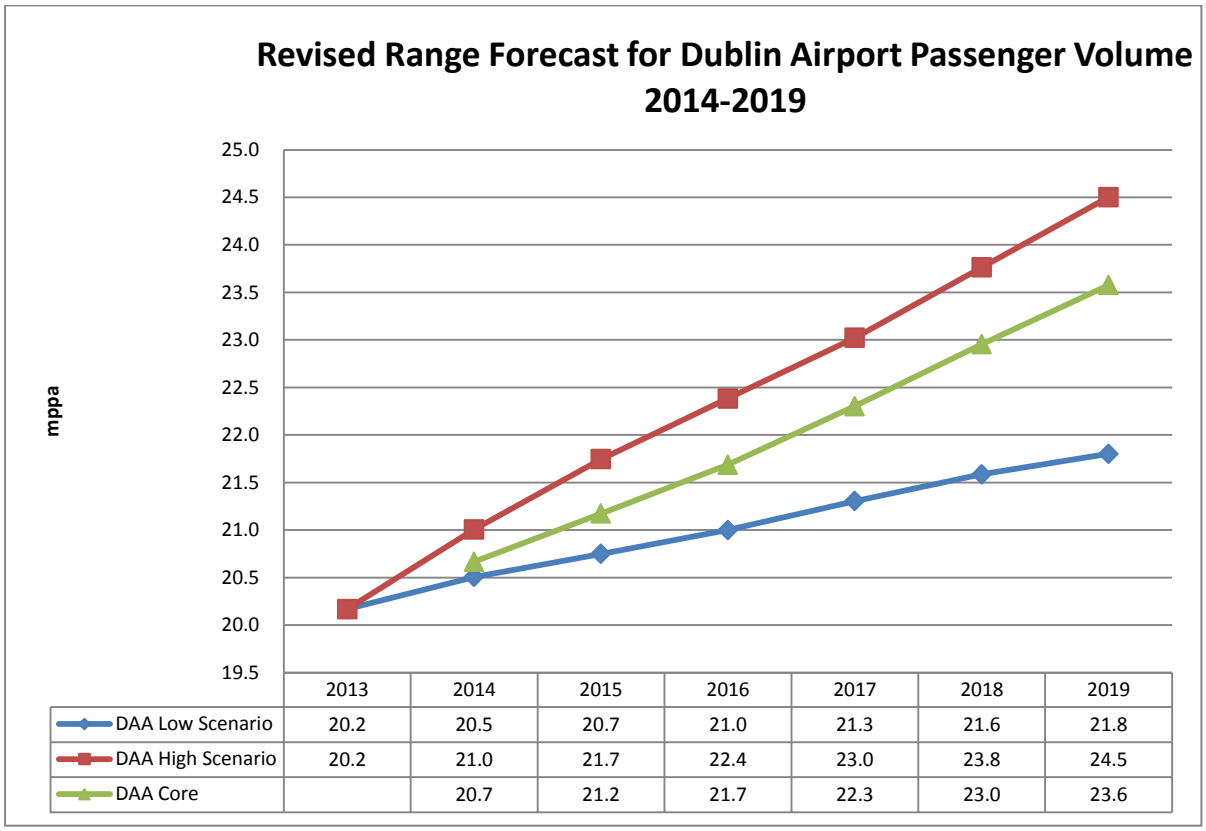
	2013	2014	2015	2016	2017	2018	2019
DAA Low Scenario	20.2	19.9	20.2	20.6	21.0	21.5	21.8
DAA High Scenario	20.2	20.7	21.5	22.2	22.9	23.7	24.5
DAA Core		20.1	20.7	21.4	22.1	22.8	23.6
DAA T1 High Growth		20.1	20.9	21.9	22.9	24.0	25.0
DAA T2 High Growth (Transfers)		20.1	20.7	21.6	22.5	23.4	24.2

At the time of publishing the Initial Range Forecast daa indicated that we would expect to refine the forecast over the course of the regulatory determination process, i.e. as the performance in the final months of 2013 and the early months of 2014 came into view and in light of emerging airline plans and general revisions to economic forecast data. daa presents the revised range forecast for 2014-2019 in Figure 3 below.

Whilst the outturn in 2013 exceeded expectations and the current outlook for 2014 is more positive than it was at the time that the Initial Range Forecast was published, it is important to introduce a note of caution. While the 2014 expectation is now more positive than it was in October 2013, daa does not believe that this necessarily points to a higher 2019 outcome than was predicted last year. Projections are typically suggestive of evenly-paced growth, when in fact growth is likely to accelerate at times and to slow (or even reverse) at other times. There are numerous different paths by which the same 2019 outcome could conceivably be arrived at. Accordingly, in producing the Revised Range Forecast, daa has amended the early years, but has left the ultimate 2019 forecast unchanged relative to what was published last year. This is consistent with our task of forecasting a trend in the knowledge that no one year is likely to be exactly on trend. To increase/decrease medium term forecasts on the basis of every short-term variance would be unduly reactive and create considerable instability in longer-term forecasts.

As indicated above, daa is expecting to hit the same traffic levels as previously presented, but with a somewhat altered path. While traffic performed strongly in 2013, the Irish, European and global economic recoveries remain fragile. daa would leave open the possibility of further final refinement of the forecast in its response to the Draft Determination.

Figure 3 : Revised Range Passenger Forecast for Dublin Airport 2014-2019



	2013	2014	2015	2016	2017	2018	2019
DAA Low Scenario	20.2	20.5	20.7	21.0	21.3	21.6	21.8
DAA High Scenario	20.2	21.0	21.7	22.4	23.0	23.8	24.5
DAA Core		20.7	21.2	21.7	22.3	23.0	23.6

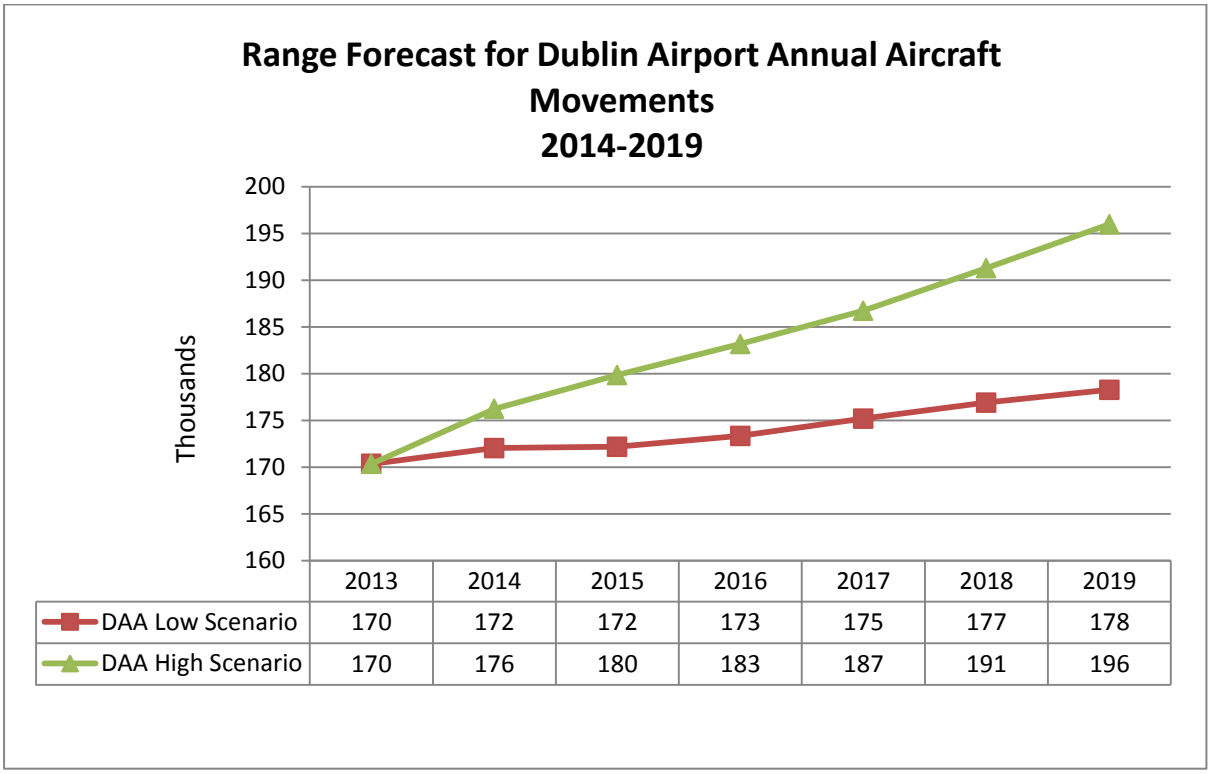
It should be noted that the high growth scenario forecasts a return to peak traffic volumes (23.5m in 2008) towards the end of this capital investment programme, but a total recovery of volume is not foreseen in the low growth scenario.

While passenger number forecasts alone are useful for modelling capacity requirements (and other business variables such as commercial revenues) they are complemented by aircraft movement forecasts which are of greater relevance in planning requirements for some facilities e.g. stands and runway.

2.2 Dublin Airport Movements Forecast 2015 – 2019

The aircraft movement forecast is derived from passenger demand projections (which take account of aircraft type, frequency and load factor) with adjustments made on routes where it is necessary to take into account the situation at constrained airports. In other words, adjustments are made to the raw aircraft movement forecast to reflect airlines greater propensity to operate larger aircraft on routes where slot restrictions exist (at either or both ends). Figure 4 presents the aircraft movement forecast range consistent with the passenger number forecast range in Figure 3.

Figure 4 : Movement Forecast for Dublin Airport 2014-2019



	2013	2014	2015	2016	2017	2018	2019
DAA Low Scenario	170	172	172	173	175	177	178
DAA High Scenario	170	176	180	183	187	191	196

2.3 Disaggregation of the Overall Passenger Forecast

The traffic range forecast under discussion is at a total airport level. In order to see the implications that volumes within this range will have on operations at Dublin airport it is necessary to disaggregate this forecast by traffic type and location of operation at Dublin Airport.

Long-haul vs. Short-haul traffic

Traffic volume in 2013 was almost 6% ahead of 2012 traffic. Long Haul growth (+13%) has consistently outperformed the Short Haul growth (+5%) at Dublin throughout the year, although only contributing 12% of the total Dublin network. This level of growth is not expected to continue indefinitely but should continue to exceed that of Dublin's short-haul network in the coming years, with a renewed focus on opening links to developing economies such as China and South-East Asia continued strong performance of transfer passengers through Dublin Airport, particularly those connecting onwards to North America.

Short-haul and long-haul traffic place varying requirements on facilities at the airport. Short-haul traffic is mainly served by turboprop (e.g. ATR42/72) and jet aircraft (e.g. A320/B737-800) with capacity in the range of 50 – 220 seats and such aircraft can in general be accommodated on a single stand (1 NBE – narrow body equivalent). Long-haul traffic is served by a mixture of narrow and wide-body aircraft e.g. B757, A330, B777 with capacity in the range 175 – 410 seats. These aircraft require a stand footprint similar to 2 NBE stands for parking, depending on apron space available. (Note: the largest aircraft currently operating in Dublin is the B777-300). The relatively strong growth in long-haul traffic will therefore place additional demand on stands at Dublin Airport than would be forecast by the overall growth in passenger numbers alone. This stronger growth in long-haul traffic is expected to continue throughout 2015 – 2019.

Transfer Passengers

Although a small percentage of the total passenger volume (1.8% in 2010 rising to 2.1% in 2012, and 2.7% in 2013) transfer passengers represent a significant growth area for Dublin airport, driven largely by the US preclearance facilities available – which also add commercial revenues as a subsidy to the single till. Again, this growth trend in transfer passengers, both in absolute terms and as a proportion of total passengers, is expected to continue through the 2015 – 2019 period. This trend will accelerate the requirement for additional investment in transfer facilities to meet the needs of this growing passenger segment.

T1 vs. T2

In 2011 which was the first full year of T2 operation, T2 accounted for 42% of all passengers at Dublin Airport; by 2012 this had risen to 44% and 47% in 2013. The traffic range forecast envisages that the volume in T2 will grow in 2015 – 2019. As the traffic profile for T2 is peakier than at T1, continued growth at T2 will result in capacity constraints being reached more quickly in the absence of effort to rebalance demand between the terminals.

While the level of disaggregation of the passenger forecast discussed in this section gives a flavour of how differing passenger types (and their airline location at the airport) impact on capacity requirements, to fully integrate the passenger forecast into capacity requirement planning, further disaggregation is required. The key to efficient capacity planning is the forecasting of passengers per processing area per hour with prime importance to identifying and managing the typical busy-hour for each processor.

The typical busy-hour passenger through-put is different for arriving and departing passengers and also differs by process area e.g. check-in, immigration etc. Passenger through-put in excess of the busy-hour capacity of the processor will result in a drop in service quality, such as extended queuing time at security, if possible at all. As daa is targeted through the regulatory price cap to achieve certain levels of service quality (and this is expected to continue in the next regulatory period), and also wishes to provide the level of service desired by our passengers, airlines and business partners, the hourly capacity of each processor must be aligned with its busy-hour demand. Typical busy-hour processor capacity is the subject of the next section.

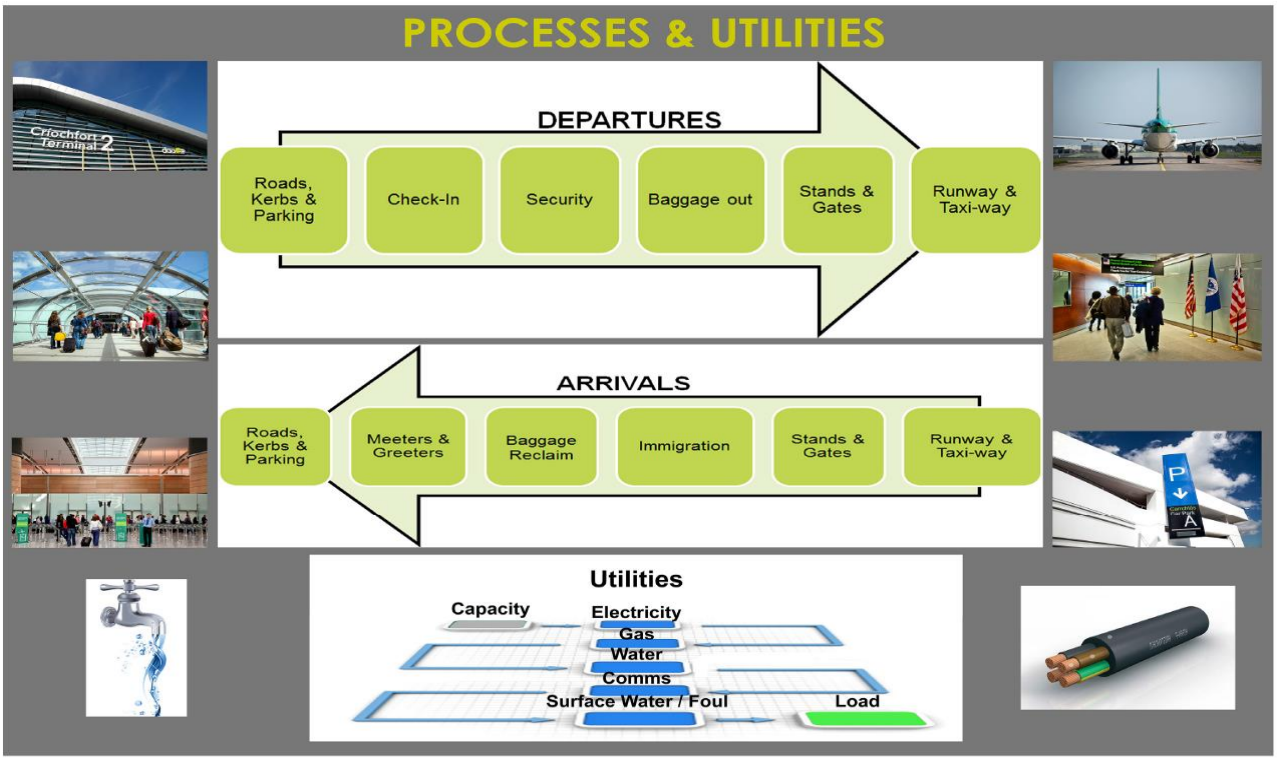
3 Capacity at Dublin Airport

At the most fundamental level the airport is a system of processors and the goal of capacity planning is to align the capacity of each processor to its peak hour demand. It is important to note that the capacity of each processor is not static and can change over time in response to external and internal factors to the daa. Examples of such factors altering the capacity of particular processors (permanently or temporarily) are :

- The first stage of regulatory LAGS requirement came into force in January 2014. Two further stages are expected in 2015 and 2016 together with explosive trace detection (ETD) requirements. The expected impact of these regulatory changes is a reduction in security capacity with current infrastructure and configuration.
- on-going work with IAA to secure sign-off of additional slots on existing 10-28 runway infrastructure will, if successful, improve runway capacity.
- the requirement to take facilities out of operation to perform necessary maintenance can result in temporary capacity reduction, e.g. stand closure to facilitate apron rehabilitation.

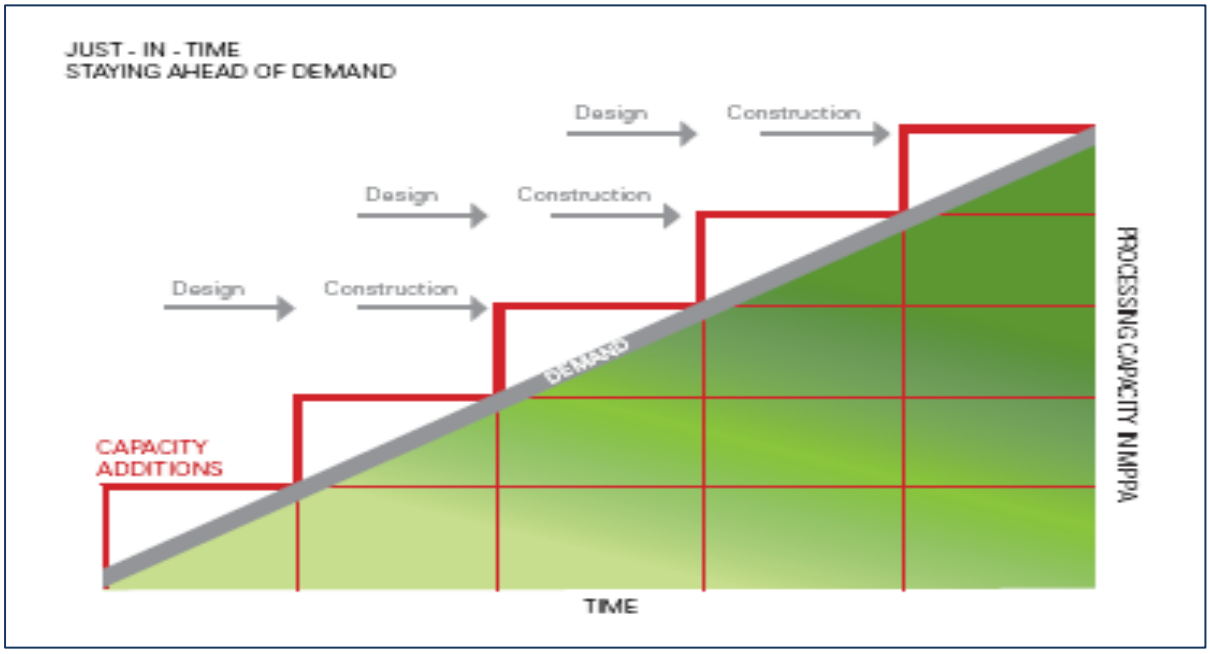
A framework of utilities such as electricity, water, gas, telecoms, fuel supply, airfield infrastructure, attenuation and pollution control support the provision of services through these processors. Figure 5 represents the logical sequence of processors for both arriving and departing passengers at Dublin Airport, together with the utilities required to support operation of these processors. Each of these utilities also has a capacity level which cannot be exceeded either physically (electricity, gas) or to comply with regulatory requirements e.g. limit on volume of de-icing run-off which can be released to the Ringsend treatment facility in a given time period.

Figure 5 : Processes & Utilities at Dublin Airport



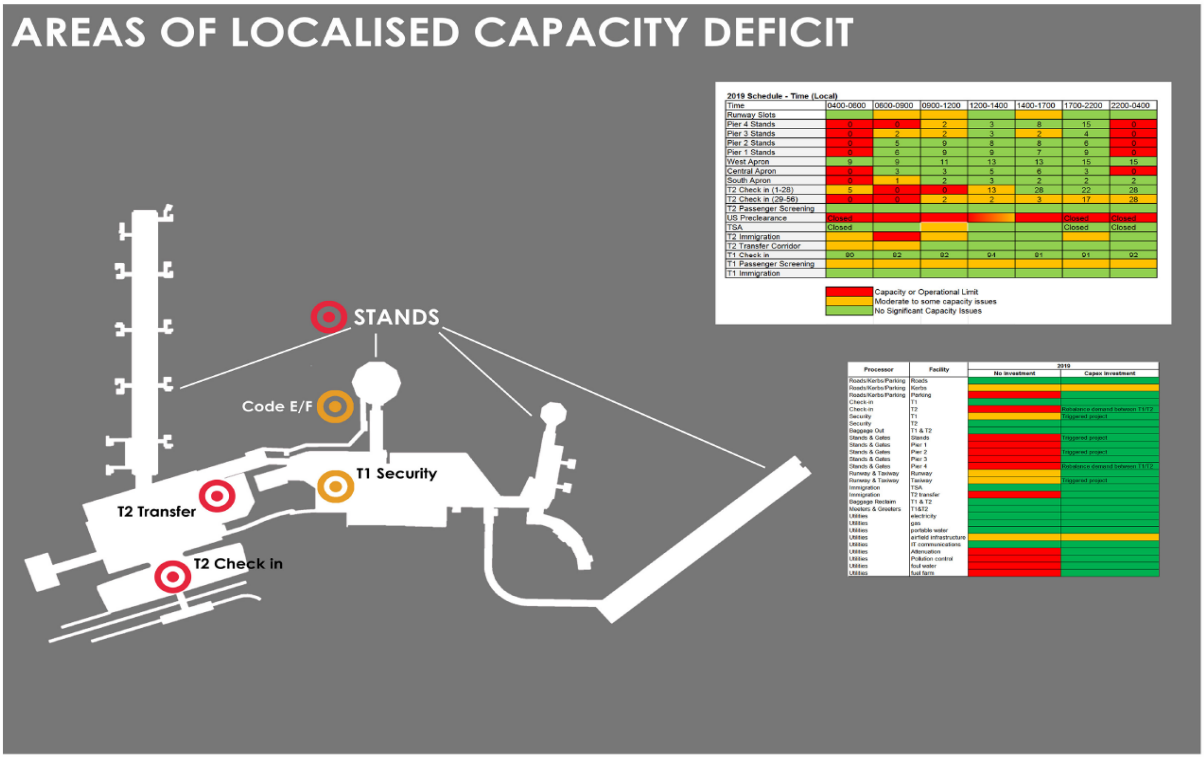
Overall capacity of each processor chain is constrained by the capacity of the weakest processor. The objective of capacity planning is to get a balanced across-the-board similar peak hour capacity for all processors in the chain. Additionally, capacity planning aims to deliver capacity increases just in time to stay ahead of demand which is illustrated in Figure 6.

Figure 6 : Optimal Timing of Capacity Investment



Areas of localised capacity deficit in 2019 based on current traffic forecast, assuming no remedial action to rebalance demand or increase capacity (through opex or capex interventions), are shown in Figure 7. Here it can be seen that stands, T2 transfer, T2 check-in, T1 security and facilities to accommodate additional larger wide-body aircraft will all constitute areas of capacity restraint by 2019, based on current forecasts of passenger numbers and time-of-day profile assuming current peak-hour capacity.

Figure 7 : Areas of Local Capacity Constraint 2019



daa is not proposing capex investment to address all of these capacity deficits as alternatives exist for some processors which do not require capex. For example, daa proposes to manage capacity constraint in T2 check-in through rebalancing of check-in demand between terminals. There is a

different time-of-day profile for departing passengers in T1 and T2 and hence to the time-of-day demand for check-in facilities between terminals; by relocating some airlines from T2 to T1 to coincide with periods where spare capacity is available more sustained use can be made of available facilities. This solution avoids capex investment to increase capacity in T2 (where localised constraint exists) but is contingent on the agreement of some airlines currently operating from T2 to relocate to T1. Airlines suitable for such relocation have indicated that they will only do so if T1 offers the same ambience and customer experience as currently available in T2.

The current declared capacity of Runway 10-28 in the peak-hour for departures is 33 departures plus 5 arrivals, an increase of 2 departures over winter 2013 season[7]. Demand in the summer season 2013 was 29 departures, which has increased to 32/33[8] in 2014, and such demand is expected to rise over the CIP period in line with the movement forecast presented in Section 2.1. The current capacity ceiling which the IAA has indicated is 39 departures in the peak departures hour resulting from the completion of the following work phases:

Table 3 : Phases 2-4 of Runway Capacity Enhancements

Phase 2 - IAA	Arriving Movements	Departing Movements	Total
06:00	5	35	40
07:00	10	30	40
Over 2 hours	15	65	80
Phase 3 - NATS	**Arriving Movements**	**Departing Movements**	**Total**
06:00	5	37	42
07:00	11	31	42
Over 2 hours	16	68	84
Phase 4 - daa	**Arriving Movements**	**Departing Movements**	**Total**
06:00	5	39	44
07:00	12	32	44
Over 2 hours	17	71	88

Further details of the IAA capacity enhancing proposals are provided in the discussion on an appropriate trigger for the Northern Runway in section 7.8.2.

Arising from the on-going work to sweat the existing runway assets, the runway itself is not expected to present a capacity restraint in the CIP period 2015-2019. However, given the lead time between initiation and delivery of such a major infrastructural facility as a new runway, planning must begin earlier than a single CIP period, to ensure that demand can be met beyond this timeframe. Four runway-associated triggered projects are included in this CIP: (i) CIP 15.6.013 to facilitate 39 departures in the peak hour (line up points at 10 and 28 ends of the existing Runway 10-28 to provide parallel feed to the runway), (ii) CIP 15.6.012 to provide an extension to Runway 10-28 to increase the range of destinations which can be served from Dublin Airport, (iii) CIP 16.6.028 amalgamating CIP 15.6.013 and 15.6.012, and (iv) CIP 15.6.051 to provide new runway infrastructure (Northern Runway). These projects, the interplay between them, and hence appropriate triggers for each to provide just-in-time runway capacity, are discussed further in section 7.8.2.

The remainder of this section comprises of a drill-down on capacity and demand for each individual processor and implications for capex investment or other remedial actions during the CIP period. Certain processors are shared between arriving and departing passengers : roads/kerbs/parking, stands & gates and runway & taxiway. Capacity of these processors is detailed in Figures 8 – 10 and

[7] Phase 1 of the capacity enhancing programme completed

[8] The 95% busy day demand in the current summer 2014 schedule is for 32 departures in the peak hour; on 7 days departure demand will reach 33.

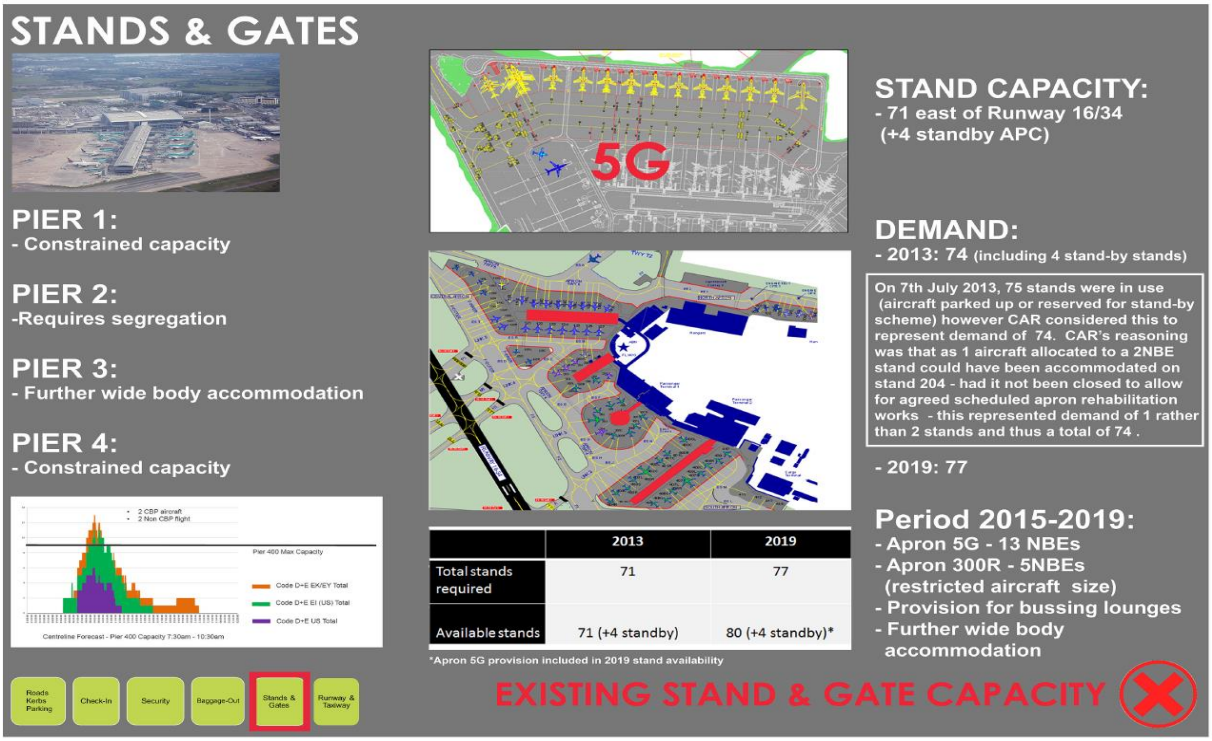
following discussion. Figures 11-14 provide similar information for the processors unique to departing passengers : check-in, security, TSA, CBP & Transfers and baggage out and Figures 15-16 for the processors unique to arriving passengers : immigration, meeters & greeters and baggage out.

Figure 8 : Roads/Kerbs/Parking – Departing & Arriving Passengers

There will be insufficient supply of short-term car parking to meet forecasted demand by the end of the next regulatory period. For this reason daa has included CIP 15.2.006 to increase the number of short-term car parking spaces in the T2 multi-storey car park (MSCP) in this CIP.

Capacity for kerbside access at T1 sits within the range of forecasted demand in 2019 – should demand outturn be towards the high-end forecast it will be necessary to increase capacity in this area. We will monitor demand for this facility on an on-going basis and have not included a project to increase capacity for kerbs in this CIP. Should demand exceed supply by period end the capacity deficit will be managed through staff intervention (opex) or daa may open an interim consultation on a specific project designed to meet this objective.

Figure 9 : Stands & Gates - Departing & Arriving Passengers

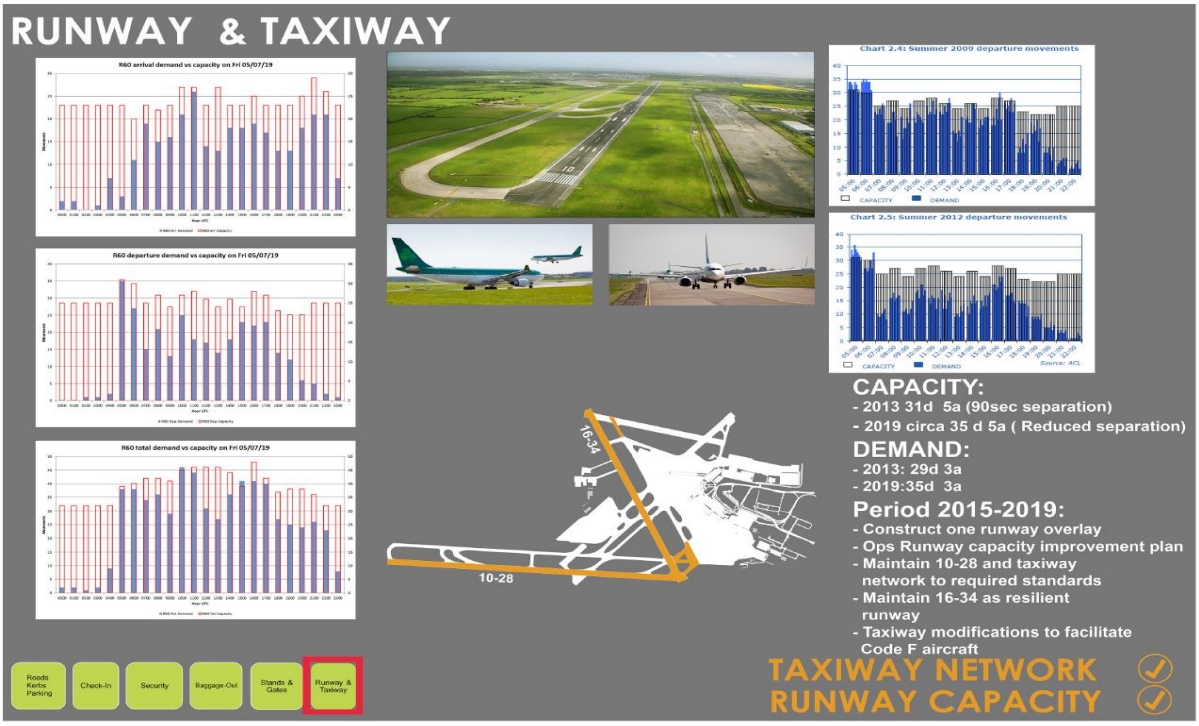


Stand capacity is a significant area of concern in the absence of approval to commence the Apron 5G project. In setting a trigger of demand exceeding 74 stands for Apron 5G in its 2009 Determination CAR recognised the necessity of a level of contingency for the efficient operation of the airfield. The figure of 74 was based on having a contingency of 10 stands (a total of 84 were considered available, including the West Apron). Over the course of the determination period it was evident that on an operational level only the stands to the East of Runway 16-34 are in play (fully operational) – to the extent that daa even relocated the airline stand-by stands from the West Apron to Aircraft Park Charlie at airline request. Essentially, daa operates with no contingency in regard to stands, and this is expected to result in operational difficulties in summer 2014[9].

Three trends identified in the traffic forecast 2015-2019 – passenger number growth, stronger long-haul growth and higher growth in the peak departures hour (by based aircraft), coupled with aircraft fleet changes – will all result in greater demand for stands at Dublin Airport. Therefore, included in this proposed CIP are two projects to increase the number of stands at the airport (resubmission of the Apron 5G project to provide 9 (net) NBE stands and Apron 300R project to add 5 additional NBE stands – the use of these 5 stands will be necessarily restricted to smaller aircraft). Provision of these stands, together with migration of airlines from T2 to T1, will result in sufficient capacity for the existing aircraft fleet in each zone of airfield operation to meet airline requirements. Additional projects to provide airfield infrastructure upgrades for larger wide-body aircraft (Code E/F) facilities at Pier 3, the provision of enclosed gates rooms in Pier 1 and the allowance for Pier 2 segregation (trigger project) are also proposed for this processor area.

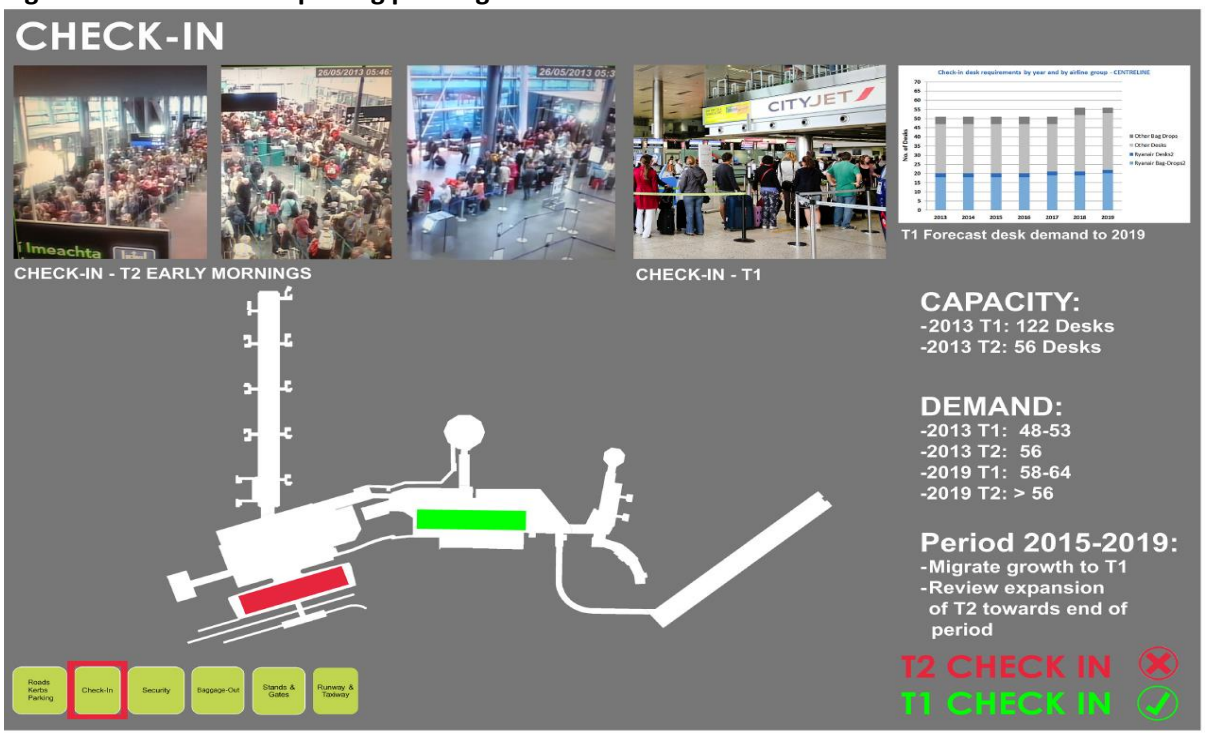
Figure 10 : Runway & Taxiway - Departing & Arriving Passengers

[9] daa regularly reviews the stand configuration on the airfield to identify possible improvements in capacity, flexibility or operational efficiency and, given the situation which is expected in summer season 2014, has put forward a number of **short-term adjustments** to stands on the airfield namely: restricted use stands on Pier 1 (East End) and South Apron and a further stand on Pier 1 through the removal of Ground Service Equipment (GSE) parking / storage and removal of an apron service roadway which links the head and rear of stand roads at the west end of the pier. This will impact on the efficiency of the apron having a knock-on operational impact on apron users including ground-handlers, fuel companies and airlines. It is clear that this proposed reconfiguration is a duress response to immediate capacity constraint on the airfield and does not represent a long term solution.



The peak hour for departures for the runway infrastructure at Dublin Airport is the 06:00 hour (local time)[10] as the based airlines begin operations for the day and require departure slots to launch their fleet. As such, peak hour demand for runway slots at Dublin Airport is driven by demand for departure slots and this is the main measurement considered for runway capacity. The current declared capacity for the runway at Dublin Airport in the peak departures hour is 33 departures (increased from 31 in Winter 2013; demand is currently 32/33[11]). A small number of arrivals (5) can also be accommodated during this hour in addition to the declared departure capacity.

Figure 11 : Check-in - Departing passengers



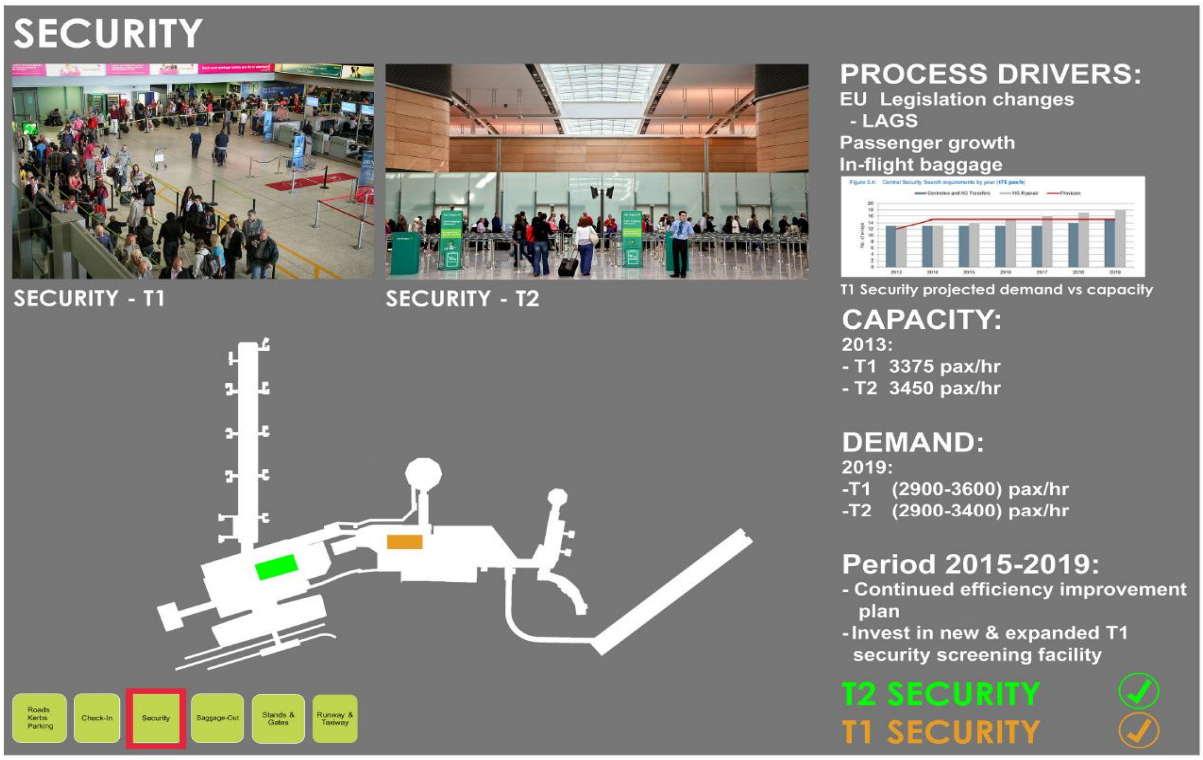
[10] In 2013 the peak 60 minute period was 06:25-07:24 (based on scheduled time of departure). This is subject to small changes forward and backwards from year to year as airlines adjust their schedules slightly.

[11] 32 on typical busy day, 33 on 7 days

The processing capacity of T2 check-in will represent a system constraint during the CIP period 2015-2019 without remedial action. The processing capacity of T2 check-in was in full demand in 2013 and demand has increased for summer season 2014 above the 56 desk capacity. As a temporary work-around, daa is seeking to install 2 additional check-in desks in T2. These additional check-in desks will not have a baggage belt and baggage will be manually processed from these desks. Therefore, while these additional desks will provide all the necessary check-in functionality to airlines, this will come at an increased opex cost. For this reason, even without any additional growth in demand as forecast, this can be considered only as a short-term measure to mitigate a shortage of check-in desks in T2. Beyond the immediate timeframe, daa proposes to rebalance demand for check-in between T1 and T2 to utilise available capacity in T1. Such a rebalancing would not, of itself, require capex investment; however such a rebalance can only be achieved through the relocation of airlines from a T2 zone of operation to a T1 zone of operation. Indications from airlines which could be relocated are that this would only be acceptable if the ambience offered in T1 is similar to that of T2.

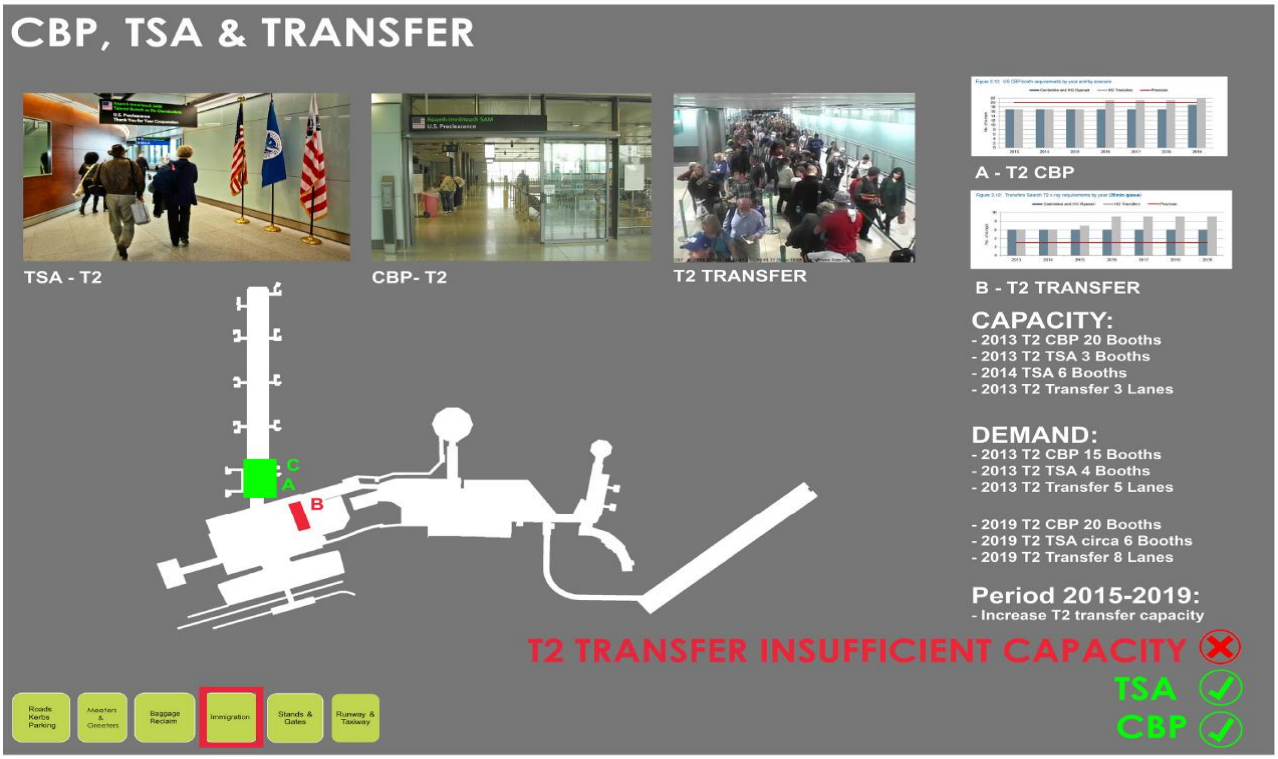
An important point to emphasise here is that T2 is constrained with regard to contact stand capacity as well as check-in capacity. Moving airlines from T2 to T1 can address both of these issues, increasing take-up of spare check-in capacity in T1, with ready access for passengers to stands on Piers 1-3. (see proposals later with regard to Pier 3 Flexibility).

Figure 12 : Security - Departing Passengers



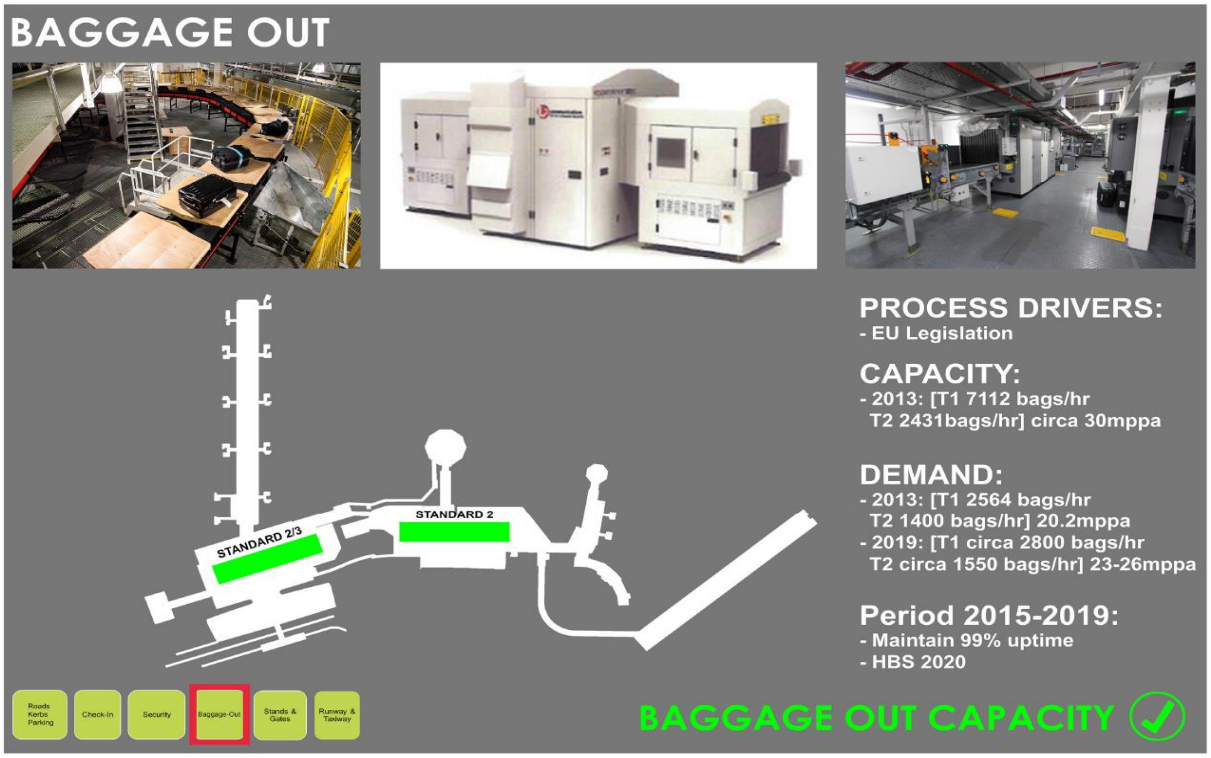
The regulatory requirement for new equipment to comply with the Liquids, Aerosols and Gels (LAGS) standard reduces security capacity in both terminals. However, there is sufficient capacity in T2, post planned migration of airlines from T2 to T1, to deal with forecasted demand to 2019. If passenger numbers are towards the high end of the traffic forecast (24.5m) range then T1 security will have insufficient capacity by 2019. It should be noted that this capacity deficit is not a result of airline migration from T2 as the current peak-hour for T1 departures is non-concurrent with the departure profile of passengers served by migrating airlines. We are proposing a trigger project in this CIP to increase capacity in T1 security through the provision of a new security facility on the Mezzanine level providing the required space for additional security lanes with the trigger based on annual number of T1 passengers.

Figure 13 : CBP, TSA & Transfer – Departing Passengers



The TSA facility was under capacity for the summer season 2013. A project currently under construction will provide additional capacity in summer 2014 sufficient to meet forecast demand to the end of 2019. Agreement to capex funding for this TSA relocation project was received from airlines through an interim capex consultation. The T2 transfer facility was also under capacity in 2013. This under-capacity is being managed through additional staffing but this is not a long-term solution. In this CIP we include a capacity-increasing project for the T2 transfer facility (CIP 15.7.117) to provide sufficient capacity, offering improved MTC (mean time to connect) to the end of 2019.

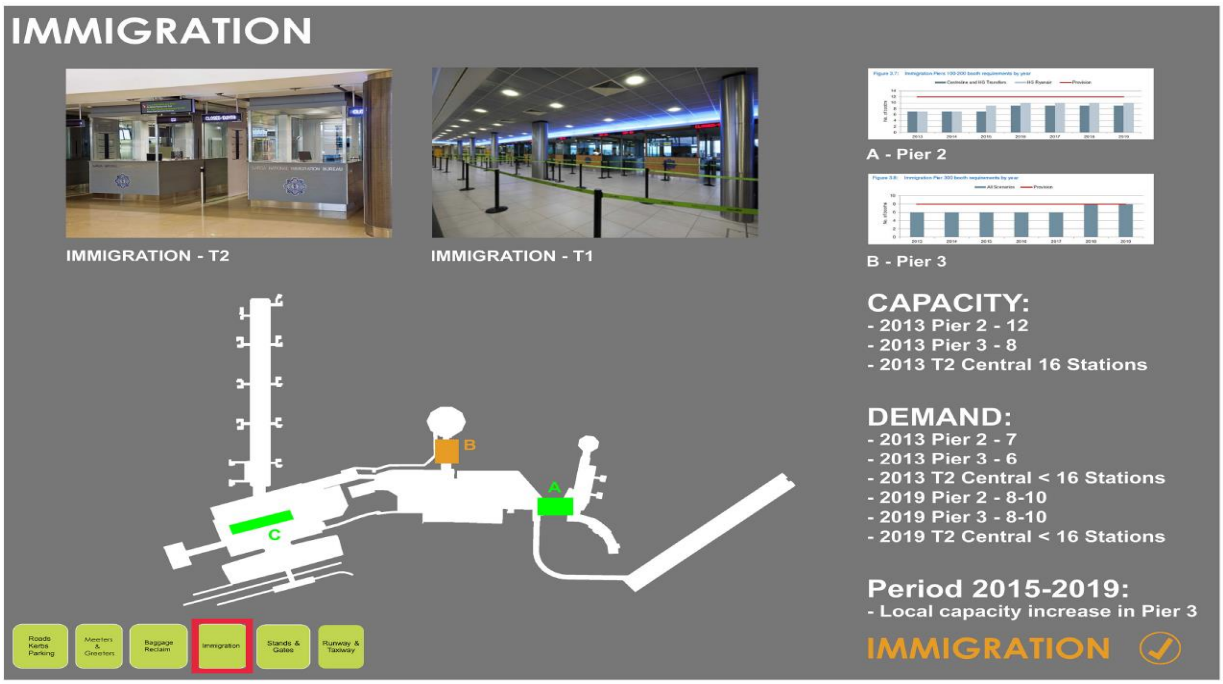
Figure 14 : Baggage Out - Departing Passengers



The baggage out processor will have sufficient capacity to the end of 2019, assuming successful rebalance of demand between terminals over that time period. CIP 15.4.003 to provide the HBS

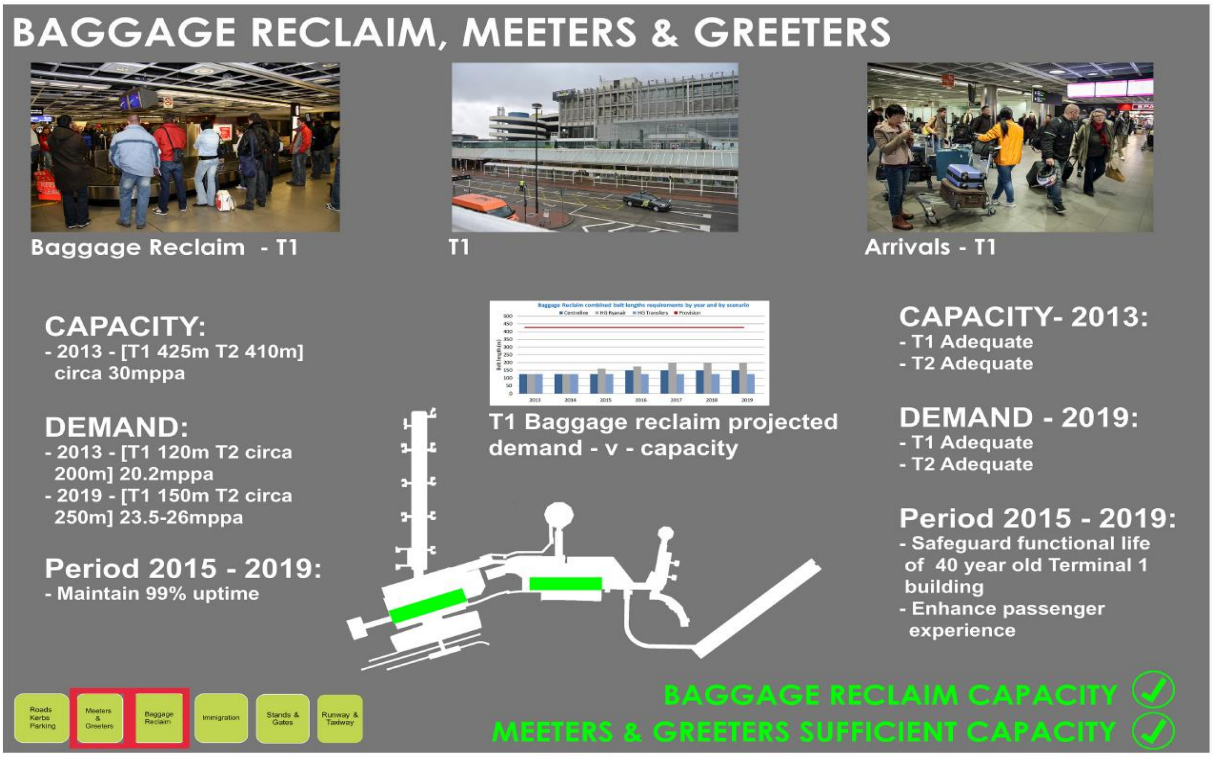
standard 3 equipment which will be required for T2 by 1st September 2020 is included in this CIP as, capex spend would need to occur in 2018 to meet a 2020 operational date.

Figure 15 : Immigration - Arriving Passengers



To accommodate the larger number of passengers which are carried on Code E and Code F aircraft, provision has been made for 2 additional immigration booths in an expanded immigration hall in CIP 15.7.116 Pier 3 Flexibility. This is consistent with the approach of aligning processor capacities.

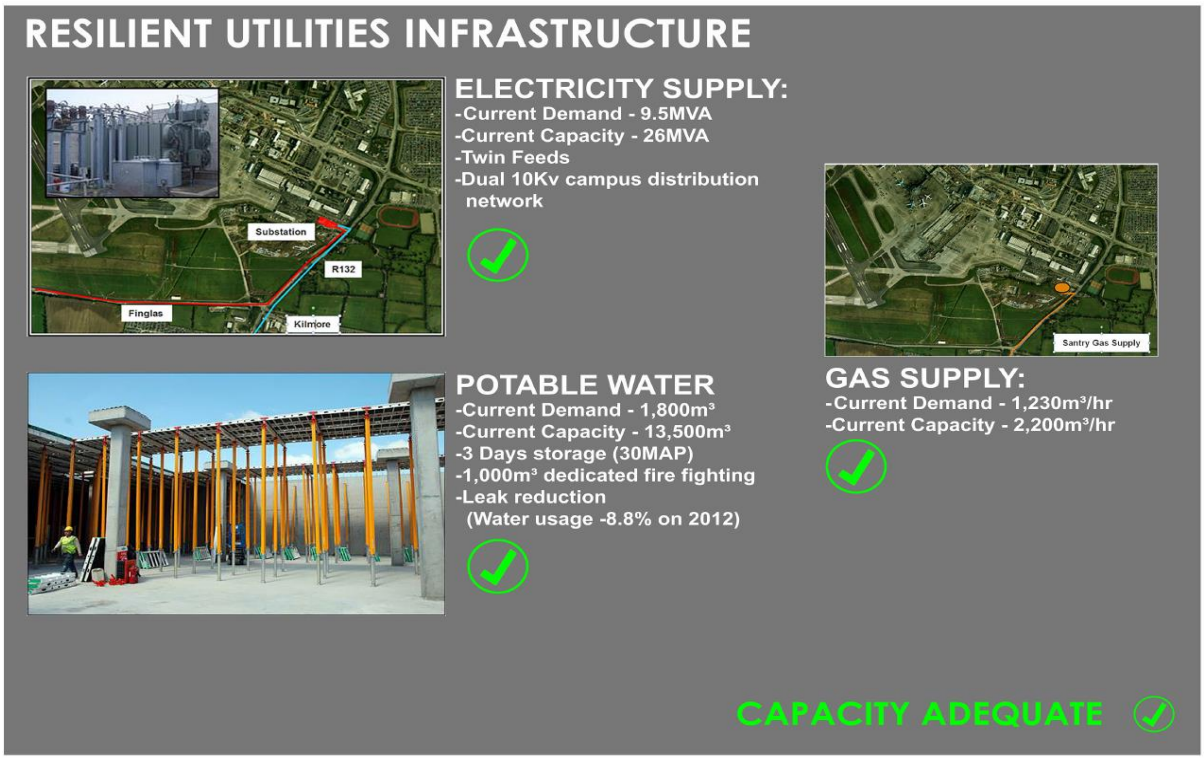
Figure 16 : Baggage Reclaim & meeters and greeters - Arriving Passengers



There is sufficient capacity in the baggage reclaim and meeters & greeters processors to meet current and forecasted demand to 2019. A CIP proposal to improve the customer experience in T1, and so assist with airline agreement to T1 relocation, is included. It is further and strongly stressed that Terminal 1 has been in operation for 42 years with an original design life of 50 years. In terms of asset regeneration and in consideration of the future demands of Terminal 1 the CIP proposal includes for all the necessary requirements to appropriately safeguard the asset.

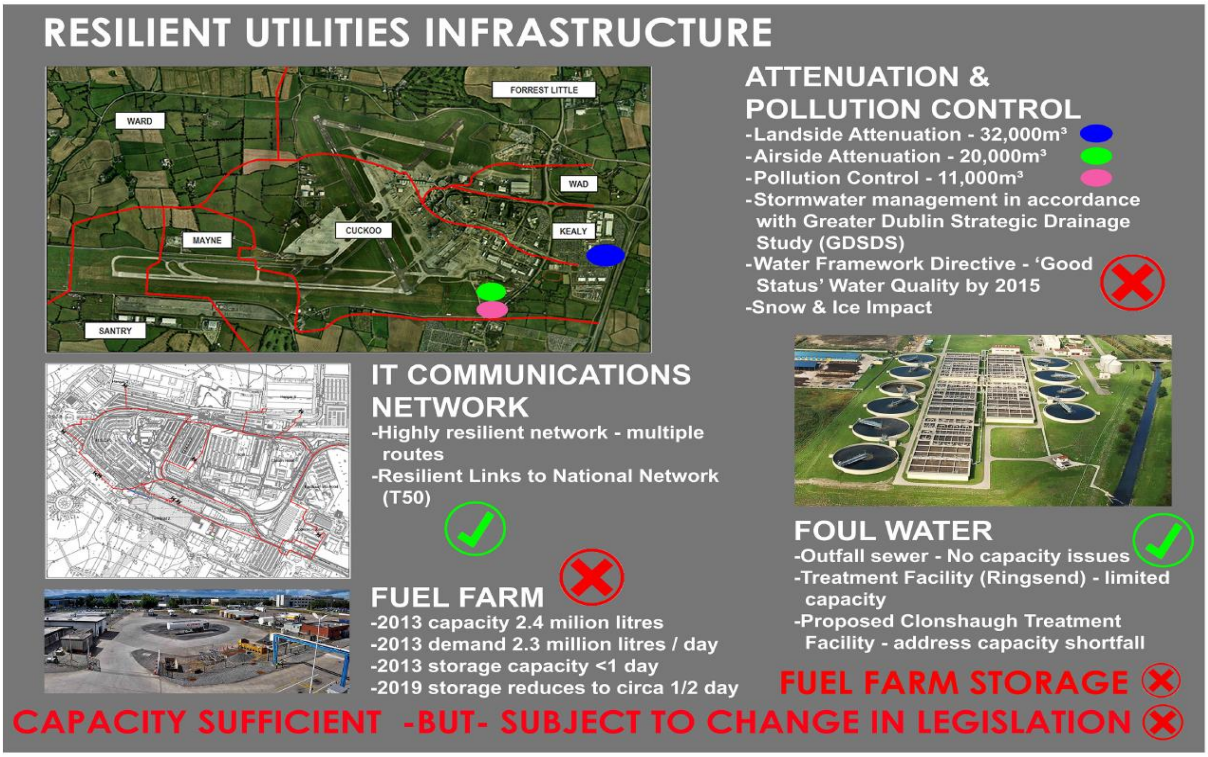
The capacity of each processor defined currently and at the end of the next CIP period shown in Figures 8-16 are predicated on the assumed availability of utilities: electricity, gas, IT communications network, airfield lighting, water – potable & foul, drainage (attenuation), pollution control and aviation fuel supply. Each of these utilities has a capacity of their own which cannot be exceeded either physically or to remain compliant with environmental regulation. A review of each of these utilities is presented in Figures 17 and 18.

Figure 17 : Utilities at Dublin Airport



Sufficient capacity is available for gas, IT Communications and electricity supply currently and to the end of 2019. While some capacity constraints are possible due to the aging airfield infrastructure we propose only to monitor performance of this utility as it is optimal to increase capacity of this utility in conjunction with runway development.

Figure 18 : Utilities at Dublin Airport (contd.)



Sufficient capacity exists for both potable water and foul water currently and to the end of 2019. While the fuel farm is below capacity in 2013, agreement has been reached with the airlines to proceed towards a DFBOT (design-finance-build-operate-transfer) solution to increase capacity with a 3x5 million litre tank facility. The preparation for the DFBOT tender process is underway; however, for the unlikely event of a technical, legal or other impediment to the successful appointment of a DFBOT operator we have included a triggered proposal, CIP 15.2.002, for fuel farm development in this CIP.

There are serious capacity issues in relation pollution control which need to be addressed in this CIP proposal, and we are bringing forward a project for this utility. While currently compliant with environmental regulations in this area, a single severe weather event (such as occurred in 2010) would be sufficient to cause non-compliance with the ultimate sanction being forced suspension of airfield operations at the airport.

4 Service Quality at Dublin Airport

The service experience of customers has been an important factor in the selection of projects for this CIP proposal. While 13 service quality metrics were incorporated into the price cap in 2010, daa monitors and seeks to improve performance on a far wider range of service quality metrics. We believe this attention to the customer service experience is reflected in the high level of service generally provided by daa to our customers and Dublin Airport's rank in the top five European airports for customer satisfaction. The Service Quality Metrics regime in place for 2010-2014 is summarised in Table 4.

Table 4 : Service Quality Metrics 2010-2014

Service quality measure	Source	Target	% weight in price cap
Security passenger search time no longer than 30 minutes	daa	100%	1.50
Percentage of time out-bound baggage handling system unavailable for more than 30 minutes during hours of operation	daa	0%	0.75
Percentage of time in-bound baggage handling system available during hours of operation	daa	99%	0.25
Ease of way-finding	ACI	3.7	0.25
Flight information screens	ACI	3.8	0.25
Cleanliness of airport terminal	ACI	3.6	0.25
Cleanliness of washrooms	ACI	3.3	0.25
Comfortable waiting/gate area	ACI	3.0	0.25
Courtesy/helpfulness of airport staff (excluding check-in and security)	ACI	3.8	0.10
Courtesy/helpfulness of security staff	ACI	3.8	0.15
Overall satisfaction (all passengers)	ACI	3.5	0.25
Communication/telecom/e-facilities	ACI	3.1	0.25

A key factor in attaining high levels of service quality is the alignment of processor capacity and demand. When a processor is utilised beyond its capacity (if possible) the quality of service will suffer. Similarly, where it is not possible to exceed the through-put capacity of a processor e.g. stands, delays and/or other operational disruptions will result, also reducing the service experience of customers. In the previous section the following process areas where under-capacity will exist by the end of 2019, without capex investment funded through CIP 2015-2019 in the intervening period, were identified:

- Short-term car parking
- Stands & gates
- Immigration
- T2 transfers
- Pollution control

and hence, in these areas, service quality is at risk. Future targets for quality of service cannot be set in isolation from the capex requirements to deliver such service levels.

An evident threat to service quality over the next CIP period is changing LAGS requirements, impacting as it will the critical area of security. The LAGS standard will require the installation of additional equipment on security belts – this will reduce the area available for passengers to load onto the belt and cause a slowing of passenger through-put without intervention. The automated tray return system (ATRS) to be funded through CIP 15.4.003 Central Search Area – New Technologies, will assist in maintaining processing rates at security for the current volume of passengers. However, passenger growth beyond a certain point will require the installation of additional security belts, which cannot be installed within the current security footprint in T1. It should be noted that the daa target of 180 passengers per lane per hour is at the top end of the range achieved by airports for security processing and additional processing can only be achieved through an increase in the number of security lanes. For this reason, we are proposing a trigger project to relocate the security facility in T1 (to provide the necessary space for additional screening lanes) when traffic volumes reach a certain level. This will safeguard performance against the security queue target consistent with the regulatory screening requirements.

The security-queue metric of 30 minutes was set with consideration to the timing required by airlines to get passengers from check-in to the departure gate and is unlikely to be increased; in fact

one airline has called for it to be shortened. daa has considered the possibility of the security queue target being reduced to 100% of passengers being processed inside 20 minutes and, should this target be adopted by CAR, there will be opex and capex implications arising. An indicative quantification of opex implications of a 20 minute queue target was presented to the airlines in week 4 of the capex proposals consultation. The capex implications of a 20 minute queue target would be to bring forward the requirement for the T1 check-in and security project CIP 15.7.101 (discussed further in section 7.9.2). It should be noted that the inclusion of a second security queue metric as proposed by one airline in response to CAR's Issues Paper of a queue <5 minutes for 95% of time would have additional and substantial impact. A lower trigger again for CIP 15.7.101 would be required and there would also be a requirement for additional security lanes in T2. As daa is proposing that the security queue target remains at the current level (with adjustment of the 'red line' to after the Walk Through Metal Detector (WTMD)), no capex to fund additional security lanes in T2 is proposed in this CIP.

Capacity is far from the sole influence on service quality requiring capital investment. Of considerable importance are such factors as

a) changing customer expectations and
b) the maintenance of existing assets

There are a number of key technology trends which are changing customer expectations of transaction processing, information delivery and independent progression through the airport for example:

- ticket sales via mobile app.;
- flight status updates via mobile devices and / or social media;
- self-service transfer and self-boarding kiosks

As customers' expectations of such technologies increase – availability, reliability, usability - airports (and airlines) will need to fulfil these expectations if they are to avoid a perceived drop in service quality. However, mindful of prevailing economic conditions, we are proposing only a modest capital investment in IT innovation in the 2015-2019 period.

Maintenance of existing assets is the largest component of the three proposed capex tranches in this CIP. Three main explanatory factors for the size of the maintenance capex required are:

- Maintenance capital was significantly curtailed in the CIP 2010-2014 leading to an increased maintenance capital requirement in the next CIP period;
- Increased asset base at Dublin Airport, i.e. T2 opened since the last Regulatory Determination and a significant proportion of the assets therein will require refresh/repair/replacement over the period of the next CIP;
- Optimal approach to asset management adopted, in some cases this means more investment in the immediate future, leading to dynamic efficiency over a longer period (lower NPV cost over life of asset) e.g. airfield pavement rehabilitation, which accounts for c. €80m

As can be seen from Figure 19 below the customer experience of Dublin Airport, supported by the quality of service we provide, is broadly positive. This quality of service is achieved through meeting (and in some cases exceeding) the service quality targets set by CAR for 2010-2014, and places Dublin Airport in the top five European Airports for service quality. For this reason, with regard to service quality daa is proposing that for the next regulatory determination period:

- the existing 10 ACI ASQ measures should continue to be included in the CAR service quality regime going forward and that they should be retained at the existing target levels;
- the security queue SQM should be retained at 30 minutes but that the current 'red line' which acts as a boundary for security queue timing should be moved forward to a point at the end of the security process (passenger passes through WTMD).

Figure 19: The Customer Experience at Dublin Airport

While daa seeks to provide an excellent level of service quality to its customers, delivery of service quality improvement is reliant on capex investment in many instances. Such capex must be supported by the airlines and be affordable for daa. The subject of affordability is addressed in the next section.

5 Capital Maintenance in a Capital constrained Environment

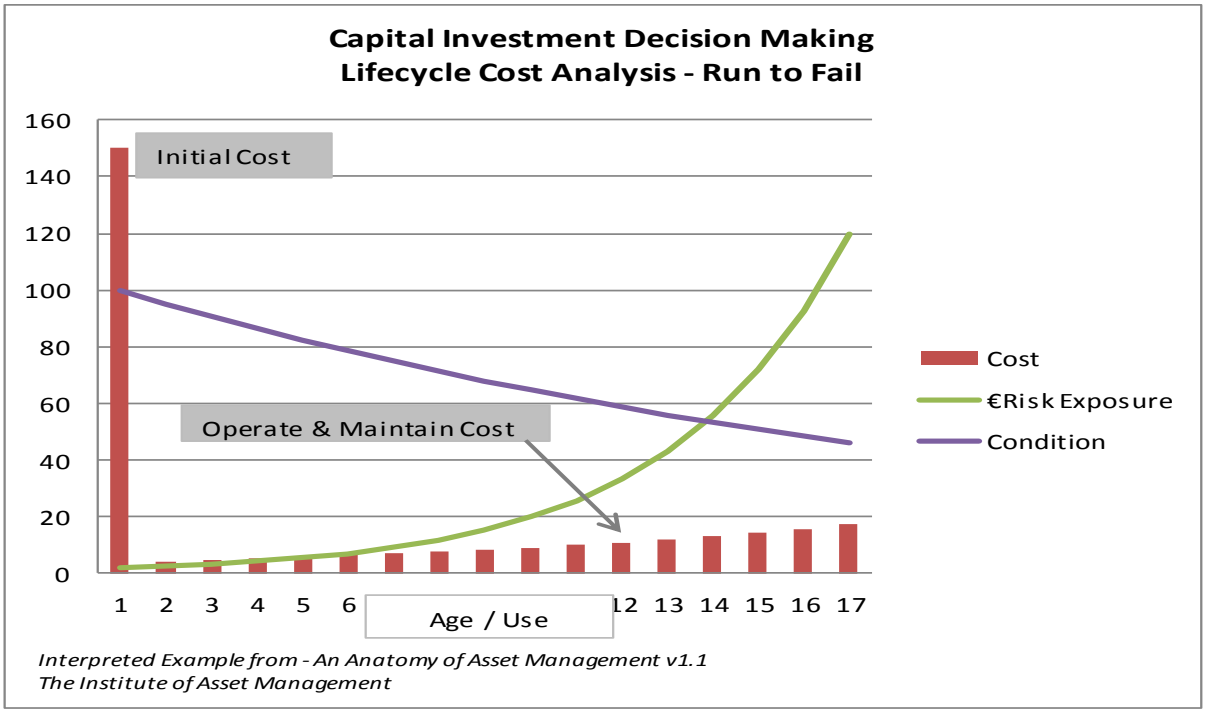
Section 3 outlined the rationale for capital investment to increase capacity across individual process areas of the airport. Equally important is the need to invest in current assets requiring rehabilitation or upgrade due to failing condition, functionality constraints or requirement for regulatory change. This investment driver is termed Capital Maintenance.

Capital Maintenance is justified on the basis of current and forecast probability & impact of asset failure, assessing optimal investment timing and consequences of deferred investment. Failure in this context is failure to meet business objectives and is inclusive of serviceability and growth requirements. Consequences are expressed in terms of euro (€)Risk which is derived from impacts of service to customers, safety, reputation and the environment (including all relevant third parties).

Operational expenditure and Capital Maintenance investment (totex) in existing assets are options to sustain the existing assets in service before proposals are developed to build new assets.

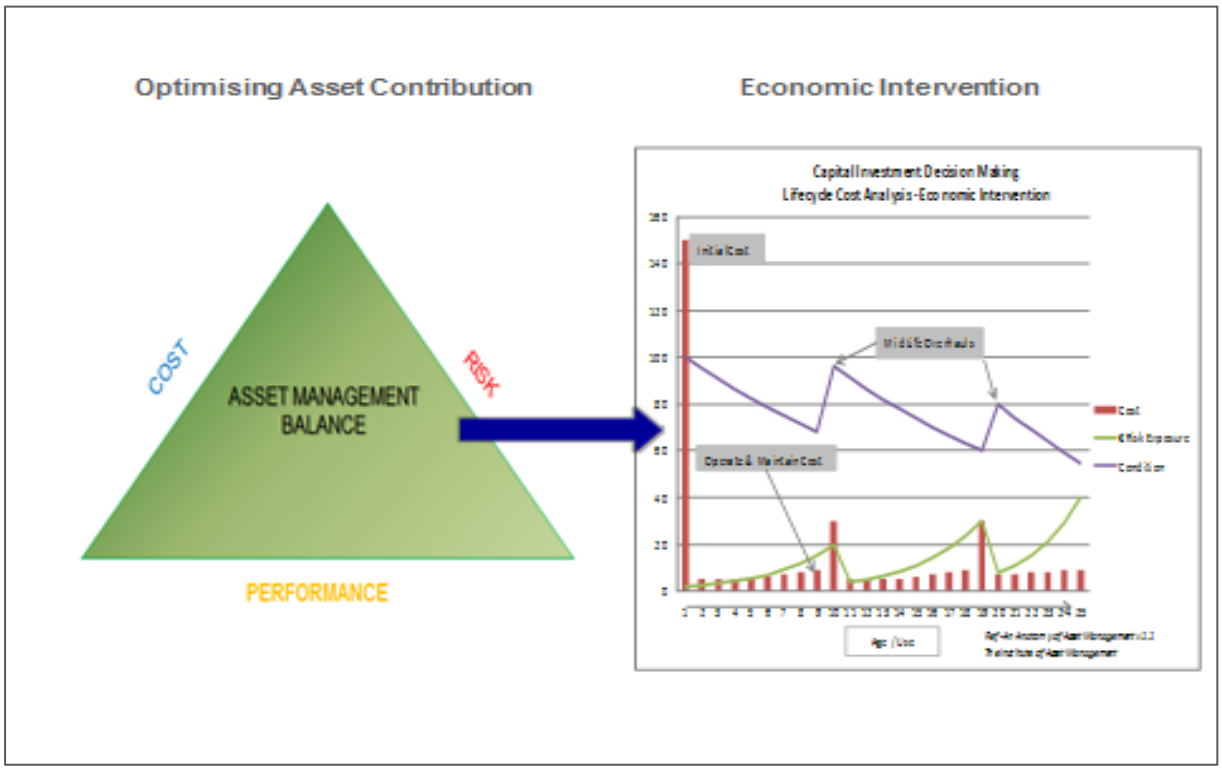
In a capital constrained environment, capital investment to maintain and replace existing assets may be postponed by pressure to invest in new assets to enable increased capacity. This is a 'run to fail' approach, which is detrimental to the economic well-being of the business and its customers. In the short term, cost savings are achieved, however in the medium to longer-term it presents a 'cliff edge' of investment requirements related to crisis-condition related failures, which accumulate over time.

Figure 20 : 'Run to Fail' Asset Management Cost/Performance/Risk Outturn



The value extracted from assets over their lifetime is sub-optimal to the business using a 'run to fail' approach as the risk and ultimate cost of catastrophic failure of the asset is high. Instead, the asset value can be maximised by systematically evaluating asset performance, risk of failure and cost of maintenance investment over its lifetime. An optimal balance between Whole Life cost management, service delivery to customers and risk exposure is the aim of the 'economic intervention' approach to good asset management.

Figure 21 : 'Economic Intervention' Asset Management Optimises Asset Value



A formal Asset Management standard, to deliver an economic approach to asset management, PAS 55, was launched in 2004. This standard has been adopted by many organisations worldwide including many international airports. PAS 55 was superseded by a new international standard, ISO 55000 was published in February 2014 and daa is working towards accreditation. daa aims to achieve ISO 55000 accreditation in Q4 2014.

Understanding ISO 55000 certification

- Asset management is defined in ISO 55000 as the 'coordinated activity of an organisation to realise value from assets'.
- It seeks to optimise the cost, risk and performance of assets over their life cycle at an individual asset, asset system and asset portfolio level.
- Asset management translates business objectives into asset-related decisions, plans and actions within a strategic framework using a set of processes, techniques and tools.
- Improved asset management practices are particularly business critical in asset intensive organisations where there are significant challenges to address in terms of increasing service demand, increasing stakeholder expectations, a deteriorating asset base and constrained funding.

An ISO 55000 certified business will schedule upgrade / replacement investment so as to minimise the overall cost of the asset to the business (both in terms of investment cost and costs of failure) while maintaining an appropriate service level. To achieve ISO 55000 all aspects of daa asset management are measured against pre-set targets, under the following headings:

1. Policy, Strategy & Objectives,
2. Leadership, Accountabilities & Responsibilities,
3. Organisation, Training & Development,
4. Asset Lifecycle Financial Planning,
5. Design & Delivery,
6. Operate & Maintain,
7. Risk Management,
8. Health & Safety,
9. Asset Information Management
10. Continuous Improvement.

daa is working towards full ISO 55001 accreditation in 2014.

The benefits of asset management listed in ISO 55000 include, but are not limited to:

1. **improved financial performance:** improving the return on investments and reducing costs, while preserving asset value without sacrificing the short or long-term realisation of organisational objectives;
2. **informed asset investment decisions:** enabling the organisation to improve its decision making and effectively balance costs, risks, opportunities and performance;
3. **managed risk:** reducing financial losses, improving health and safety, good will and reputation, minimising environmental and social impact, resulting in reduced liabilities such as insurance premiums, fines and penalties;
4. **improved services and outputs:** assuring the performance of assets leading to improved services that meet or exceed the expectations of customers and stakeholders;
5. **demonstrated social responsibility:** improving the organisation's ability to reduce emissions, conserve resources and adapt to climate change, demonstrating socially responsible and ethical business practices and stewardship;
6. **demonstrated compliance:** transparently conforming with legal, statutory and regulatory requirements, as well as adhering to asset management standards, policies and processes;

7. **enhanced reputation:** through improved customer satisfaction, stakeholder awareness and confidence;
8. **improved organisational sustainability:** effectively managing short and long-term effects, expenditures and performance, improving the sustainability of operations and the organisation;
9. **improved efficiency and effectiveness:** reviewing and improving processes, procedures and asset performance improving efficiency and effectiveness, and the achievement of organisational objectives.

Achievement of this quality standard will be an outward demonstration of the professionalism of the asset management function within daa and will give assurance to our airline customers that the capital maintenance investments put forward are timely, necessary and proportionate.

Asset Management in practice at daa

Asset Health Reviews have been conducted on current daa assets over the past 3 years assessing condition, serviceability and risks. Failure of Condition is generally a driver for Capital Maintenance Investment whereas failure of Serviceability is generally a driver for Growth Investment. Risk is used to prioritise investment requirement. These reviews inform the proposed investments for 2015-2019 and on-going operational maintenance planning for the life of the assets.

Figure 22 : Asset Health Matrix

Score	Condition	Serviceability	Health Index
1	New or as new	Appropriate for use with >15 years spare capacity	Just built – monitor performance to design
2	Good condition	Appropriate for use with >10 years spare capacity	>10 year planning period
3	Shows moderate sign of wear	>5 years spare capacity	Monitor - On the radar within 10 year horizon
4	Intervention in next planning period	Fully utilised requiring investment in next planning period	Plan & close monitor - Next 5 year planning period
5	Intervention this planning period	Needs urgent mitigation to address service issues	Action now - This planning period

The reviews have demonstrated that uplift in capital maintenance activity is required over the next 5 years to mitigate increasing risk of disruption to services and optimise cost input against performance output for certain areas such as:

- Airfield Pavements
- Airfield Lighting
- Terminal 1 & Pier Roofs
- Campus Building Roofs
- Road Infrastructure

In particular, due to the deferment of constructing the Northern Parallel Runway and associated infrastructure, timely investment in the existing airfield assets is required to sweat them further and ensure they continue to meet service demands.

Capex Prioritisation Process

The investment planning matrix example shown above assumes capital availability to meet the schedule. However, in a capital-constrained environment, this schedule is modified in a systemised capex prioritisation process. The capex prioritisation can be reduced to four fundamental steps:

1. Evaluate current risk based on planned investment date
2. Evaluate risk to business if investment is deferred
3. Calculate increased risk between investment at planned date and deferred investment
4. Prioritise on the basis of reducing euro (€) value of increased risk

Figure 23 : Risk Assessment Matrices

LIKELIHOOD MATRIX					
	1	**2**	**3**	**4**	**5**
	Rare If Ever	**Possible**	**Likely**	**Very Likely**	**Almost Certain**
Frequency	Would only occur in exceptional circumstances	Not expected to occur	May occur	Will probably occur, but not as a persistent issue	Will probably occur frequently
	1:10	1:5	1:2	1:1	4:1
	>5 years	Within 5 years	Within 2 years	3-12 months	Within 3 months

IMPACT MATRIX*					
	1	**2**	**3**	**4**	**5**
Domains	**Negligible**	**Minor**	**Moderate**	**Major**	**Catastrophic**
Service	Organisation efficiency issues but no obvious impact to customer experience or perception	Organisation efficiency issues have adverse impact on customer experience and perception	Sustained or Systematic service deliver interruptions and / or poor service quality	Localised failure of Regulatory Standards of Service	Wide spread gross failure of Regulatory Standards of Service
Safety	Minimal injury or illness requiring no time off work	Minor injury or illness requiring time off work for >3 days	Moderate injury requiring time off work for 4-14 days	Major injury leading to long-term incapacity / disability	Incident leading to death or multiple permanent injuries or irreversible health effects
Environmental	Minimal impact on environment with no impact on biodiversity, habitat or endangered species. No cleanup required	Minor impact on environment – c. 1 month to clear with no impact on biodiversity, habitat or endangered species. Report to EPA and cleanup.	Moderate impact on environment – short term (<1 year) impact to biodiversity, habitat or endangered species. Fines and cleanup costs.	Major impact on environment – medium term (1 – 3 years) damage to biodiversity, habitat or endangered species. Major court case, fines and cleanup.	Catastrophic impact on environment – permanent damage to biodiversity, habitat or endangered species. Public enquiry, organisational prosecution and cleanup.
Calibrated €Risk / Event	€1k	€10k	€100k	€1M	€4M

*daa internal matrix also includes 'reputational' impacts, excluded from the above table.

A frequency value in the likelihood matrix is converted to a probability e.g. 'within 2 years' converts to an annualised 0.5 probability, and multiplied out by €Risk in the relevant column. The target investment date is determined by euro (€) Risk exposure and adjusted as required to a tolerable level. A deferred investment date is also assessed by euro (€) Risk to determine how business

objectives will be impacted and to what extent. Projects are then ranked in order of priority on deferred euro (€) Risk value.

daa operates in a capital constrained environment. Continual risk evaluation and investment flexibility is therefore important. It is for this reason that daa includes a number of capital investment envelopes in the CIP Proposals 2015-2019. Such an approach will allow flexibility in the capital investment spend to respond to changing risk assessments over the five year period. Continual risk assessment may result in certain projects moving up (or down) the order of priority during the time period of the CIP and investment should take place based on current risk assessment rather than the risk assessment undertaken at the beginning of the CIP period.

6 User Consultation

6.1 Consultation Process

The proposals in this Capital Investment Programme are largely driven by the traffic volume forecast to 2019, and daa's analysis of maintenance, commercial and opex requirements. The formulation of the proposals has included a number of opportunities for airline input – one consultation undertaken by Pascall + Watson[12] on daa's behalf and focused on terminal requirements and two others undertaken by daa directly as envisaged under the Airport Charges Directive[13].

From these consultations, in additional to general comments, the following specific projects respond to airline requests:

- Pier 3 Flexibility (to provide for Code E and larger aircraft on Pier 3 with one stand having three airbridges)
- Airfield Upgrades for Larger Aircraft
- T1 Baggage Reconciliation System
- T1 Fixed Electrical Ground Power
- Pier 1 Enclosed Gate Rooms

Additional projects in this CIP were derived from capacity analysis to meet the forecasted levels of traffic and from an economic intervention model of determining capital maintenance projects to be brought forward. Commercial projects which contribute to the Single Till through a return > 7% (current allowed cost of capital) are the final group of projects within the CIP.

Mindful of the difficulties experienced in gaining approval for capital investment through the 2010 – 2014 CIP consultation process, daa sought to improve on previous practice for CIP Proposals 2015-2019. Our aim was to gain meaningful engagement and consultation with the airlines and to this end daa followed a process which has been developed through the interim capex consultations which have taken place since the last regulatory determination. The process adopted through this consultation was as follows:

1. **Advance distribution of the project sheet and presentation materials** for the project to be explored in the consultation meeting. More information on the proposal provided prior to the consultation meeting in the form of a consultation paper. This allowed airlines and other

[12] The Pascall+Watson consultation, undertaken on daa's behalf, focused on airlines requirements from terminal facilities. This was to direct the T1 redevelopment project, and an intensive consultation process with survey and face-to-face meetings methodologies was employed.

[13] These engagements with our airline customers (as part of our volume and airport charges consultations in 2013) had a wider focus than the Pascall + Watson process (which centered primarily on T1) and gathered airline requirements across the airport as a whole.

stakeholders to examine the proposal in detail in advance, allowing the consultation meeting itself to be more exploratory than demonstrative in nature.

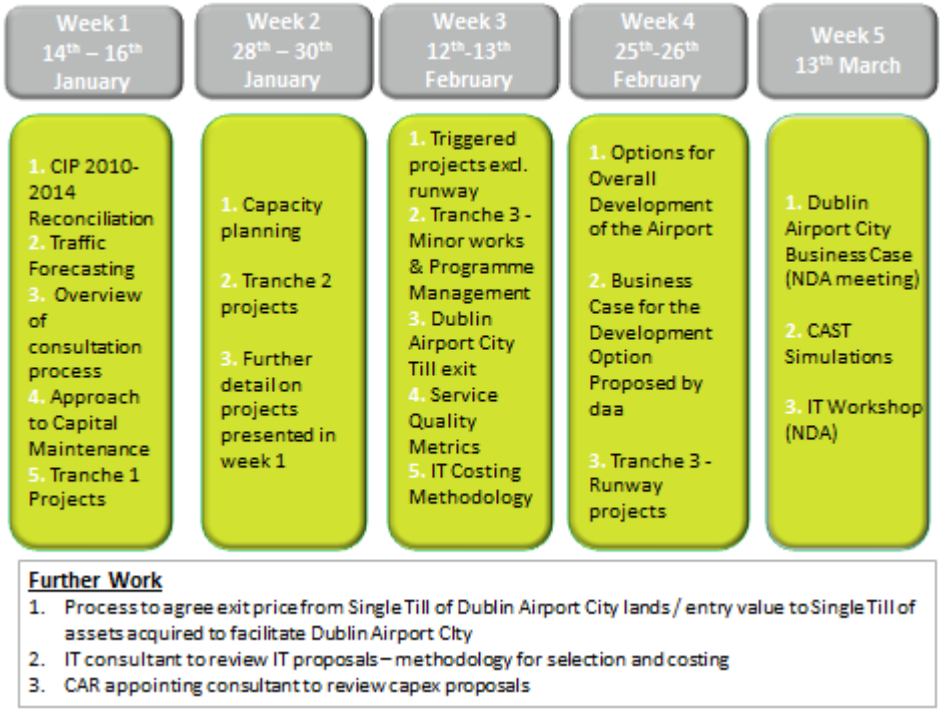
2. **Consultation meeting** – open to all stakeholders, presentation on the project with opportunity to seek whatever information considered necessary in determining support for the project and for stakeholders to share their views with each other. A full transcript of the meeting produced by the professional stenographer in attendance was circulated after each meeting.
3. Opportunity for stakeholders to submit **clarification questions** to daa
4. daa responds with the requested information
5. **Final written submissions** from stakeholders containing their level of agreement with the proposed project

In week 2 of the consultation process daa were requested to provide detail on alternative development options for Dublin Airport, to include;

a) The overall development plan – building the second runway and a new pier immediately; essentially the acceleration of Dublin Airport's Masterplan and
b) Options to reduce the scope of the proposed CIP – through elimination of entire projects and / or reducing specification of projects.

daa added additional consultation sessions to the schedule to respond to these requests. The format of the capex proposals for Dublin Airport 2015-2019 consultation process is shown in Figure 24.

Figure 24 : Capex Proposals for Dublin Airport 2015-2019 Consultations



6.2 Development Options

6.2.1 Overall Development Plan

The analysis of the overall development plan option was presented in week 4 of consultation. This option, essentially the acceleration of the Masterplan, would render some projects in this CIP redundant – Pier 2 Segregation, Pier 3 Flexibility and Apron 300R. However, the overall impact of such acceleration was a negative NPV (net present value) of -€59m based on the time value of

money and the fact that accelerating the Masterplan would provide capacity in advance of passenger demand. Through delaying the implementation of the Masterplan, consistent with just-in-time capacity delivery approach, the sweating of the existing assets as proposed in this CIP provides the best value to our airline customers.

6.2.2 Options to Sweat Existing Assets

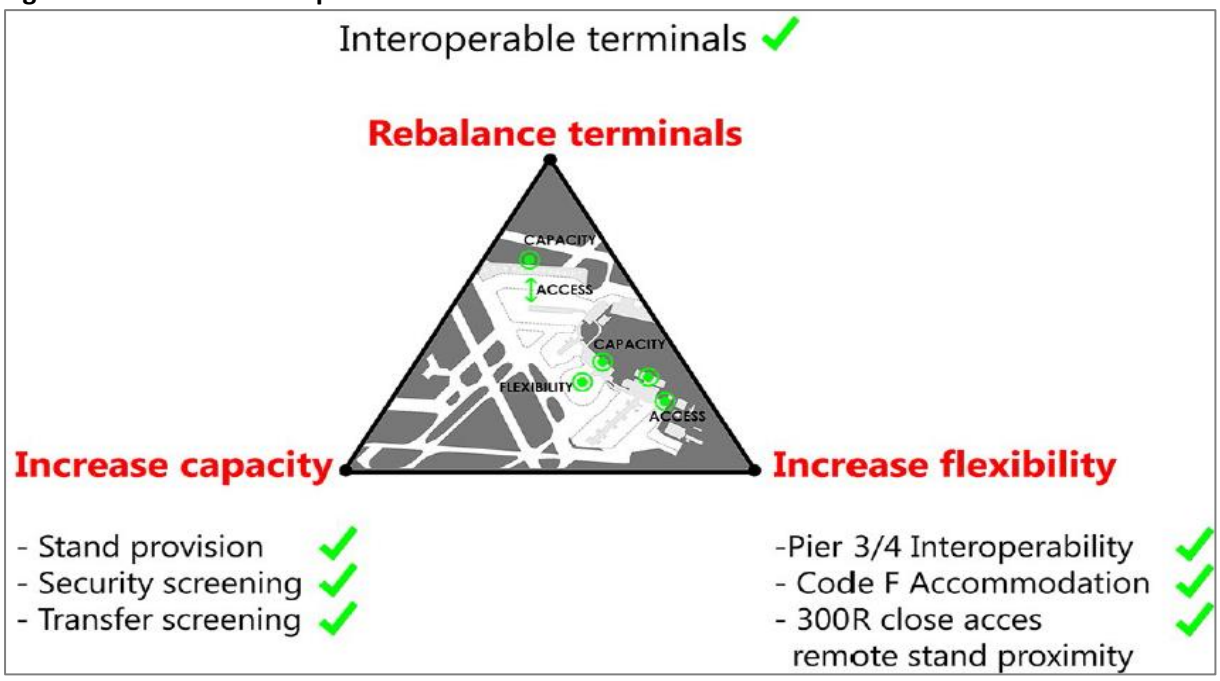
Additionally, daa presented three options on the sweating of existing assets (Options 2A, 2B and 2C) in week 4 of consultation. Each of the three options was evaluated based on ability to satisfy the three fundamental imperatives for the development of the airport over the period 2015-2019:

1. Rebalance demand between terminals (to avoid capacity constraints localised to a single terminal)
2. Increase capacity for stands, security screening and transfer screening
3. Increase flexibility to accommodate additional aircraft types and facilitate ease of airline operations

Development Option 2A

Option 2A[14] included all of the projects in this CIP with the T1 Check-in and Security project being implemented immediately (no demand trigger applied). The evaluation of this option showed that it was able to deliver all three of the fundamental imperatives.

Figure 25: Evaluation of Option 2A



Development Option 2B

Option 2B, as 2A with the following changes –

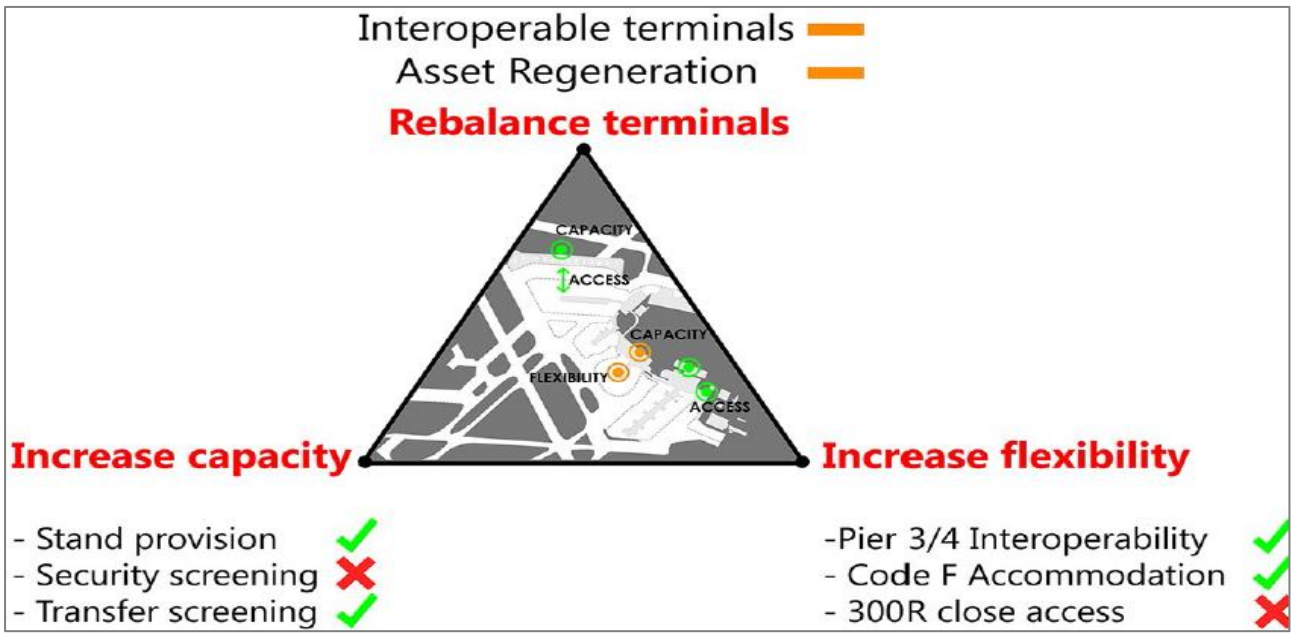
- Elimination of:
  - T1 FEGP
  - T1 Enclosed Gate Rooms
  - Apron 300R

[14] Option 1 was Masterplan acceleration

- Reduction in scope of:
    - T2 Transfers
    - Pier 3 Flexibility
    - T1 Arrivals
    - The check-in element of T1 check-in and security.
- Triggering of T1 check-in and security
- Provision of an opex solution (bussing) instead of capex segregation of Pier 2.

The evaluation outcome of option 2B is show in Figure 26.

Figure 26: Evaluation of Option 2B



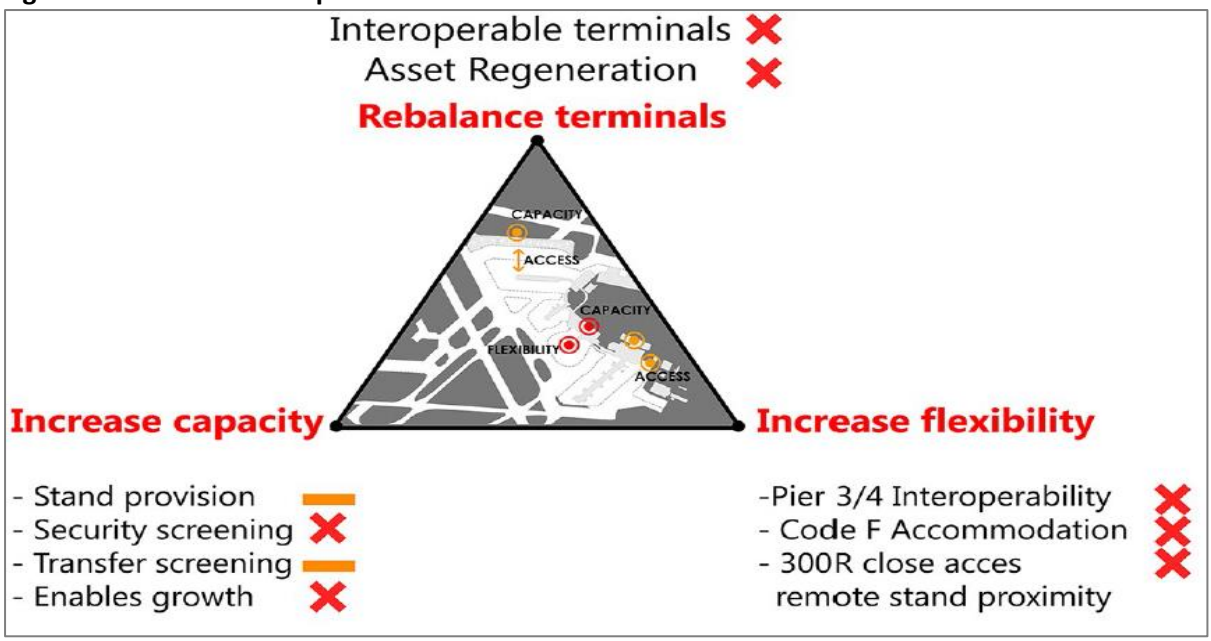
Development Option 2C

Option 2C, as 2A with the following changes –

- Elimination of:
    - T1 FEGP
    - T1 Enclosed Gate Rooms
    - Apron 300R
    - Pier 3 Flexibility
    - T1 Check-in and Security
    - T1 Façade
    - T1 Arrivals
- Reduction in scope of:
    - T2 Transfers
    - Apron 5G
    - Bus Lounge Facilities.
- Provision of an opex solution (bussing) instead of capex segregation of Pier 2.

The evaluation outcome of option 2C is show in Figure 27.

Figure 27: Evaluation of Option 2C



From this analysis of three alternative proposals for the sweating of the existing assets at Dublin Airport it was shown that both options 2B and 2C are sub-optimal in terms of their ability to address the rebalancing of the terminals, increasing capacity for stands, security and transfers and in increasing flexibility.

6.3 Airline Comments

A number of airlines provided final comments to daa on the projects consulted upon, with airlines commenting on a single project, a single tranche of proposals or the capital investment proposal as a whole (see Table 5 below). Unanimous agreement between responding airlines (either in support or rejection) was not expressed on any project. Further, very differing levels of engagement by airlines was seen across the consultation process, nevertheless daa has made best efforts to ascertain airline views through this comprehensive and transparent consultation process.

Table 5 : Summary of Airline Final Comments

Tranche	Airline	Comment
Tranche 1	Ryanair	"The DAA monopoly has failed -to confirm that you will undertake and deliver all capex projects that are allowed into the RAB, to correct specification and at the forecast time" -to respond to Ryanair's query concerning the overall impact of capex proposals on airport charges -to provide airport users with adequate information on the service quality impact of its Tranche 1 proposals "Airlines should not be required to comment on, much less agree to, proposals in the abstract" "The DAA monopoly's failure to provide capex benchmarks or any resultant analysis of specific projects before the "consultation" process has prevented airlines from constructively engaging or commenting on the Tranche 1 proposals"

Tranche	Airline	Comment
Tranche 1	Aer Lingus	"supportive of a capital investment program that addresses the mandatory projects necessary to keep the airport operating efficiently and resiliently" "concern on the proposed level of expenditure" "acknowledge that the DAA have indicated that the investment plan can be implemented while keeping airport charges flat, corollary of this is that airport charges could be reduced in the context of a more cost effective capital plan" "crucial that careful phasing of projects ensures that only those projects that are mandatory in the next CIP period are advanced in the plan" "The investment program is excessive at an aggregate level. We suggest that reductions could be made to the scope of individual projects combined with more aggressive cost targets and management of risk" "Supports the inclusion on the "*Nose in Guidance System*" project at the airport. However, the cost proposed would be prohibitive. costing should be re-evaluated by DAA" "We endorse the proposals offered in the DAA's response paper to establish a mechanism for independent review of costing and capital efficiency. However, the body or consultants appointed must be completely independent and have no vested interest in the outcome of the reviews" "BRS is mandated at T2 due to the provision of CBP screening and is ostensibly a baggage imaging and location system. We would oppose any additional charge being imposed in relation to BRS" "The overall settlement in the next 5 years must result in controlled and reduced airport charges"
Tranche 1	Sky Handling Partner	"Fail to understand 'neutral' stance by DAA on BRS. How can DAA be so forward thinking in one sense and at the same time not understand that facilities and technology such as BRS is critical to supporting such future business and is crucial for many current and prospective airlines"
Tranche 1	Swiss International Air	"Strong view in favour of installing a Baggage Reconciliation System in T1. If no BRS is installed in T1 we would like to request to move our operations into T2"
Tranche 2a	Ryanair	"All expenditure by a regulated monopoly must be supported by a comprehensive business case which demonstrates that a project provides value to its customers. The DAA has failed to provide any such analysis during your Tranche 1 and Tranche 2 presentations" "The fuel hydrant facility, which the DAA monopoly has by now installed around Pier E, should be in place for the entire airport or none at all" "DAA monopoly has failed to guarantee that the cost it claims is needed for each proposal is the lowest cost available" "Should the DAA monopoly commence a trial of the proposed enclosed gates on a single gate in Terminal 1, this should be subject to airline support and at minimum cost. In Ryanair's experience at other airports, enclosed gates allow for a more efficient boarding process"
Tranche 2	Aer Lingus	"Crucial that investment projects feed into one consolidated plan for the airport. vital that items like the availability of check-in desks, or plans to alleviate stand congestion are included in the Capital Investment Planning framework" "Recommend that DAA consider the opex cost impact to the airline community and airport users"

		"Accepting of the commercial property and retail investment, so long as the revenue expectation is included in the single till" "Investment in retail facilities and commercial property developments appears to be very significant. We expect that these investments can be evaluated and supported by independent assessment and that all project capital outlays are subjected to rigorous assessment, and that by reduced expenditure the various rates of return can be increased further" "With regard to the enhancements to the T2 MSCP, we support the concept of the project so that DAA can realise the revenue contribution from serving latent demand. In connection with the consolidated staff carpark, Aer Lingus will consider the proposals further upon receipt of an expanded business case"
Tranche	**Airline**	**Comment**
Tranche 2b/3	Ryanair	"The DAA monopoly has failed to provide the overall impact of Tranche 2(b) and 3 capex proposals on airport charges. This is in breach of recital 13 and article 7 of the Airport Charges Directive" "The DAA monopoly should focus on increasing Dublin Airport's efficiency and lowering airport charges in order to attract growth, rather than seeking spurious "upgrades" or "improvements" when they are not needed" "We note that the DAA monopoly has failed to use the Discounted Cash Flow Model (which is part of the standard Capital Asset Pricing Model) when presenting its proposals" "The DAA monopoly's refusal to provide any cost breakdown, benchmarking analysis, or even a source for figures prevents airlines from commenting on these proposals. This absence of information is in breach of recital 13 and article 7 of the Airport Charges Directive" "The DAA monopoly has failed to guarantee that the cost it claims is needed for each proposal is the lowest cost available, and the Response simply refers to unspecified "cost estimates", unsubstantiated "cost analysis" and unsupported references to the allegedly "cost effective" nature of proposals" "The DAA monopoly should maximise the usage and efficiency of the current T2 check-in desks…by allowing airlines other than Aer Lingus to use desks 29-56 during Aer Lingus' off-peak hours and by penalising airlines (through significantly higher charges) for operating T2 check-in desks that process only a minimal number of passengers" "The DAA monopoly should introduce attractive off peak discounts as this would further negate the alleged need to increase capacity at Dublin Airport... The DAA monopoly's extreme reluctance to consider off peak discounts demonstrates that you have no interest in serving your customers' needs …." "Ryanair does not support either the 5G proposal of the 300R proposal." "Given that Apron 300R will only be used by regional aircraft…there is no justification for this proposal and Ryanair objects to it" "The DAA monopoly's confirmation that parties and stakeholders who were surveyed regarding T1 development did not have sight of the potential costs and impact on airport charges proves that your "surveys" were flawed and your "consultation" process is in breach of recital 13 and article 7 of the Airport Charges Directive" "Given that the DAA monopoly seeks to justify the €15 million proposal for 'Pier 3'

		Flexibility' on the basis of airline "site visits" rather than actual demand, Ryanair does not support this rapacious proposal" "We note that the DAA monopoly has failed to provide airlines with its claimed benchmarks for the 'Pier 3 Flexibility' proposal, despite our specific request for same" "The DAA monopoly's attempt to underestimate the bussing time from the proposed T2 bussing facility to apron 5G…demonstrates the DAA monopoly's detachment from the operational and commercial reality of its customers." "The DAA monopoly's proposed T1 bussing facility would increase Ryanair's turnaround time by at least 5 minutes…equivalent to a 20% increase. As such, Ryanair does not support this inefficient proposal" "Given that airport users objected to the current T1 security location, the DAA monopoly must pay for the entirety of the 'T1 Check-In and Security' proposal, and exclude it from the RAB" "It is unacceptable that current users pay for increased capacity which will then be used by future users." "The price cap and the airport charges incurred by Ryanair and others at Dublin airport are among the highest in Europe, and are directly responsible for the dramatic traffic collapse at Dublin airport since 2007" "Instead of seeking to build a second runway (and thereby reduce traffic at DUB due to the resulting 80c increase in the price cap), the DAA monopoly should aim to achieve the levels of performance on runway 10/28 which are currently experienced at London Gatwick. "The DAA monopoly should only consider a new parallel runway once all cheaper capacity enhancements have been achieved" "In the "consultation" meetings, the DAA monopoly claimed that it could increase the existing runway capacity from 31 departures per hour to 37 departures... However, at a recent stakeholders' meeting … the IAA confirmed that there will not be capacity enhancements at terminal level in the forthcoming ANSP regulatory period from 2015 to 2019. This further demonstrates that the DAA monopoly's "consultations" lack adequate information and are misleading, in breach of recital 13 and article 7 of the Airport Charges Directive" "The DAA monopoly's insistence in targeting long-haul growth, and claimed capex requirements therein, will lead to higher airport charges and will damage growth at Dublin Airport. Furthermore, the DAA monopoly's admission that its actions are dictated by Government policy, emphasises the flawed nature of this "consultation" process in that the CAR (Ireland's non-independent aviation regulator) is appointed by the owner of the DAA monopoly – the Irish Government – and is legally obliged to follow binding directions issued by the Minister for Transport regardless of how misguided and damaging these directions are" "Other than much lower airport charges and adequate staffing of security points (which does not require additional staff but merely that the archaic work practices in T1 are replaced with those applied in T2), Ryanair has no other requirements at Dublin Airport. Similarly, other Dublin Airport operators cannot have further requirements given the incredible over-capacity following the opening of white elephant T2 in November 2010 and the dramatic traffic collapse since 2007. Dublin Airport now has capacity for at least 35 million passengers per annum (mppa), but traffic has declined from 23.3mppa in 2007 to 20.2mppa in 2013, with T1 in particular handling 10mppa as opposed to 23.3mppa in 2007. .... Ryanair does not support the

		other Tranche 2(b) and 3 proposals by the DAA monopoly, which are simply examples of further regulatory gaming in order to artificially increase its capex, airport charges and profit"
Tranche 2b	Aer Lingus	"see merit in the new proposals with regard to the plans for temporary check-in desks at T2; the acknowledgment that the 'old Pier C' gates for bussing will be reviewed in the short term; the options for a bussing solution for Pier 2 segregation; and the comments relating to the turnaround efficiencies that could be achieved from the implementation of 300R stands"
Tranche	**Airline**	**Comment**
Tranche 2b	CityJet	"Segregation of Pier 2. This is something that we are very strongly in favour of as we feel our customers currently get an inferior product to other airport users while we continue to pay the same charges. We are however totally against the notion of bussing all arriving passengers. This is a short sighted solution to a problem faced by our passengers and would result in our product being even further hampered in comparison to other users. We would be in favour of the remodelling option of the current pier to enable segregation of arriving and departing passengers"
Tranche 3	Aer Lingus	"we submit that the DAA should now focus on creating a new revision of its CIP that reflects as far as possible the views expressed by users during the consultation. This can be submitted to the CAR on the basis that it remains subject to revision following further consultation with users. As soon as the revised CIP has been issued, further detailed engagement should take place to help agree a plan in the best interests of all airport stakeholders and to facilitate the CAR in its review"
General	Aer Lingus	"welcomes the level of detail and the depth of the information provided by the DAA in response to the questions posed and the information sought by users during the recent consultation"
General	CityJet	"Would like to commend the DAA on this series of consultation meetings. In general they were carried out in a manner that led to real consultation, and hopefully the comments made during the process will be considered"
General	Ryanair	"The extremely tight deadlines and time constraints imposed by the DAA monopoly on airlines throughout this "consultation" process have prevented constructive engagement between airlines and the DAA monopoly" "The DAA monopoly's "consultation" process, which lacks transparency and necessary information, is simply a box-ticking exercise which will result in harm to airport users and Irish consumers…"

6.4 Submission of proposals to CAR

Having presented and explained our proposals in detail to airlines through the consultation process, daa now submits them to CAR for consideration.

As a general point, it is difficult for daa to respond to the consultation. For instance, Ryanair rejected all proposals in all three tranches with the exception of the T1 Enclosed Gate Rooms. This does not represent a feasible maintenance/development option, and provides daa with no basis for proceeding.

The development option submitted is 2A with the modification that we include the proposal of the T1 Check-in and Security project with a **demand trigger**, consistent with our overall approach to the delivery of just-in-time capacity.

In light of the discussion of bussing and Apron 300R[15] at the capex consultation meetings, daa has chosen to include Apron 300R in the CIP Proposals as a standard project, i.e. non-triggered. (T2

[15] This project was presented in the consultation process for possible inclusion in the CIP, contingent on airline support.

Bussing Lounge is also a non-triggered project). daa is also proposing to proceed with developing a small bus lounge in the area previously known as Pier C, consistent with airline suggestions in the capex consultation meetings. This development will be funded within the 2010-2014 allowance.

Additionally, the HBS Standard 3 project has been moved into the Business Development envelope, as airlines appeared unhappy in the capex consultation meetings with its treatment as a contingent project.

Also in response to airline request during consultation, daa has forwarded details of solutions for the provision of automated docking guidance systems to airlines. Initial feedback from airlines indicated that the proposed solution was viewed as expensive. daa remains open to the inclusion of this, or an alternative technology, in CIP 2015-2019, if requested.

At time of writing, there are two on-going work streams in relation to this capex consultation process:

1. daa and airlines have agreed terms of reference for an independent IT consultant to review daa's rationale for bringing forward IT projects, the costing of such projects and opex implications (if any), a consultant has been appointed and work has commenced. It is expected that the consultant's report will be available in time to inform the Draft Determination.
2. daa issued terms of reference for review by airlines (who are party to this confidential process) for the independent valuation of the lands and assets proposed for Till Exit to facilitate the Dublin Airport City project. Airline comments on the terms of reference are due by 22nd April and the valuation work will go out to tender at that time. It is expected that this piece of work will complete end May/early June.

7 Capex Proposals 2015-2019

In this section we set out the capex proposals which daa submits for approval for the period 2015-2019. The proposals contained in this document are designed to:

- Support current and future traffic profiles (through satisfaction of the three fundamental development imperatives set out in section 6)
- Provide the desired passenger quality of service
- Grow commercial revenues

Table 6 : Tranche to Envelope Mapping

CIP Number	CIP Name	Tranche (as per consultation)	Capex Flexiblity Envelope	Trigger
15.4.001	Airfield Vehicles and Equipment	1	Airfield Maintenance	No
15.6.001	Runway 16-34 Pavement Rehabilitation	1	Airfield Maintenance	No
15.6.002	Apron Rehabilation	1	Airfield Maintenance	No
15.6.004	Airfield Lighting Upgrade (Runway 10-28)	1	Airfield Maintenance	No
15.6.006	Airfield and Apron Road	1	Airfield Maintenance	No
15.6.009	Taxiway Airfield Ground Lighting (AGL)Upgrade	1	Airfield Maintenance	No
15.6.017	Runway 10-28 Overlay	1	Airfield Maintenance	No
15.6.055	Airfield Taxiway Rehabilitiation	1	Airfield Maintenance	No
15.9.022	Airfield Pollution Control	1	Airfield Maintenance	No
15.3.001	Landside Infrastructure - Utilities	1	Terminal & Landside Maintenance	No
15.3.004	Landside Infrastructure - Carparks	1	Terminal & Landside Maintenance	No
15.3.035	Landside Infrastructure - External Roads	1	Terminal & Landside Maintenance	No
15.4.002	Light Vehicle Fleet	1	Terminal & Landside Maintenance	No
15.4.005	T1 Baggage Reconcilation System	1	Terminal & Landside Maintenance	No
15.4.006	T1 Critical Equipment Upgrades	1	Terminal & Landside Maintenance	No
15.7.102	T1 Roof Upgrades	1	Terminal & Landside Maintenance	No
15.7.104	HVAC / BMS Upgrades & Replacements T1	1	Terminal & Landside Maintenance	No
15.2.005	Commercial Hangars Infrastructure	2	Revenue	No
15.2.006	T2 MSCP Phase 2	2	Revenue	No
15.2.007	Cargo Terminal Development & Office Accomodation	2	Revenue	No
15.2.009	Consolidated Car Rental Centre	2	Revenue	No
15.2.010	Digital Advertising PODs	2	Revenue	No
15.2.013	Commercial Property Refurbishment	2	Revenue	No
15.3.006	Long Term Car Park Resurface	2	Revenue	No
15.5.001	Retail Refurbishments	2	Revenue	No
15.2.017	Consolidated Staff Car-park	2	Business Development	No
15.4.003	T2 HBS Standard 3	3	Business Development	No
15.4.004	Central Search Area - New Technologies	2	Business Development	No
15.6.007	Airfield Infrastructure Upgrades for New Large Aircraft	2	Business Development	No
15.6.021	Cargo Gate Redevelopment	2	Business Development	No
15.6.022	Airport Screening Centre	2	Business Development	No
15.6.023	New Apron Development 300R	2	Business Development	No
15.6.047	New Apron Development 5G	2	Business Development	No
15.7.103	Fixed Electrical Ground Power Pier 1	2	Business Development	No
15.7.116	Pier 3 Flexibility	2	Business Development	No
15.7.117	Transfer Facility	2	Business Development	No
15.7.119	T1 Façade Works	2	Business Development	No
15.7.120	T2 Bus Lounge Facilities	2	Business Development	No
15.7.121	T1 Arrivals	2	Business Development	No
15.7.122	Pier 1 Enclosed Gate Rooms	2	Business Development	No
15.5.002	Retail IT	2	IT	No
15.8.008	daa Technology Operations & Lifecycle Management	1	IT	No
15.8.009	daa Business Systems Investment	1	IT	No
15.8.009c	Business Innovation Investment	2	IT	No
15.6.018	North Runway Fees and Planning	3	Other	No
15.6.019	North Runway Advance House Purchase	3	Other	No
15.8.001	Minor Projects	3	Other	No
15.8.200	Programme Management	3	Other	No
15.2.002	Fuel Farm	Additional Project (see later)		Yes
15.6.012	Runway 10-28 Extension	3		Yes
15.6.013	Additional Line-up Points on Runway 10-28	3		Yes
15.6.028	Runway 10-28 Extension and Addition of Line-up Points	Additional Option (see later)		Yes
15.6.051	Northern Runway	3		Yes
15.7.101	T1 Check-in and Security	3		Yes
15.7.111	Pier 2 Segregation	3		Yes

7.1 Grouping of Projects

The first tranche of proposed capital investment for 2015-2019 covers capital maintenance; the investment needed to maintain existing assets. This spend will allow the continuation of facilities and level of service to match the existing level of traffic at the airport. The total proposed investment in this area is €186m.

The projects in Tranche 1 are allocated to three envelopes of capital spend:

- Airfield maintenance envelope;
- Terminal and landside maintenance envelope;
- IT[16].

The purpose of grouping projects into envelopes of investment is to provide flexibility in capital spend and is discussed in detail in section 8.

The Business Development projects in Tranche 2 represent the investment proposed to provide new assets at the airport. These new assets will provide additional capacity and/or commercial revenue and/or increased efficiency. This spend will allow the continuation of facilities and level of service to match our Core forecast of traffic to 2019, improve subsidy to the Single Till through growth in commercial revenues and reduce opex at the airport. The total proposed investment in this area is €183m.

The projects in Tranche 2 are grouped into three envelopes:

- Revenue envelope;
- Business Development envelope;
- IT.

The project proposals in Tranche 3 represent a number of different objectives. Firstly, there are proposals on planning & development projects as necessary precursors to future significant capacity addition at Dublin Airport. Secondly, there are proposals to allow for the efficient management of the capital investment programme and to provide a budget for minor works which arise on a short planning horizon. Projects in these two categories are grouped together in the 'Other' capex flexibility envelope (€22m).Thirdly, within Tranche 3, we are proposing a number of projects for significant capacity retention / expansion investment, the initiation of which will be subject to the attainment of a specified trigger or other contingent circumstance. Projects where the expectation is that the trigger will be met and the capex allowance released in 2015-2019 represent a total proposed investment of €86m.

Table 7 : Summary of Capex Flexibility Envelopes

Project Group	Value (m)*	Capex Flexibility Envelope
Airfield Maintenance	€119	Yes
Terminal & Landside Maintenance	€36	Yes
Revenue	€55	Yes
Business Development	€119	Yes
IT	€41	Yes
Other	€22	Yes
Trigger (expected)	€86	No
Total	**€477**	
Trigger (not expected in 2015-2019)	€325-€344+	No

*figures have been rounded to the nearest million

[16] There is a single IT envelope which includes proposed expenditures on IT from Tranches 1 and 2.

7.2 Airfield Maintenance Envelope (€ 119m)

The planned scope for this category is driven by the need to maintain the airfield in serviceable manner with minimum impact on operations and to prevent an increase in opex costs. The overlay of Runway 10-28 and the refurbishment of Runway 16-34 comprise a major element of this programme of works in addition to ongoing refurbishment of apron and taxiway pavements. Allowance for the projects contained in this envelope will fund:

- Complete overlay of Runway 10-28 to safeguard runway facility for the c. 95% of movements which utilise this runway
- New approach lighting and masts both ends of Runway 10-28
- Intersection take-off operations on runway 16 through taxiway lighting upgrade
- c. 8,000 m^2 of new full depth runway pavement and 120,000 m^2 of rehabilitated runway pavement with drainage improvement
- c. 70,000 m^2 planned taxiway rehabilitation to life extend by minimum of 15 years at less than 30% of the cost of emergency repair
- Replacement of c. 45,000 m^2 of failed apron pavement and c. 100,000 m^2 of failed taxi-lane pavement
- 22,000 m^2 of apron and perimeter road rehabilitation (life extension 30 years on apron, 15 years on perimeter road)
- Airfield pollution control engineered to a 1 in 10 year rainfall event standard
- Modern well maintained heavy fleet vehicles consistent with fleet optimisation plan

7.2.1 Airfield Maintenance Project Summaries

The following projects comprise the Airfield Maintenance envelope;

15.4.001 Airfield Vehicles and Equipment (€ 5.8m)

Critical airfield vehicles and equipment are up to 30 years old. They comprise vehicles over 3.5t and specialist vehicles such as fire tenders, snow & ice vehicles and maintenance vehicles. The replacement of these vehicles is in line with the 10-year fleet replacement plan developed in 2012, to optimise maintenance costs and improve fleet reliability.

15.6.001 Runway 16-34 Pavement Rehabilitation (€ 21.5m)

Runway 16-34 will remain a critical piece of infrastructure until the opening of the North Parallel Runway. The runway is used for dual operations each morning and is critical in keeping the airport open when work is required on the main Runway 10-28. A structural survey carried out in 2013 indicated that extensive structural rehabilitation will be required over the next 5 years in order to keep this critical asset serviceable.

15.6.002 Apron Rehabilitation (€ 21m)

A significant portion of the airfield apron at Dublin Airport is over 40-years old. Recent structural surveys, as part of the ongoing Pavement Management System, have identified critical parts of the apron that require rehabilitation over the next 5 years. These areas are reaching the end of their useful economic life and need to be replaced to prevent increased opex costs, closure of stands, curtailment of movements and risk of Foreign Object Damage (FOD).

15.6.004 Airfield Lighting Upgrade (Runway 10-28) (€ 9.1m)

The current electrical system on Runway 10-28 is over 25 years old and has reached the end of its useful economic life. Cables have been subject to ongoing failure due to breakdown in cable insulation, and spare parts for the approach lighting system are not readily available. A robust electrical system is critical for maintaining safe airfield operations and reducing the risk of flight

interruptions. These works will be carried out in conjunction with Runway 10-28 Overlay (CIP 15.6.017).

15.6.006 Airfield and Apron Road (€ 1.7m)
Sections of the airfield and apron roads are reaching the end of their useful economic life and need to be replaced. These works will prevent increased opex costs, ensure the efficient operation of the airfield is not severely impacted and minimise the risk of Foreign Object Damage (FOD).

15.6.009 Taxiway Airfield Ground Lighting Upgrade (€ 3.9m)
The provision of taxiway centreline inset pavement lights on Taxiways A, B2, B3, E3, E6, E7, G, D3 and a section of Runway 16-34 to enhance surface movement safety on the airfield, particularly in the hours of darkness.

15.6.017 Overlay Runway 10-28 (€ 22m)
Runway 10-28 is Dublin Airport's most important asset accounting for 95% of all air traffic movements. It was overlaid in 2010 with a Thin Porous Friction Course (TPFC) with a design life of 6-8 years and is approaching the end of its life. It is critical that this runway is overlaid by 2017 in order to extend its operational life for another 15 years and sustain airport operations.

15.6.055 Airfield Taxiway Rehabilitation (€ 14m)
Part of the airfield taxiway system at Dublin Airport is over 60 years old. Recent structural surveys, as part of the ongoing Pavement Management System, have identified critical parts of the taxiway network that require rehabilitation over the next 5 years. These areas are reaching the end of their useful economic life and need to be replaced to prevent increased opex costs, closure of the taxiway, curtailment of movements, and risk of Foreign Object Damage (FOD).

15.9.022 Airfield Pollution Control (€ 20m)
The environmental impact of aircraft de-icing fluid and pavement de-icing fluid on existing watercourses can be significant. Water quality in the streams and rivers around Dublin Airport is governed by both European and National legislation. Following significant winter events in 2010 and 2011, daa were issued with an enforcement notice by Fingal County Council to stop the discharge of contaminated water to the Forest Little Stream. daa has since invested in diverting contaminated run-off from stands on Pier 1 to existing pollution control facilities south of Pier 4 and has acquired 2 glycol recovery vehicles for the collection of spent aircraft de-icing fluid from stands. However, the existing pollution control facility has insufficient capacity to deal with the volumes of contaminated run-off generated during significant winter events and modelling shows that an increase in storage is required. The modelling exercise indicates that an additional 63,000m^3 of run-off collection storage is required. The option of providing dedicated de-icing pads for all anti-icing/de-icing activity is not optimal as the majority of aircraft de-icing fluid used at Dublin Airport is for frost de-icing which is most efficiently carried out on stand.

7.2.2 Capital Maintenance (Airfield) Project Timelines

The indicative timelines for the Capital Maintenance (Airfield) projects are shown below. This high level programme summary is underpinned by a series of detailed project schedules. The timing of this investment in the period 2015 to 2019 is driven by;

- The remaining life of the assets
- Regulatory compliance
- The ability to complete works with minimum impact and disruption to airline and airport operations
- The alignment of projects to ensure the greatest economies of scale are achieved.

Key projects to be completed over the period are the overlay of Runway 10-28 and rehabilitation of Runway 16-34, the timing of which is sequential to allow phased construction with minimum disruption to users.

Capital Maintenance - Airfield Maintenance																				
CIP No.	Project Title	2015				2016				2017				2018				2019			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
15.4.001	Airfield Vehicles and Equipment																				
15.6.001	Runway 16-34 Pavement Rehabilitation																				
15.6.002	Apron Rehabilation																				
15.6.004	Airfield Lighting Upgrade (Runway 10-28)																				
15.6.006	Airfield and Apron Road																				
15.6.009	Taxiway Airfield Ground Lighting (AGL)																				
15.6.017	Overlay Runway 10-28																				
15.6.055	Airfield Taxiway Rehabilitiation																				
15.9.022	Airfield Pollution Control																				

7.3 Terminal & Landside Maintenance Envelope (€36m)

The planned scope for this category is driven by the need to maintain landside and terminal assets and to prevent an increase in opex costs. Key deliverables from this capex envelope include:

- Baggage reconciliation system in T1 to provide full traceability and auditability for all out-bound baggage;
- Essential work to car park equipment, lighting and lifts in MSCP, public, long-term and staff car parks as appropriate;
- Amelioration works to landside roads and footpaths as per 2013 survey report;
- Repair and replace HVAC and CHP equipment, BMS systems;
- Elimination of rain ingress to T1 and Pier 1 (roof repair);
- Modern well maintained light fleet vehicles consistent with fleet optimisation plan.

7.3.1 Terminal & Landside Maintenance Project Summaries

15.3.001 Landside Infrastructure - Utilities (€ 4.6m)

Some of the key utilities systems in Terminal 1 are over 40 years old and have reached the end of their useful economic life. This project comprises the replacement of life expired Heating Ventilation & Air Conditioning (HVAC) system and Medium Temperature Hot Water (MTHW) system in Terminal 1 and other energy efficiency projects. The implementation of this project will achieve a reduction in overall energy usage and increased reliability on key environmental systems in Terminal 1. This will greatly improve the airline and passenger experience. It will also enable daa to meet compliance requirements for the phase-out of gases contained in certain HVAC sytems as dictated by European legislation.

15.3.004 Landside Infrastructure - Car Parks (€ 4.5m)

daa operates some 19,000 public car parking spaces at Dublin Airport spread over numerous locations. It is critical that these facilities are kept operational as they are in constant use on a daily basis. These works consist of the replacement of car park equipment that has come to the end of its useful economic life, the upgrading of car park lighting and improvements to the roof level of Terminal 1 MSCP at Block 'C', which will become life-expired in the next 5 years. These works are essential to maintain the existing revenues that the car parks at Dublin Airport generate.

15.3.035 Landside Infrastructure - Campus Roads (€ 2m)

This project was included in CIP 2010-2014, however the roads are currently in a reasonable state of repair and the investment was not required in the previous CIP period as the rate of deterioration of this asset has not been as severe as originally predicted. Due to historic reasons, there are 11km of roads that daa own and maintain. The ultimate objective is to have these roads transferred to Fingal County Council (FCC) when the planning opportunity arises. daa is seeking to have FCC take these roads in charge and, while this investment will not guarantee this action from FCC, it is more likely if the roads are upgraded to a reasonable condition. There is little to no likelihood of this occurring while the roads remain in their current condition.

15.4.002 Light Vehicle Fleet (€ 2.2m)

The light fleet comprises 95 vehicles under 3.5t required by Airport Police, Asset Care & Operations etc. The replacement programme detailed in this CIP is in line with the fleet management plan developed in 2012 and the proposal is to replace vehicles at the optimum time within their economic life-cycle. This will result in an overall cost reduction in the life-cycle costs of the fleet.

15.4.005 T1 Baggage Reconciliation System (€ 1m)

There have been numerous requests by stakeholders to implement a Baggage Reconciliation System in Terminal 1. Terminal 1 8-Bay baggage systems have no traceability and Terminal 1 6-Bay baggage systems have limited traceability. The implementation of such a system would improve efficiency for airlines by reducing lost and missed bags. daa is currently trialling an alternative 3g technology which may facilitate an expansion of the existing T2 BRS system. daa will share the output of these trials with stakeholders in due course.

15.4.006 T1 Critical Equipment Upgrades (€ 5.9m)

A number of critical assets in Terminal 1 are at the end of their useful economic life and need to be replaced. These include T1 Fire Safety Systems, T1 Baggage Handling PLC and Pier 2 passenger lifts. In order to maintain terminal operations and minimise disruption to airlines and users these assets must be replaced in a timely manner. Fire safety systems require continuous investment to ensure the terminal is fully compliant. The T1 Baggage Handling PLC is over 10 years old, reaching the end of its normal asset life, and is critical to maintaining a fully operational baggage handling system. Pier 3 passenger lifts essential for the smooth operation of Pier 3 are 40 years old, with replacement parts no longer available.

15.7.102 T1 Roof Upgrades (€ 7.9m)

Terminal 1 and its associated Piers have some 56 individual roof surfaces. Some of these roofs are over 50 years old and are reaching the end of their practical life. A condition survey carried out in 2011 by a specialist consultant identified a number of roofs that required replacing. The first phase of this work was consulted with users in Q1 2013 and this project is currently on site. The additional phases need to be completed in the next 5 year period in order to protect the integrity of the roof and to prevent further structural damage. In addition, due to changes in Health & Safety legislation, fall arrest systems need to be installed to allow preventative maintenance to take place. This project will reduce terminal leaks and improve passenger experience with enhanced comfort levels due to improvement in roof insulation.

15.7.104 HVAC/BMS Upgrades & Replacements T1 (€ 7.4m)

The Heating Ventilation & Air Conditioning (HVAC) system in Pier 3 was installed in the early 1970s and is at the end of its useful economic life and needs to be replaced. This will increase efficiency, reduce energy consumption, provide reduced maintenance costs and enable compliance with regulations relating to replacement of certain gases in HVAC systems. The HVAC system in Pier 2 has limited air conditioning and the main passenger areas are not covered; the climate in Pier 2 has been the subject of a significant number of passenger complaints. This project will install HVAC in areas of Pier 2 not currently covered as well as upgrading the existing HVAC system.

7.3.2 Capital Maintenance (Terminal & Landside) Projects Timelines

The indicative timelines for the Capital Maintenance (Terminal & Landside) projects are shown below. The timing of this investment in the period 2015 to 2019 is driven by;

- The remaining life of the assets.
- Regulatory compliance with European legislation on the phase-out of Ozone Depleting Substances in HVAC systems.
- The ability to complete works with minimum impact and disruption to airline and airport operations.

Capital Maintenance - Terminal /Landside																				
CIP No.	Project Title	2015				2016				2017				2018				2019			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
15.3.001	Landside Infrastructure - Utilities																				
15.3.004	Landside Infrastructure - Carparks																				
15.3.035	Landside Infrastructure - Campus Roads																				
15.4.002	Light Vehicle Fleet																				
15.4.005	T1 Baggage Reconcilation System																				
15.4.006	T1 Critical Equipment Upgrades																				
15.7.102	T1 Roof Upgrades																				
15.7.104	HVAC / BMS Upgrades and Replacements T1																				

7.4 Revenue Envelope (€55m)

This category covers essential works to existing buildings and facilities that typically generate commercial revenues for the Single Till. Provision of additional and improved car parking and car hire facilities account for 53% of the forecast spend in this category and include Phase 2 of the T2 MCSP, Consolidated Car Rental Centre and Upgrade to the Red Long Term Car Park. Essential maintenance of the Retail and Commercial property estates accounts for the bulk of the remaining capex within this envelope.
Projects in this category include;

- T2 MSCP Phase 2
- New Car Rental Centre
- Long Term Car Park resurfacing
- Cargo Terminal Development
- Commercial Property Maintenance
- Retail Refurbishments
- Commercial Hangar Infrastructure
- Digital Advertising PODs

7.4.1 Revenue Project Summaries

15.2.005 Commercial Hangars Infrastructure (€0.6m)

There is growing interest amongst General Aviation customers in the development of private aircraft hangars at Dublin Airport. This project facilitates development of services and infrastructure that will enable the future development of hangars for General Aviation. Following this investment the daa will be able to licence 4,500m^2 of private hangar space. This project has a positive NPV of €45,000.

15.2.006 T2 MSCP Phase 2 (€ 12.3m)

Short term parking is at capacity with more than double the number of passengers using this facility vs. 4 years ago. 34% of our business passengers use this facility even though they make up 19% of the travelling population. Growth in this business has focused on converting passengers who use taxis to short term parkers. This targeted modal shift has been successful and the increased capacity to be provided by CIP 15.2.006 is required to continue this modal shift which increases car parking revenue to the benefit of the Single Till. This project also rebalances the capacity available at both terminals to give c 2,000 spaces at each terminal (compared with 1,200 T2 : 2,000 T1 currently). This project has a positive NPV of €2.06m.

15.2.007 Cargo Terminal Development & Office Accommodation (€ 2.2m)

The development of Cargo Terminal 1 as a modern distribution centre, including refurbishment of existing vacant offices, will ensure the existing customer base is retained and will also attract new customers to support commercial revenues. A modern facility will increase the cargo sector's interest in locating at the airport. This project has a positive NPV of €232,000.

15.2.009 Consolidated Car Rental Centre (€10m)

The development of a Consolidated Car Rental Centre will generate additional direct income to daa by reducing the costs of the Car Rental Operators thereby permitting them to pay higher revenues to the airport authority, while also generating additional car park income by freeing up some of the existing car park spaces in the car parks used by car rental. It will also reduce the level of pressure on the existing road and bus-stop infrastructure by removing a significant number of vehicles needing to commute to the airport. This project will deliver €1.1m of incremental GMS (Guaranteed Minimum Sum) revenue per annum.

15.2.010 Digital Advertising Pods (€ 0.5m)

In order to grow the daa's advertising sales revenue and keep pace with the advertising sales market it is essential that we develop a digital advertising solution at Dublin Airport. This project will allow the daa to develop and install 150 digital advertising pods providing a digital advertising platform in T1 and T2. This project has a positive NPV of €437,000.

15.2.013 Commercial Property Refurbishment (€ 10.5m)

This capital will provide for the fitting out of office and general airport accommodation across campus, terminals and piers in advance of occupation by rent-paying tenants. Some accommodation is now relatively old and will require significant refurbishment to bring it to the quality, fit-for-purpose standard expected of an international airport. Investment is made on a case by case basis subject to positive NPV and appropriate Till payback term.

15.3.006 Long Term Car Park Resurface (€ 6.7m)

The long term car park business is not capacity constrained and is primarily a price led commodity market. This project seeks to differentiate the airport's primary long term car park (Express Red) and price it above the general long term car parking market. This project has a positive NPV of €670,000.

15.5.001 Retail Refurbishments (€ 12.1m)

Airport Retailing is one of the daa's core sources of revenue and contributes a significant proportion of daa income supporting the funding of the daa's Capital Investment Programmes and operations. Strong retail revenue into the Single Till helps to keep airport charges low.

Compared to the previous CIP period (2010-2014), Dublin airport now consists of 2 main Terminal buildings with associated Retail and Concession space embedded within each.

Terminal 2 opened to passengers in Q4 2010 and will therefore require a refresh and refurbishment to its Retail estate during the CIP period 2015 to 2019 consistent with a standard retail five year cycle. The daa will also look to potentially expand the Retail offer within Terminal 2, moving part of

the offer to the right of passengers as they exit the security screening area with the aim to create a 'walk- through' concept in Terminal 2.

The indicative timelines for the Revenue projects are shown below. The timing of this investment in the period 2015 to 2019 is driven by;

- New Business Opportunities.
- Customer service needs.
- Changing market requirements.

7.4.2 Revenue Projects Timelines

Revenue																					
CIP No.	Project Title	2015				2016				2017				2018				2019			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
15.2.005	Commercial Hangars Infrastructure																				
15.2.006	T2 MSCP Phase 2																				
15.2.007	Cargo Terminal development & Office Accommodation																				
15.2.009	Consolidated Car Rental Centre																				
15.2.010	Digital advertising PODs																				
15.2.013	Commercial Property Refurbishment																				
15.3.006	Long Term Car Park Resurfacing																				
15.5.001	Retail Refurbishments																				

7.5 Business Development Envelope (€119m)

The planned scope for this category is driven by : the need to provide capacity to match the core traffic forecast to 2019; improving flexibility to facilitate new large aircraft at Dublin Airport; safeguarding the continued operational life of T1 and providing additional efficiencies for airport operations and for airlines. Allowance for the projects contained in this envelope will fund:

- 13 NBE stands (9 net) to match stand availability to airlines zone of operation
- 5 NBE stands adjacent to Pier 3 (restricted aircraft size)
- T2 Transfer Facilities
- Stand and gate facilities for wider code E aircraft on Pier 3
- Car parking Infrastructure for 3rd Party Staff
- 'Cargo Gate' Staff Screening
- New Cargo Screening Centre
- New Technologies in Central Search Area of T2
- Provision of Fixed Electrical Ground Power (FEGP) on Pier 1
- T2 Bus Lounge Facilities
- Enclosed Gate Rooms in Pier 1
- T1 Façade Improvement
- Rehabilitation of Arrivals area in T1

7.5.1 Business Development Project Summaries

15.2.017 Consolidated Staff Car Park (€ 1.5m)

Staff parking at the airport is fragmented and now at capacity. Revenue-generating development is encroaching on existing staff car parking and this will continue. This project is the first step in moving to a bus-served consolidated staff car park on the other side of the R132.

15.4.003 T2 Hold Baggage Screening Standard 3 (€ 13m)

This project proposes the replacement of the Standard 2 hold baggage screening equipment in T2 & Area 14 T1 with Standard 3 equipment as is required by 1st September 2020 under ECAC CEP (European Civil Aviation Conference – Common Evaluation Process) Standard 3. Funding for this project is required in the CIP period 2015-2019 to allow compliance with this regulatory requirement by 1st September 2020.

15.4.004 Central Search Area – New Technologies (€ 11.6m)

With the impending regulatory change towards the screening of Liquids, Aerosols and Gels (LAGS) and in order to maximise efficiencies, it is intended to introduce both explosive trace detection (ETD) equipment and automatic tray returns on each security line. Both these measures will go towards ensuring that the airport delivers and maintains a safe, compliant and efficient security process.

15.6.007 Airfield Infrastructure Upgrades for New Large Aircraft (€ 1.5m)

Recent additions to the aircraft fleet which use Dublin Airport such as the B777-300ER and the A340-600 have difficulty in manoeuvering from runway to contact stands as their long wheel base requires a significant pavement area in which to manoeuvre efficiently and safely. This project will facilitate minor alterations to a number of taxiways to facilitate these requirements.

15.6.021 Cargo Gate Re-Development (€ 1.8m)

Plan to increase vehicle and person screening capabilities and thereby reduce queue times. This will be achieved through the creation of further vehicle inbound processing lanes. The existing building floor plan will also be expanded to cater for additional person screening equipment.

15.6.022 Airport Screening Centre (€ 0.8m)

Utilise existing building on Airport Campus to create a screening area where unknown supplies can be screened with fit for purpose X-Ray screening equipment. This will reduce vehicle queuing and gate processing times at all gates thereby improving the customer experience and increasing throughput capacity. It will also increase the flexibility to allow access through any gate for vehicle transferring to airside.

15.6.023 New Apron Development 300R (€ 8.2m)

The apron development adjacent to Pier 3, labelled Apron 300R, provides five new stands restricted for use by regional size aircraft (ATR / RJ85). This project was proposed in capex proposals 2015-2019 consultation, contingent on airline support. A remote apron in this location benefits T2 operations in particular, being in close proximity for T2 bussing, allowing aircraft self-manoeuvering on / off stands thereby negating the need for push-back operations which, given the location, would likely contribute to apron congestion during peak times. Provision of stands in this apron area also minimises the duplication of ground servicing equipment in other apron areas furthest from the main area of operation for T2 operators.

The project was proposed to airlines to mitigate access issues associated with longer bus journeys, towing to other apron areas including the proposed remote apron north of Pier 1 (Apron 5G) or crossing Runway 16-34 during peak periods of operation. In light of the discussion of bussing and Apron 300R at the capex consultation meetings, daa has chosen to include Apron 300R in the CIP Proposals as a standard project, i.e. non-triggered.

15.6.047 New Apron Development (5G) (€ 18.2m)

Current apron capacity on the East side of Runway 16-34 is constrained, particularly overnight. This apron project located directly north of Pier 1 provides 13 fully operational stands (net gain of 9) in a narrow-body configuration (NBE). The apron will allow remote aircraft operations and efficient towing to contact stands at Pier 1 and other apron areas as necessary. The reconfigured apron taxiway created as part of the design will also significantly improve aircraft circulation by allowing

simultaneous code C aircraft (e.g. B737-800W, A320) operations on two independent centrelines north of Pier 1, removing the 'cul-de-sac' effect for aircraft both taxiing to / from stands in the area and under tow to / from hangars located on the North apron.

15.7.116 Pier 3 Flexibility (€ 15m)

The existing wide-body stands at Pier 3 are unable to accommodate new larger aircraft such as the B777-300 and the A380. This project incorporates modifications to adapt two existing stands, 303 and 305C at the pier and provision of an additional stand on the existing apron footprint of stands 306 and 307 in a MARS configuration to provide flexibility and resilience to wide-body aircraft parking demand at Pier 4, and future forecast demand in the context of both T1 and T2 operations. Modifications to gate areas within the pier are incorporated in the project in order to provide the necessary capacity and service levels for these large aircraft. Provision for an additional airline lounge has also been included.

15.7.117 Transfer Facilities (€ 21.5m)

In delivering an expanded transfer facility, this will accommodate both airline and passenger growth intent on using Dublin. The improved and expanded facility will help passengers to expediently make their way to their next flight with significantly reduced end to end processing times and reduced Minimum Connection Times (MCT).

15.7.103 Fixed Electrical Ground Power Pier 1 (€ 1.5m)

In order to reduce the need of airlines to manage, procure and operate mobile power units it is proposed to introduce fixed electrical ground power following airline request.

15.7.119 T1 Façade Works (€ 0.7m)

Terminal 1 8-bay, built 40 years ago and nearing the end of its design life, requires a structural and environmental protection rehabilitation that will see its life extended for the next twenty years.

15.7.120 T2 Bus Lounge Facilities (€ 13.3m)

In order to operate the apron and stand facilities to be made available, this proposed facility will make provision for a nine gate bussing lounge which will serve all remote stands.

15.7.121 T1 Arrivals (€ 8.9m)

The arrivals area of Terminal 1 has served the airport for over 40 years with minimum intervention over that time. A rehabilitation of the area is planned to reset the area's basic fabric in order to establish it on a firm footing for the next period of its operational life.

The façade improvement and arrivals rehabilitation in T1 are designed to promote a similar customer experience in both terminals and hence facilitate airline relocation from a T2 zone of operations to a T1 zone of operations. Terminal 1 has been in operation for 42 years and by the end of CIP period 2015-2019 will be approaching the end of its original design life of 50 years. In consideration of the future demands of Terminal 1, and the necessity to extend its operational life, the arrivals rehabilitation and façade works are vital to the appropriate safeguarding of the asset for further use.

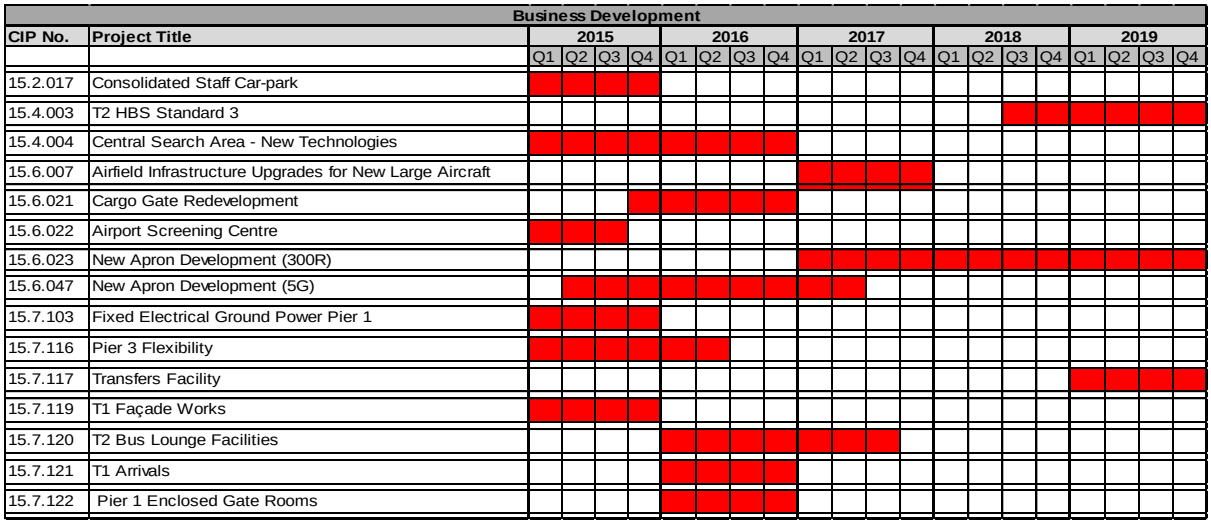
15.7.122 Pier 1 Enclosed Gate Rooms (€ 1.1m)

The provision of enclosed gates in pier 1 will facilitate airlines in the management and direction of passengers to their allocated gate in an efficient and board-ready manner.

7.5.2 Business Development Projects Timelines

The indicative timelines for Business Development projects are shown below. This high level programme summary is underpinned by a series of detailed project schedules. The timing of this investment in the period 2015 to 2019 is driven by;

- The forecast demand exceeding capacity.
- Regulatory requirements



7.6 IT Envelope (€41m)

The capital proposed in this envelope is central to efficient operation of Dublin Airport providing the key systems infrastructure, processes and controls that support the delivery of critical business systems needed for the safe and efficient running of the airport for its customers.

This capex facilitates centrally managed infrastructure technology that includes data centers, virtual server platforms, storage, databases, networks, end user devices and desktop support services. IT security and compliance also falls within this arena. This infrastructure is the backbone and nervous system on which all the Airport Systems function.

80% of the capital spend contained in this budget is driven by the replacement and upgrading of existing IT infrastructure, which is typically carried out on a five year cycle for the majority of the IT capital assets.

The balance will fund IT innovation in order to actively support the growth of air travel and continue to be competitive. In this context the innovative use of Information Technology will be essential to successfully enable and deliver in the following areas:

- Lower operating costs
- Faster and more efficient passenger flows
- New revenue streams, driven by increased retail and services opportunities

The projects included in this capex grouping include;

- Retail IT
- Technology Operations & Lifecycle Management
- IT Business Systems Investment
- IT Innovation

7.6.1 IT Project Summaries

15.5.002 Retail IT (€ 1.6m)

To ensure that our systems are robust, up to date and serviceable we must invest not only to maintain the system but also to enhance the ease of use, efficiency and to maintain the hardware and software to the most up-to-date versions available.

15.8.008 daa Technology Operations and Lifecycle Management (€ 15.8m)

An annual programme of IT work is necessary to ensure that technology required to run Dublin Airport and provide services to airlines and passengers is properly maintained and kept up to date. The scale of IT operations is vast; for example there are in excess of 2000 client devices; 800 FIDS screens are deployed; 1,400 CCTV cameras are also in use. Outputs of this project over the period of the CIP include;

- Infrastructure replacement
- Operating Platform Upgrades
- Storage Upgrades
- Database Upgrades
- Network Maintenance
- Wi-Fi expansion & upgrades
- Data Centre/Comms Room Maintenance & Upgrades
- Security upgrades

15.8.009 daa Business Systems Investment (€ 15.6m)

The daa Group at Dublin Airport consists of a number of business functions that include Dublin Airport Operations, Asset Care, Commercial and Business Support. Each of these functional areas utilise a range of business systems (generally procured and licensed from commercial software vendors) to enable the continuous delivery of services to a broad range of internal and external customers.

The business systems used include solutions such as Oracle eBusiness Suite (ERP), Business Intelligence, HR and Time and Attendance Systems, Access Control, Telephony and Collaboration Tools. Business specific solutions are also catered for where required and these include Airport Operations System (AOS), Flight Information Display Systems (FIDS), Queue Measurement Systems (QMS), Autopass, Taxi Management, Car Park Management Systems and Asset Management Systems.

The daa uses 165 business applications and these systems require continued lifecycle investment to ensure continue delivery of existing services and information that airlines and passengers require 24/7.

15.9.009c IT Innovation Investment (€ 8m)

Business and leisure travelers alike expect the highest level of service. daa wants to use technology and intelligent collaboration for quick, smooth processing combined with optimal security and cost-effectiveness. The objective is to deliver speedier processes – which translate into higher satisfaction rates among passengers, even higher levels of security, lower costs, and increased revenues.

7.6.2 IT Projects Timelines

The timelines for IT projects are shown below. IT projects require continuous investment over the 5-year period.

IT																				
CIP No.	Project Title	2015				2016				2017				2018				2019			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
15.5.002	Retail IT																				
15.8.008	daa Technology Operations and Life Cycle Management																				
15.8.009	daa Business Systems Investment																				
15.8.009c	IT Innovation Investment																				

7.7 Other Envelope (€22m)

7.7.1 Other Project Summaries

15.6.018 Northern Runway Studies and Planning (€ 4m)
This project allows for planning fees and design and consulting fees, to deal with the processing of a new or amended runway planning permission. This work will enable daa to be in a position to commence construction without delay once the demand trigger for the Northern Runway is reached.

15.6.019 Northern Runway Advance House Buyout (€ 4.3m)
This project allows for the purchase of housing within the 69 dBA Leq 16 hour noise contour of the Northern Runway, as is required under the current planning permission and is expected to be required under any new planning permission granted. House prices in Dublin are beginning to rise again after the recent collapse of the property market. This proposal is being brought forward as it is believed that in a rising market the necessary house purchases should be undertaken at the earliest opportunity to minimise cost.

15.8.001 Minor Works (€ 10m)
This allocation is to fund numerous small value projects (<€75k) that arise on a short time horizon on an annual basis. As per spend under this category in 2010-2014, daa envisages this capex allocation will provide a general provision for the following types of works in 2015-2019:

- Airport Operations
  - Response to ongoing operational / security / safety infrastructural requirements.
  - General unanticipated upkeep / upgrade and refurbishment of the external and internal elements of the Main Terminal Building, Piers, Airside and Landside operational buildings.
  - Ensure daa building compliance with current regulatory standards relating to Health & Safety, Fire Strategy and Management systems and Building Regulations
- Airside Works
  - Unanticipated reactive works including maintenance, refurbishment and/or upgrades to the Runway, taxiways, aprons, parking stands or critical services in the Airside Operational area.
  - Such works are by their nature, urgent and in the majority of cases, carried out at night to suit the airfield operation. Further works may also be required on foot of annual audits carried out by the IAA.
- Fire
  - Minor works that ensures that Dublin Airport maintains continued compliance with fire safety regulation in public buildings.
- M&E Maintenance
  - Unanticipated and reactive works including maintenance, refurbishment and / or up-grades to critical services within the Terminal Buildings.
- Airport Police and Security
  - Upgrade and replacement of equipment and facilities to ensure compliance with all applicable regulatory security standards on both the Irish and EU level.

15.8.200 Programme Management (€ 3.5m)

Programme Management can be defined as the process of managing the multiple interdependent projects contained in the CIP with the objective of ensuring strategic standardised commonality in approach to managing cost, risk (particularly risk mitigation), change control, quality, safety, project reporting and monitoring and controlling all projects within the CIP. Programme Management is independent of Project Management process which is concerned with the planning, organising, design and management of resources to bring about the successful delivery of the individual projects.

7.7.2 Other Projects Timelines

The indicative timelines for other projects are shown below;

- Programme Management methodology will be applied to all projects over the 5-year period, 2015 to 2019.
- Minor projects have an annual spend of €2m over the 5-year period, 2015 to 2019.

Other and Trigger Projects																				
CIP No.	Project Title		2015				2016				2017				2018				2019			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
15.6.018	North Runway Studies and Planning																					
15.6.019	North Runway Advance House Buyout																					
15.8.200	Programme Management																					
15.8.001	Minor Projects																					

7.8 Contingent Projects – Expected (€86m)

There are also a number of projects which may or may not be appropriate for development within the 2015-2019 period depending on regulatory requirements and / or traffic growth and /or development having already taken place. As it is uncertain at this time whether the conditions necessitating such expenditures will arise, daa is proposing to set out a rationale for each project and a measure which will indicate the necessitating conditions are present (trigger) for the following projects.

Table 8 : Summary of Contingent Projects – Expected to Trigger

Project	Value (m)	Expected to Trigger in 2015-2019
15.7.101 T1 Check-in and Security	€38	Yes
15.7.111 Pier 2 Segregation	€18	Yes
15.6.013 Line-up Points to Runway 10-28	€30	Yes
Total	**€86**	

This are also four additional trigger projects included in these CIP Proposals although it is not expected that capex for these projects will be required in the period 2015-2019. Details of these projects are given in the table below.

Table 9 : Summary of Contingent Projects – Not Expected to Trigger

Project	Value (m)	Expected to Trigger in 2015-2019
15.6.012 Extension to Runway 10-28	€55	No – preference is to develop Northern Runway
15.6.051 Northern Runway	€245	No – expected to trigger such that

		capex allowance increments to the RAB in the following CIP period
15.6.028 Runway 10-28 Extension and Addition of Line-up Points	€74	No – preference is to develop Northern Runway
15.2.002 Fuel Farm	€25+	No – trigger event not foreseen and viewed to be of low probability

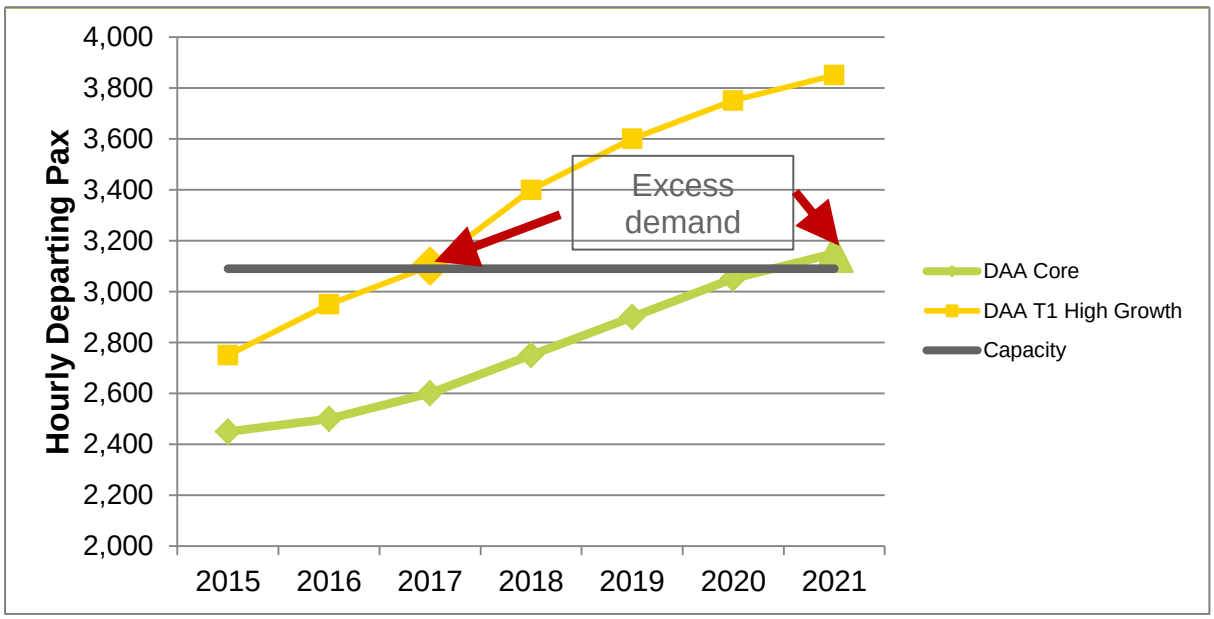
7.8.1 Project Summaries

15.7.101 T1 Check-in and Security Development (€38.3m)

New regulations for inspection of LAGS planned to come into force in 2014 and 2016 require larger machines and will decrease processing speed, reducing capacity in the security processor. Works planned for 2013 will enable compliance with 2014 regulations but will only provide capacity to 2016. Further works are planned to take effect between 2014 and 2016 to install equipment in line with 2016 LAGS regulations to maintain processing rates, however, ultimately there will be insufficient space at the current location to meet future anticipated demand and maintain the current service metric.

This proposal involves relocating the security search facility to the mezzanine, providing a larger area for the facility. The greater space available will allow a dedicated 19-lane search area with longer lanes and so maintain processing capacity and the current security queue metric, with the ability to expand further within the area as required to meet further future demand. The proposal also offers the freedom to reconfigure check-in in a way that best suits airline operations.

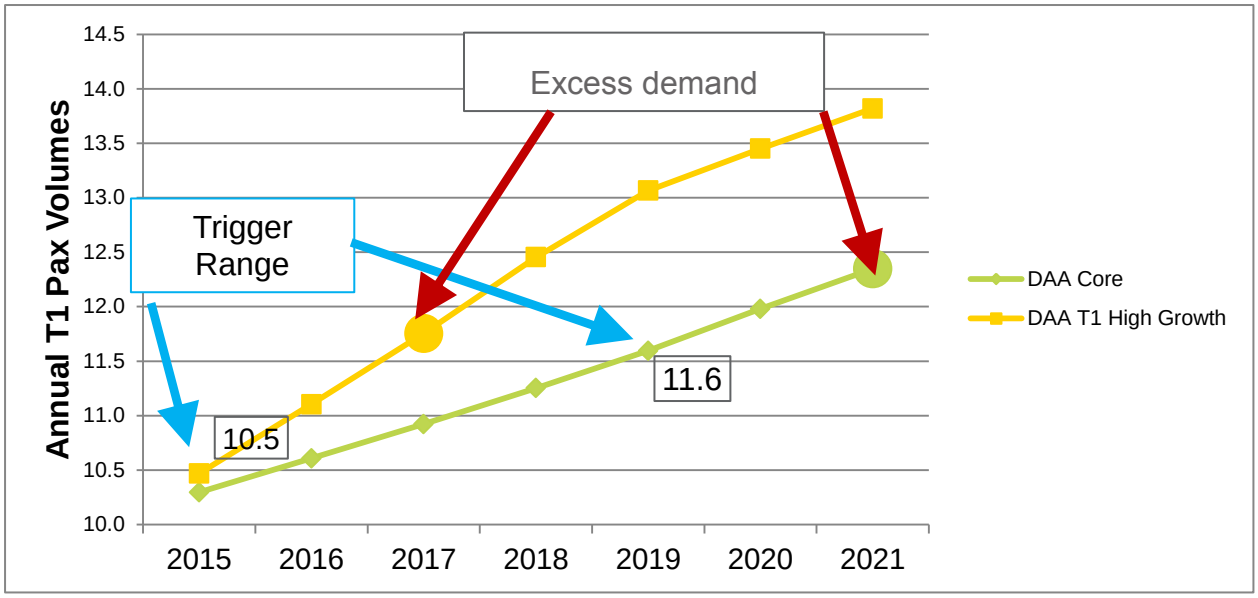
Figure 28 : Forecast T1 Busy Hour Flow rates versus T1 Security Hourly Capacity



The above chart compares the existing hourly departure capacity in T1 Security (3,090 passengers per hour) with the expected growth through T1 security based on the 2 forecast scenarios, daa Core and the daa T1 High Growth scenario. The former scenario only breaches the capacity figure in 2021 but the T1 High Growth scenario was predicted to breach the limit in 2017.

In order to create a trigger based on annual passenger volumes, daa looked at the annual volume handled two years before the capacity figure was breached above (i.e. 2015 in the T1 High Growth and 2019 in the Core), since the new security facility requires a two year lead in.

Figure 29: Trigger needs to occur 2 years before facility reaches capacity



The above graph shows the passenger volume forecast in T1 based on these same two scenarios. Given the two year lead time to complete the project, the trigger is required when T1 handles between 10.5m and 11.6mppa. The lower figure reflects the T1 High Growth scenario and the higher figure the Core Growth scenario. To stay reasonably conservative, daa is suggesting a trigger of 11.5mppa T1 passengers, at the high end of this range.

The proposed trigger of 11.5 million passengers in T1 in a 12 month period is predicated on a 30 minute security queue standard. If the security queue target is shortened then the trigger for this project will need to be adjusted downward as additional security capacity in the busy-hour would be required sooner to meet the stricter target.

15.7.111 Pier 2 Segregation (€18m)

There is currently no segregation of arriving and departing passengers in Pier 2. The Revenue Commissioners, as the body responsible for appointing an airport as a Customs Airport in Ireland, has within its powers the power to lay out any conditions it deems appropriate relating to the appointment of Dublin Airport as a Customs Airport. The Revenue Commissioners has laid out conditions with regard to Dublin Airport's appointment as a Customs Airport and these were accepted and agreed by daa (the 'Conditions of Appointment'). daa is contractually obliged, pursuant to the Conditions of Appointment, to include a capital expenditure business case to achieve segregation of inbound and outbound passengers at Pier 2, in this Capital Investment Programme. While the Revenue Commissioners has only mandated the inclusion of a business case in the Capital Investment Programme, it is expected, should CAR approve the proposal presented in its Regulatory Determination, that a further mandate to implement the proposal will issue.

Trigger proposed : The Revenue Commissioners issue mandate to implement the proposal for Pier 2 Segregation.

Proposals for Pier 2 Segregation

There is currently no segregation of arriving and departing passengers at Pier 2 in Dublin Airport. The Revenue Commissioners as the body responsible for appointing an airport as a Customs Airport in Ireland has laid out conditions with regard to Dublin Airport's appointment as a Customs Airport. Under these conditions, daa is now obliged to provide in the CIP Proposals 2015-2019 a capital expenditure business case to achieve the segregation of inbound and outbound passengers at Pier 2. In examining the business case for the provision of segregation of passengers at Pier 2, daa primarily looked at two options; option 1 (capex based solution) and option2 (opex based solution).

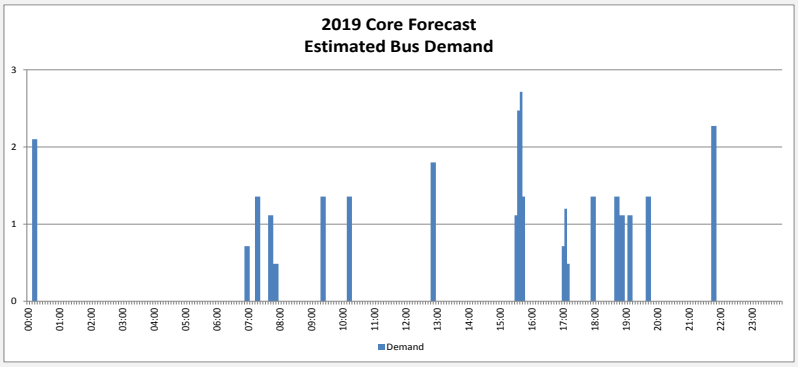
Option 1

Option 1 proposes the provision of segregation of Pier 2 through the installation of vertical circulation nodes at each stand with segregated internal corridors. This capital project would have an estimated cost of €18m with an asset life of 20 years. In addition, daa would also incur an associated incremental annual opex cost of €140,000.

Option 2

Option 2 proposes the provision of segregation of Pier 2 through the bussing of all arriving passengers into Pier 2 through a dedicated segregated injection point. Passengers would continue to be bussed into Pier 2 until a new Pier 2 building would be provided in circa 20 years time. This option will have a small associated capex cost of €250,000 but an annual incremental opex cost of €480,000. This annual opex cost of €480,000 is estimated on the basis of the requirement for a daily three 70 seater co-bus operation. The diagram below illustrates this requirement based on the core growth forecast for 2015 -2019 and using the following assumptions :

- A five minute bus loading time
- A one minute drive to the terminal building
- A three minute bus offloading time



daa looked at the relative cost implications of these two options.

Option 1		**Option 2**	
Capex	€18m	Capex	€250,000
Annual Opex	€140,000	Annual Opex	€480,000
Asset Life	20 yrs	Asset Life	20 yrs
Cost of Capital	7%	Cost of Capital	7%
Annual Impact on Airport Charges		Annual Impact on Airport Charges	
Capex Costs	€1,699,000	Capex costs	€24,000
Opex Costs	€140,000	Opex Costs	€480,000
Total Impact	**€1,839,000**	**Total Impact**	**€504,000**

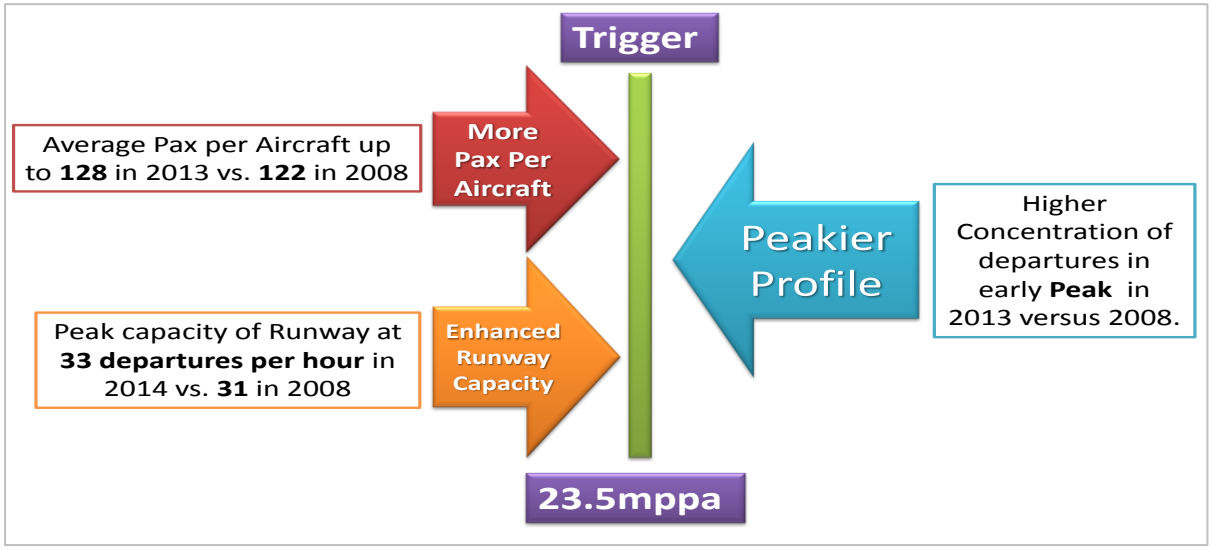
Cityjet, who are the main operators from Pier 2, have expressed a clear preference for Option 1 to safeguard the level of service offered to their passengers.

7.8.2 Runway Capacity and Runway Infrastructure Projects

The long-run development of the airport is predicated on the delivery of the Northern Runway, which will provide sufficient runway capacity for the foreseeable future. In the last determination, CAR set the trigger for the Northern 10-28 runway ('Northern Runway') at 23.5m passengers in a rolling 12 month period.

The existing trigger encapsulates the regulatory decision that at 23.5m pax the extent of runway demand relative to supply for the existing runway will be at a level that makes it appropriate to commence expenditure (detailed design and building works) on the Northern Runway. In assessing an appropriate trigger for the Northern Runway in this CIP, the key point to note is that while a trigger in terms of total annual pax has the advantage of being clear and transparent, the actual capacity constraint occurs in the daily peak usage period, from which the annual aggregate pax volume is an abstraction. To determine the trigger in annual pax terms, we have to first determine peak capacity use and then map from this peak capacity use to annual volume. There are three important variables in this regard: (i) peak runway capacity in terms of movements; (ii) concentration of movements in the peak; (iii) average pax per movement. As the figure below illustrates, changes in these variables affect the value of the trigger. A peakier profile of movements, i.e. more peak movements at any given level of pax, will push down the value of the trigger, while higher peak capacity, i.e. the ability to accommodate more peak movements, will push up the value of the trigger. Similarly, a higher average of pax per aircraft will push up the value of the trigger in pax terms for any given level of movements. The figure below shows that these three different forces have all been shifting at Dublin Airport in recent years.

Figure 30: Factors Influencing Change in Peak Capacity : Annual Use Ratio



Higher Concentration of Departures in Peak

As Dublin Airport's volume is heavily dominated by based carriers (approx. 89%) with overnighting aircraft, the pressure in the early morning peak relates to departures rather than arrivals or total movements. Based aircraft need to leave early in the first wave in order to maximise turn-arounds over the course of the day. For this reason, peak capacity and peak use are both expressed in terms of peak departures. As a consequence of our predominant reliance on based carriers, with overnighting aircraft which require departure in the first wave, the use pattern of the existing runway is very condensed.

The table below shows pax departures in the peak 1-hour and 2-hour periods for 2006, 2008 and 2013. Again, the striking feature is that pax departures were significantly peakier in 2013 than in

2008 or 2006, with 14% of departing passenger movements leaving in the peak hour by comparison with 11% in the previous years. The absolute number of passenger aircraft departing movements in the peak hour was also higher (slightly) in 2013 than in 2008 (11,566 versus 11,503), despite 2013 pax in total being 4.7m or 20% lower in 2013 than in 2008. The evidence here is very decisive. Runway demand is now significantly more condensed than in previous years, not just by comparison with the year of peak passenger volume in 2008, but also by comparison with 2006, in which overall volumes were closer to current levels. This increased peakiness exerts a downward pressure on the trigger value, all other things equal.

Table 10 : Annual Pax,Departing Pax per Hour and per Peak Departing 60 Minutes

Year	Annual Pax.	Annual Dep Pax in 06:00 + 07:00	% Departing in 06:00 + 07:00	Annual Dep Pax in Peak 60 mins	% Departing in Peak 60 mins
2006	21,196k	14,900	15%	10,452	11%
2008	23,467k	18,700	18%	11,503	11%
2013	20,167k	16,700	20%	11,566	14%

Increased pax per aircraft

Average pax per aircraft has risen from 122 in 2008 to 128 in 2013. All other things being equal, this would exert a downward pressure on the trigger value. The main factors driving increased average pax have been:

- reduced domestic volumes (typically smaller aircraft with lower load factors);
- increased long-haul volumes (larger aircraft with typically higher load factors);
- increased average sector length within short-haul, which would be expected to be associated with higher average load factors;
- generally speaking, in the downturn, airlines culled poorer performing routes, pushing average load factors up.

Enhanced runway capacity

The current declared peak-hour capacity of Runway 10-28 is 33 departures (plus 5 arrivals), up from 31 in 2008. Demand in the summer season 2013 was 29 departures, 32 in summer season 2014 (based on typical busy day although on the busiest days departure demand in the peak will reach 33), and is expected to increase further as traffic grows. Given this constraint, which has been a focus of on-going discussion at the Dublin Airport Co-ordination Committee, a Runway Process Improvement Group (RPIG) was established, comprising daa, IAA (air traffic control) and airline representatives, in order to explore the potential for increasing peak capacity. As a result of this collaborative work, the IAA has indicated that peak departure capacity can be increased in a number of phases, as set out below:

- Phase 1 (completed): 33 departures by 2014, resulting from reduction of the DD (departure-departure) separation delay;
- Phase 2: 35 departures by 2017, resulting from reduction of the DD separation delay;
- Phase 3: 37 departures, subject to negotiation with NATS (as controller of UK airspace) of reduced in-flight separation trails for aircraft entering UK airspace from Dublin;
- Phase 4: 39 departures, subject to provision by daa of additional airfield infrastructure, namely additional line-up points for Runway 10-28.

Looked at in terms of the two-hour peak, from 06:00 to 08:00 in local time, these changes will give rise to increased runway capacity as per the table below, showing phases 1 to 4, and indicating in each case the key dependency, whether IAA, NATS or daa.

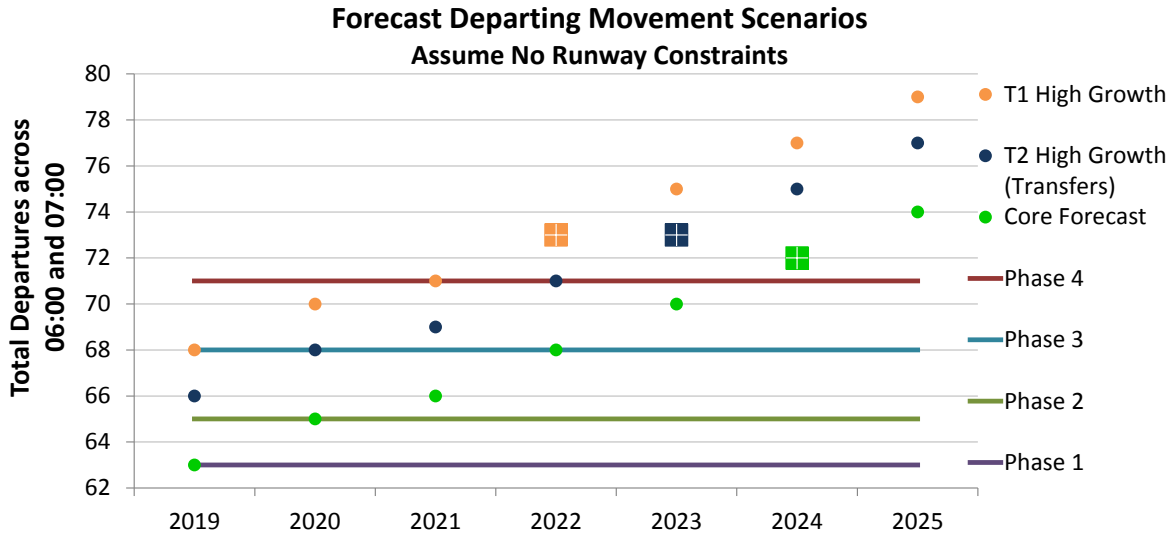
Table 11 : Phases of Runway Capacity Enhancement

Phase	Peak Departure Capacity	Dependency
Phase 1 (complete)	63	IAA – Reduction of DD separation from 90s towards 80s
Phase 2	65	IAA – Maximising efficiencies from Phase 1 (DD to 80s)
Phase 3	68	NATS – Reduced separation of aircraft entering UK airspace
Phase 4	71	daa – Additional infrastructure at each end of R10-28

With regard to the threshold at which all existing runway capacity will be required, daa (below) defines this as the point at which user demand would exceed supply capacity in the peak two-hour period. This definition gives a higher (i.e. later) threshold than if the one hour peak were used. To put it another way, there is a peak 60 minutes within the two-hour peak that fills more quickly than the two-hours. In linking the threshold to the latter, daa assumes that airlines will push growth into the shoulder periods around the peak 60 minutes (which is approx. 06:30 to 07:30), that this will be acceptable for overnighting aircraft (albeit less attractive than the peak 60 minutes) up to the point that the two-hour peak is full. **Secondly**, a technical point: capacity cannot be traded off as between arrivals and departures in a perfectly linear way. For instance the combination 35 departures and 5 arrivals represents a maximum level of departures from phase 2. Additional departures cannot be made available by surrendering arrivals. However, any increase in the number of arrivals beyond 5 requires a reduction in the number of departures. **Thirdly**, a further technical point: Dublin Airport runway slots are allocated on the basis that the agreed 10-minute delay criterion is not breached. Over the course of a peak hour, capacity is maximised, and by the end of the peak hour modelled delay would be approaching 10 minutes. Peak capacity cannot be replicated in the subsequent hour, because to do so would breach the 10-minute delay criterion.

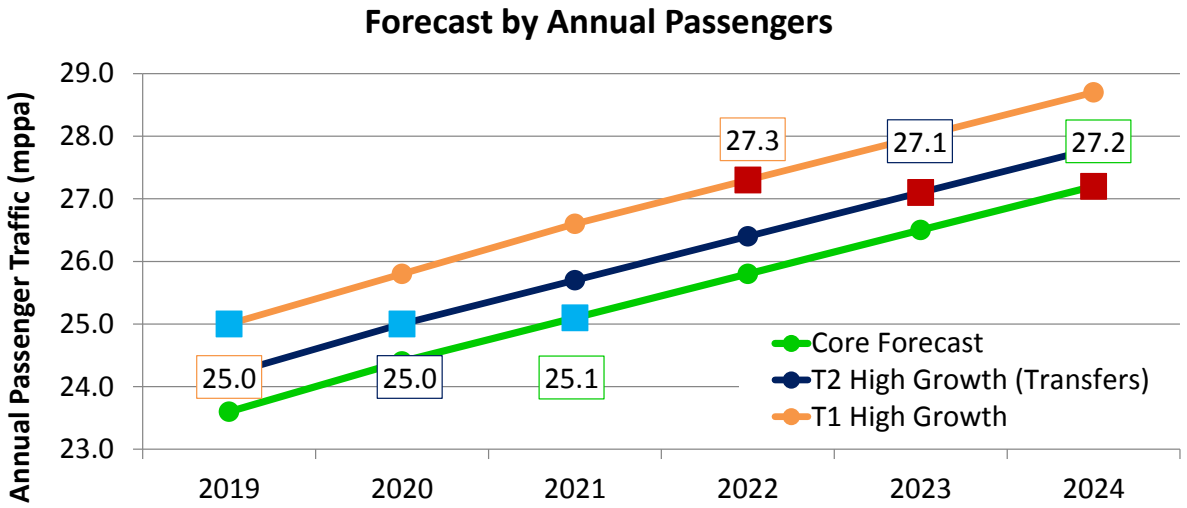
The graph below represents the outcome of this exercise. Assuming that all four phases of runway capacity enhancement are delivered, the graph plots when for each of our main traffic scenarios demand would exceed supply. It is indicated that this would occur in 2022, 2023 and 2024 respectively under the T1 High Growth, T2 High Growth (Transfers) and Core scenarios.

Figure 31: Forecast Peak Departure Movements 2019-2025



The graph above indicates when peak runway demand will exceed supply. Taking account of the three-year lead time for the detailed design, tender, construction and commissioning of the runway, the appropriate trigger point is three years before the excess demand threshold in each case. This is illustrated in the graph below. By coincidence, three years before the excess demand threshold equates to 25m pax in each of the three forecasts.

Figure 32: Assessing Appropriate Trigger to Deliver Just-in-Time Northern Runway



In addition to the above analysis, daa has also examined how access to a longer runway could stimulate additional traffic growth to long-haul destinations not currently within direct (commercial) reach of Dublin. (The current 10-28 is only 2.637km long, whereas the length specification for the Northern Runway is 3.11km.)

At present, key destinations in South America, Africa and Asia are effectively out of reach. This includes cities such as Sao Paulo, Buenos Aires, Cape Town, Johannesburg, Singapore, Jakarta, Bangkok, Hong Kong and Tokyo. While the next generation of aircraft may redress this reach problem to an extent, this remains uncertain. For example, the B787-8 could reach further off the existing 10-28, but may not be commercially suitable for direct flights to the destinations in question (because of its size). The larger B787-9 and A350-9 could be commercially suitable, but their heavier MTOWs may require a longer runway. Full clarity on the operational/commercial reach of new aircraft out of Dublin will not be available until 2015/2016.

The size of the long-haul market available with longer reach is highly significant. As the table below indicates, existing traffic to the regions in question is estimated at 2.8m pax per year, with growth of up to 50% available over the next 10 years, based on IATA estimates of growth rates for the markets in question to/from Western Europe. (1% has been added to the IATA-estimated growth rates for the markets marked with an asterisk, reflecting the higher propensity to travel of the Irish population and faster population growth rates relative to the rest of Western Europe.)

Table 12 : Traffic Volumes Ex Ireland to Selected Regions

Ireland to:	2013 Traffic	2023 Traffic	CAGR	2023 vs. 2013
United States	2,157	3,097	+4.1%	+49%
Latin America*	167	276	+5.8%	+75%
China & Hong Kong*	103	199	+7.6%	+108%
Rest of Asia/pacific*	525	731	+3.8%	+45%
Total Selected Regions	**2,831**	**4,302**	**+4.3%**	**+52%**

As an illustrative business case, for consideration in the context of the runway trigger, daa believes that services to 7 new hubs in the regions identified above could be established if there were no restrictions on reach out of Dublin. It is estimated that these services could ramp-up over a 5-year period to a single daily year-round service to each hub. Based on typical capacity and load factors, each route would be expected to support circa 170k pax per year, delivering a total of additional

1.2m pax by the end of the 5-year period. To put this target in context, by 2014/2015 total capacity from Dublin to the Middle East (Etihad/Emirates) will have grown to c. 1m seats per year, from a base of <200k pax in 2010.

It is appropriate to ask whether the additional pax estimated above would be genuinely incremental or would represent displacement off existing routes (serving the destinations in question through connecting flights). As the table below illustrates, substantial growth to the Middle East has been accomplished in recent years at Dublin Airport without damaging existing traffic to major hubs. In fact, over the period in which traffic growth to the Middle East exceeded 300k, growth to 5 major EU hubs of 370k was observed, with total pax growth at 1.7m. This reflects the stimulation effect for both direct and onward connecting traffic when new point-to-point routes are opened.

Table 13 : Travel Volumes Ex Dublin to Selected Hubs

Traffic from Dublin (000's)	2010	2013	% Growth	Variance
5 Major EU Hubs	3,280	3,649	+11%	+370
2 Middle East Hubs	197	506	+156%	+309
Rest of Dublin	14,954	16,012	+7%	+1,058
Dublin Airport Total	**18,431**	**20,167**	**+9%**	**+1,736**

The excess demand analysis pointed to a possible Northern runway trigger of 25m; here we consider the additional business which access to a longer runway can generate. To bring forward the Northern Runway imposes a cost in terms of the time value of money, but it also creates a benefit in terms of bringing forward the additional business that a longer runway can generate. In the table below, these linked costs and benefits are shown, working off a starting assumption that the Northern Runway would be delivered in 2023 (the mid-point of our excess demand range, shown above). A strong case emerges that bringing forward delivery of the runway would pay for itself. Even if the additional long-haul business generated was only approx. two thirds of the 1.2m pax expected (i.e. 850k as shown in the table), bringing forward the runway by even three years would essentially pay for itself – giving a small net negative impact in NPV terms of €70k.

Table 14 : Calculating Return on Accelerated Runway Delivery

NPV of New Runway €m	Passengers Reqd. (000's)	Year of 2nd Runway Completion			
		2020	2021	2022	2023
Cost of Bringing Forward Investment	N/A	-30.0m	-19.3m	-9.3m	-
Benefit of Increased Passengers	0	-	-	-	-
	850	29.9m	19.1m	9.2m	-
	1,200	42.2m	27.0m	13.0m	-
	1,600	56.3m	36.0m	17.3m	-
Total Impact	0	-30.0m	-19.3m	-9.3m	-
	850	**-0.07m**	**-0.18m**	**-0.15m**	**-**
	1,200	**12.2m**	**7.7m**	**3.6m**	**-**
	1,600	26.3m	16.7m	7.9m	-

In conclusion, based on both the excess demand analysis above and the potential for long-haul growth discussed in this section, daa's recommendation is that the Northern Runway trigger be retained at 23.5m passengers in a 12 month rolling period. Under the Core forecast, this traffic volume would be expected towards the end of 2019 – just inside this CIP period. There are also other reasons not to delay the construction of the Northern Runway, including the current relatively favourable conditions in the construction sector (from a demand-side point of view) and the broader importance of international connectivity to the Irish economy and society.

15.6.051 Northern Parallel Runway (€245m)

The concept of two east-west parallel runways was established for Dublin Airport in the 1960s. The necessary lands were acquired and the first of these two runways Runway 10-28 was opened in 1989. Passenger numbers have since increased from 5 million in 1989 to over 20 million in 2013. This project allows for the construction costs, mitigation costs and statutory levies associated with the Northern Runway. Since the 2009 Regulatory Determination, further consultation has taken place with prospective long haul airlines and the runway length now being proposed is 3,110m to accommodate direct non-stop services to destinations currently out-of-reach of the existing runway, namely to developing economies in Far East Asia and South America.

Over the past five year period runway demand has exceeded capacity at busy times, which has required airlines to operate at times different from requested. daa has looked at squeezing incremental capacity from the existing assets by a range of measures including changes to IAA separation procedures and increased air-traffic control efficiencies. These increases are subject to trial of additional slots and to agreement with NATS UK on UK airspace restrictions. Consequently, although runway capacity is somewhat higher in 2013 than it was in 2008, the increase in peak departure demand has maintained the need for additional runway infrastructure.

Trigger proposed : 23.5m passengers in a 12 month period.

15.6.012 Extension to Runway 10-28 (€55m)

Anticipated medium term growth rates means that a number of cities that currently do not justify direct service from Dublin will become viable within a five to ten year timeframe. The introduction of new technology aircraft from 2016 onwards is likely to create a new and optimised set of operating economics for these markets, which would predominantly be located in key developing economies in Asia and Latin America. Airlines seeking to operate in these markets will obviously wish to maximise both passenger and cargo payload from Dublin. Given that the key aircraft for these routes (A350-900 and Boeing 787-900) are not yet in operational service, there is some scarcity of data on likely performance from the existing runway in Dublin. Initial indications are that the current runway is insufficient to support operations to a number of emerging markets without payload restrictions. This project, by extending the runway will support operations on a commercially sustainable basis to destinations in key developing economies. This project is attractive in the case of the Northern Runway being deferred to a point where the incremental revenues from service of long haul destinations only serviceable from the extended runway provide a positive NPV for the project. For this reason we propose this project with a trigger relating to the expected delivery of the Northern Runway.

Trigger proposed : Project allowed if Northern Runway set at >23.5m passengers in a 12 month period.

15.6.013 Line-up Points to Runway 10-28 (€30m)

This project proposes line-up points for aircraft at the 10 and 28 ends of Runway 10-28 consistent with IAA's proposal of declared capacity on the runway to reach 39 departures in the peak hour should such line-up points be installed, based on successful completion of phases 1-3 of the runway

capacity enhancement programme. Without such investment the IAA would currently indicate a maximum of 37 departures in the peak departures hour (subject to aircraft flow from the ramp to the runway not being constrained, and the negotiation of additional UK Airspace Capacity from NATS). As the timeline from initiation to operational delivery of this project is 2 years the appropriate trigger event is the completion of phase 2 of the runway capacity enhancement. Phase 4 (CIP 15.6.013) will then come into operation when phase 3 has just completed (based on a schedule of addition of 1 departure slot per year).

Trigger proposed : declared departure capacity of Runway 10-28 reaches 35 departures in the peak hour.

Development Option if CIP 15.6.012 and CIP 15.6.013 To Proceed

15.6.028 Runway 10-28 Extension and Addition of Line-up Points (€74m)

This project combines the Runway Extension to Runway 10-28 (CIP 15.6.012 - €55m) and the Additional Line-up Points to both ends of Runway 10-28 (CIP 15.6.013 - €30m) to leverage available construction synergies. It would provide the aircraft line-up points at both ends of Runway 10-28 in addition to a holding bay at the Runway 10 end and the runway extension of c.390m. Together the line-up points and the runway extension would provide a runway pavement length between 3,000m and 3,100m which will enable direct service to a number of key destinations and international markets. We propose this project with a trigger relating to the expected delivery of the Northern Runway.

Trigger proposed : Trigger for Northern Runway set at >23.5m passengers in a 12 month period.

15.2.002 Fuel Farm

Following consultation with airlines in 2013, agreement was reached for a 3x5 million litre tank fuel farm with the intoplane unit located airside and link-up to the fuel hydrant system at Pier 4, as well as exploration of the economic viability of establishing and linking hydrant facilities at the other piers. This project is proceeding towards a DFBOT solution with preparation of tender documents underway. While we are not currently aware of any technical, legal or commercial reason why this tender process should not proceed and succeed, nevertheless the risk remains of such an obstacle emerging in the course of the tender process and contract finalisation. To address this risk (associated with a critical element of airport infrastructure), daa includes a triggered allowance of €25m (plus additional costs to install hydrant system on Piers 1-3, as appropriate) be included in the CIP Proposals 2015-2019 to allow daa to deliver the agreed fuel farm infrastructure should the preferred DFBOT solution be unrealisable.

Trigger proposed : Occurrence of a technical, legal or commercial impediment to the tendering process to appoint a DFBOT operator for the fuel farm, of such significance that no operator can be appointed.

7.8.4 Triggered Projects Timelines

Trigger Projects																					
CIP No.	Project Title		2015				2016				2017				2018				2019			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
15.6.051	Northern Runway										Subject to trigger											
15.6.012	Runway 10-28 Extension										Subject to trigger											
15.6.013	Line-up Points to Runway 10-28										Subject to trigger											
15.6.028	Runway 10-28 Extension and Addition of Line-up Points										Subject to trigger											
15.7.111	Pier 2 Segregation										Subject to trigger											
15.2.002	Fuel Farm										Subject to trigger											
15.7.101	T1 Check-in & Security										Subject to trigger											

7.9 Notional Impact of Proposed Capital Investment on Price Cap

Table 15 below sets out the notional impact of individual capital projects on the price cap. This can be a useful reference, but a number of points should be made:

- The price cap is a complex mechanism. Its level in any given year is affected by numerous factors, including: (i) the forecast opex and commercial revenue for the year; (ii) the forecast passengers for the year; (iii) the average value of the RAB for the year in question; (iv) the depreciation/remuneration treatment of the different components of the RAB (there are currently five different types of treatment of RAB value); (iv) the allowed WACC; (v) the rate of inflation; (vi) other factors, including service performance versus target, previous under-recovery, CAR's levy, smoothing effects.
- Changes in the price-cap level from one year to the next reflect multiple movements in the above values.
- With regard specifically to the impact of a proposed capital programme on the price cap, the value is added gradually over the course of the determination period, with typically one fifth of the total value added to the RAB each year over the five year period, and with trigger capex added only if and when the triggers are reached. While capex is added to the RAB over the determination period, existing capital value is also exiting the RAB each year as assets reach full depreciation.

Table 16 sets out the impact of daa's proposed capital investment programme on the price cap for the period 2015-2019.

- For key categories of daa's proposed CIP, the table shows the average annual price cap impact in real terms over the course of the 5-year period. These are stand-alone impacts.
- Taking account of the impact of capital value exiting the RAB, the net impact is 72c.

Table 15 : Impact of Capital Investment Proposals on Price Cap

Capital Project	Value, €m	Weighted Average Asset Life	Annual Notional Impact on Airport Charges
15.4.001 Airfield Vehicles and Equipment	5.7	9	€0.04
15.6.001 Runway 16-34 Pavement Rehabilitation	21.5	15	€0.12
15.6.002 Apron Rehabilitation	21	25	€0.09
15.6.004 Airfield Lighting Upgrade (Runway 10-28)	9.1	20	€0.04
15.6.006 Airfield and Apron Road	1.7	23	€0.01
15.6.009 Taxiway Airfield Ground Lighting (AGL) Upgrade	3.9	15	€0.02
15.6.017 Runway 10-28 Overlay	22	20	€0.10
15.6.055 Airfield Taxiway Rehabilitation	14	25	€0.06
15.9.022 Airfield Pollution Control	20	30	€0.08
15.3.001 Landside Infrastructure - Utilities	4.6	23	€0.02
15.3.004 Landside Infrastructure - Carparks	4.5	13	€0.03
15.3.035 Landside Infrastructure - External Roads	2	18	€0.01
15.4.002 Light Vehicle Fleet	2.2	4	€0.03
15.4.005 T1 Baggage Reconciliation System	1	7	€0.01
15.4.006 T1 Critical Equipment Upgrades	5.9	18	€0.03
15.7.102 T1 Roof Upgrades	7.9	20	€0.04
15.7.104 HVAC / BMS Upgrades & Replacements T1	7.4	25	€0.03
15.5.002 Retail IT	1.6	5	€0.02

Capital Project	Value, €m	Weighted Average Asset Life	Annual Notional Impact on Airport Charges
15.8.008 daa Technology Operations & Lifecycle Management	15.8	5	€0.19
15.8.009 daa IT Business Systems Investment	15.6	5	€0.19
15.8.009c Business Innovation Investment	8	2-5	€0.15
15.2.017 Consolidated Staff Car Park	1.5	25	€0.01
15.4.003 T2 HBS Standard 3	13	11	€0.09
15.4.004 Central Search Area - New Technologies	11.6	10	€0.08
15.6.007 Airfield Infrastructure Upgrades for New Large Aircraft	1.5	25	€0.01
15.6.021 Cargo Gate Redevelopment	1.8	25	€0.01
15.6.022 Airport Screening Centre	0.8	25	€0.00
15.6.023 Apron Development (300R)	8.2	20	€0.04
15.6.047 Apron Development (5G)	18.2	25	€0.08
15.7.103 Fixed Electrical Ground Power Pier 1	1.5	15	€0.01
15.7.116 Pier 3 Flexibility	15	25	€0.06
15.7.117 Transfer Facility	21.5	39	€0.08
15.7.119 T1 Façade Works	0.7	25	€0.00
15.7.120 T2 Bus Lounge Facilities	13.3	30	€0.05
15.7.121 T1 Arrivals Development	8.9	25	€0.04
15.7.122 Pier 1 Enclosed Gate Rooms	1.1	15	€0.01
15.2.005 Commercial Hangar Infrastructure	0.6	20	€0.00
15.2.006 T2 MSCP Phase 2	12.3	25	€0.05
15.2.007 Cargo Terminal Development & Office Accommodation	2.2	10	€0.02
15.2.009 Consolidated Car Rental Centre	10	20	€0.05
15.2.010 Digital Advertising PODs	1	4	€0.01
15.2.013 Commercial Property Refurbishment	10.5	10	€0.07
15.3.006 Long-term Car Park Resurface	6.7	25	€0.03
15.5.001 Retail Refurbishments	12.1	5	€0.15
15.6.018 North Runway Fees and Planning	4	20	€0.02
15.6.019 North Runway Advance House Purchase	4.3	20	€0.02
15.8.001 Minor Works	10	13	€0.06
15.8.200 Programme Management	3.5	5	€0.04
			€2.41
CONTINGENT PROJECTS - EXPECTED			
15.6.013 Addition of Line-up Points on Runway 10-28	30	20	€0.14
15.7.101 T1 Check In and Security	38.3	25	€0.16
15.7.111 Pier 2 Segregation	18	20	€0.08
CONTINGENT PROJECTS - NOT EXPECTED			
15.2.002 Fuel Farm	25	40	€0.09
15.6.051 Northern Runway	245	20	€1.14
15.6.012 Runway 10-28 Extension	55	20	€0.26

Table 16 : Price Cap Impact in Real Terms

Average annual price cap impact (real terms relative to 2014 price cap)	
Tranche 1: Capital maintenance investment (€186m)	69c
Tranche 2: Business development capex (€183m)	68c
Tranche 3: Contingent Projects – Expected (€86m)	21c
Other (€22m)	12c
Impact of capital value exiting RAB	-97c
Net price cap impact of daa capital investment proposals	72c

8 Programme Management

All daa projects within the CIP will continue to be delivered using the programme management toolkit. Programme management can be defined as the process of managing the multiple interdependent projects contained in the CIP with the objective of ensuring strategic standardised commonality in approach to managing cost, risk, change control, quality, safety, project reporting and monitoring and controlling all projects within the CIP.

Programme management is independent of the project management process which is concerned with the planning, organising, design and management of resources to bring about the successful delivery of individual projects. Programme management provides:

- Continuous scrutiny of the various projects by the Board of daa and other stakeholders.
- Visibility of the management and delivery of individual projects against pre-defined objectives.
- Staged approval of the project ensuring proper deployment of front end optioneering and value management to develop an optimal solution coupled with progressive release of capital funding in a structured and standardised manner.
- Creation of an audit trail through the various stages of a project culminating in a review by all parties to the project.
- Integration of cost and schedule through project control procedures and provision of performance metrics.
- Driver of risk management and in particular risk mitigation
- Interface management to ensure minimal disruption to operations and passengers.
- dedicated Programme and Project Environmental and Health and Safety management systems and personnel.

9 Capex Groups and Flexibility

In this section we outline the need for some level of flexibility within the overall capex allowance; the capex groupings or envelopes within which we are seeking flexibility and the limits within which the daa would operate such flexibilities

9.1 The Need for Flexibility

The need for flexibility is driven by 4 main factors;

- Risk based approach to maintenance investment

- The level of design maturity of the programme at Q1 2014
- The portfolio approach to risk
- The need to be able to respond in a dynamic way to airport user needs over medium term horizon

In section 6 an envelope approach to capital allowance was shown to be consistent with best practice in asset maintenance (ISO 55000). Such an approach allows flexibility in the maintenance capital investment spend to respond to changing risk assessments over time. Continual risk assessment may result in certain projects moving up (or down) the order of priority during the time period of the CIP and investment should take place based on current risk assessment rather than the risk assessment undertaken at the beginning of the CIP period.

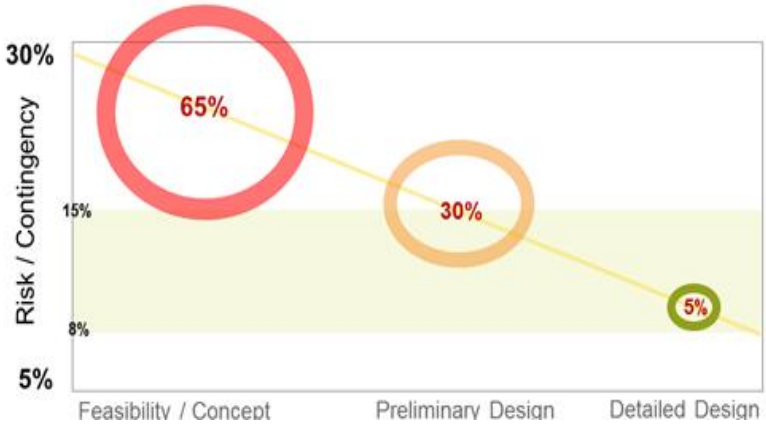
A capital allowance could be made to include a number of projects relating to e.g. apron rehabilitation. To reconcile whether actual spend was consistent with the allowance CAR would only be concerned with whether the overall output from the envelope was consistent with that for which capital was allowed (e.g. repair to specified number of sq. m of apron) rather than whether specific projects within the envelope were undertaken (e.g. repair of apron in area A, area B etc.).

During the consultation process daa demonstrated that a significant number of projects were at an early stage of design maturity with approximately 65% of the projects at feasibility /concept stage (Figure 33). Substantial resource is needed to advance major projects in an Airport environment through the design process and the daa has sought to balance the level of investment in design for projects which may or may not be supported by airport users.

Taking this level of design development into consideration contingency levels in the range of 8-15% of total project costs are generally well below published recommended amount. Royal Institute of British Architects would recommended contingency levels in the range of 20-30% for projects at concept design stage.

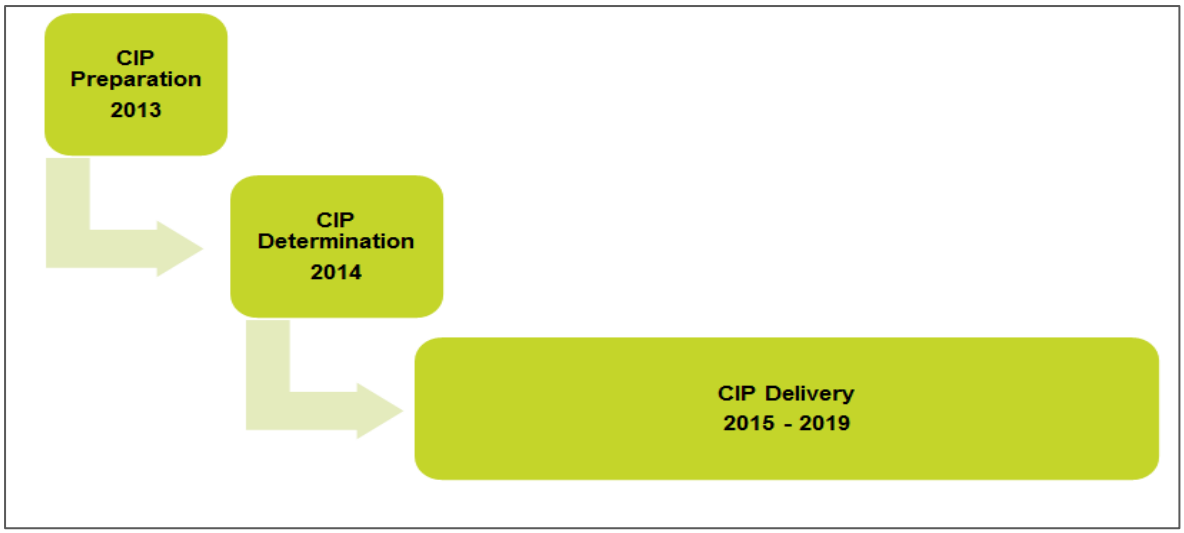
The daa has adopted low levels of project risk based on a portfolio approach to risk management.

Figure 33 : Contingency Levels CIP Proposals 2015-2019



There is also a wider argument, beyond that of adoption of best practice in asset management, in support of this envelope approach. In the interests of efficient allocation of capex investment daa requires reasonable flexibility to plan, build and implement its infrastructure as conditions at the airport change over time. The standard CIP process is an example of an inflexible capex allocation method. Given the time lapse between now and the end of the next regulatory period, daa is in some cases required to attempt an accurate prediction of investment requirement up to 6 years in advance of the actual investment taking place. See Figure 34 CIP Process Timescale.

Figure 34 : CIP Process Timescale



If at the time of investment daa undertook a project which provided greater relative benefits for a slightly increased cost, reconciliation at the project level would leave daa at risk of having such investment disallowed in the subsequent regulatory period. In this case, daa could elect to continue with the approved project, despite a more beneficial option being available. This is demonstratively inefficient. A more appropriate approach would be to allow daa envelopes of capital allowance, rather than specific project-by-project approvals. In the last Determination, CAR has taken a step in this direction, and in the interests of ensuring allowed capex is allocated to the most urgent and / or most beneficial project at the time of investment (rather than time of capital allowance) across all capex projects this approach should be applied more generally.

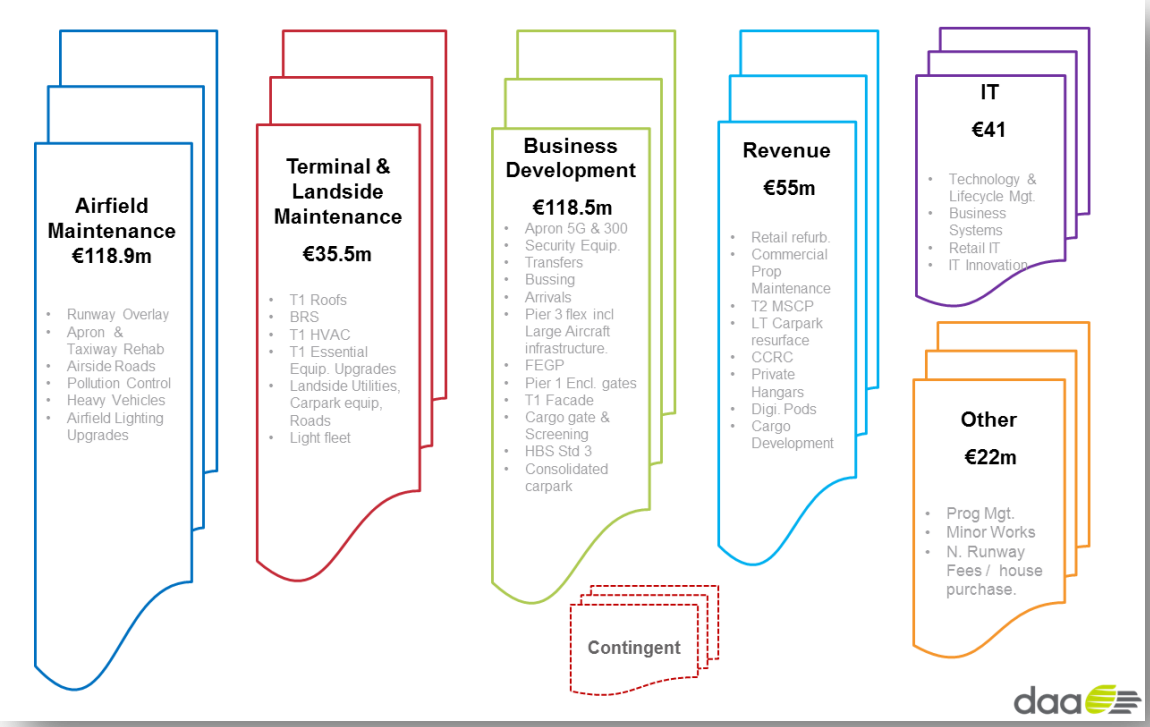
9.2 Capex Groups

As per discussion above we present our capital requirements in the following groupings:

- Airfield maintenance envelope
- Terminal and landside maintenance envelope
- Revenue envelope
- Business development envelope
- IT envelope
- Other (Programme Management, Minor Works, North Runway facilitation works)

For this approach to produce any meaningful benefit in terms of increased flexibility, reconciliation of costs, outturn and allowance should be at the envelope rather than the individual project level.

Figure 35 : CIP Capex Groups Proposed.



9.3 Restrictions Proposed on Capital Flexibility

The current determination contains a principle where CAR sets out a series of outputs which the daa is expected to deliver when making a capex allowance for a given grouping. We propose that this principal be retained for CIP 2015-2019. In the interests of retaining and promoting airline support for the CIP as it rolls out over the period daa proposes the following approach to consultation under a capex envelopes approach. (This is slightly different from the proposal discussed at the capex consultation.)

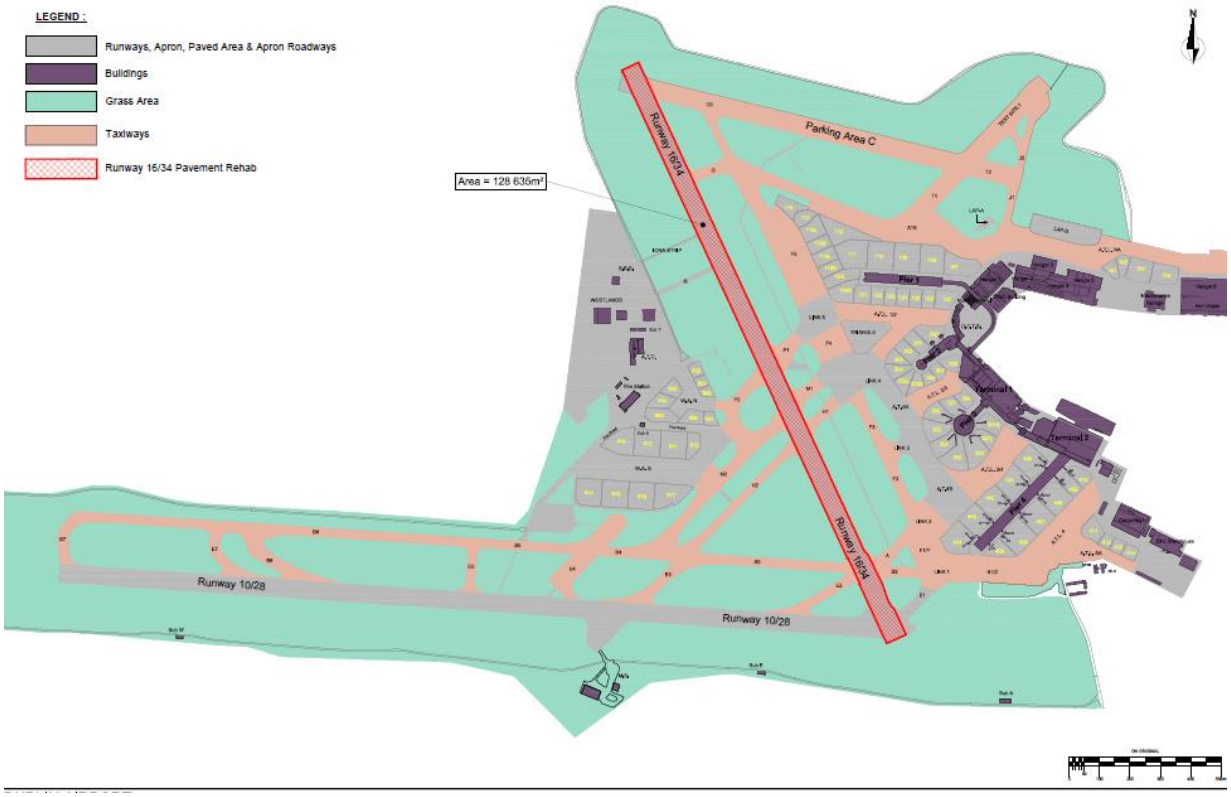
1. Where a new project can be delivered within an envelope at a cost <€3m, no interim consultation will be required.
2. Where a new project can be delivered within the capex envelope and such new project is expected to be €3m or above an interim consultation would be required.
3. Where a new project cannot be delivered within the capex envelope and cost is >€1m an interim consultation would be required.

10 CIP Project Sheets

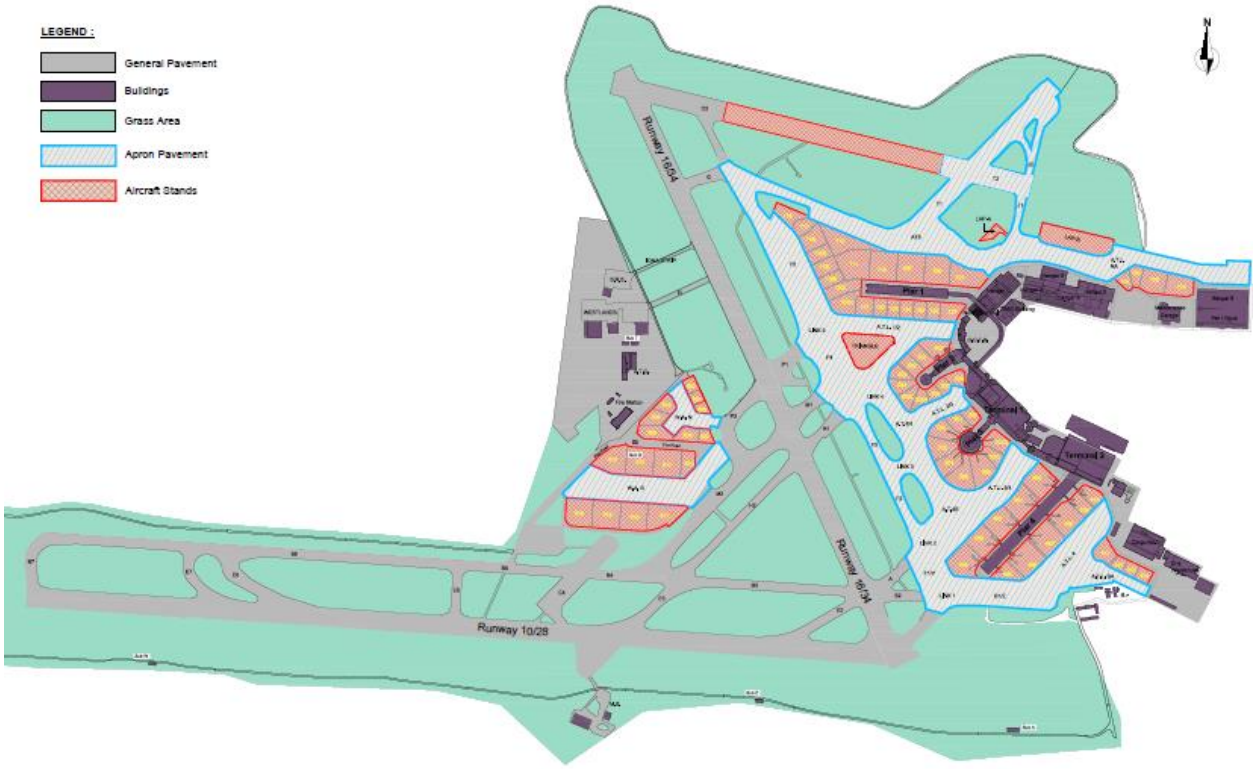
Capital Maintenance Projects - Airfield

CIP 15.4.001 : Airfield Vehicles and Equipment	
Project Rationale: The DAA Heavy Fleet Vehicles comprise of a broad mix of vehicles such as fire tenders, snow and ice equipment (Snow ploughs, Runway de-icers, snow blowers), airfield pavement sweepers, airfield painting equipment, tractors and hoist. The provision of this equipment is essential thus ensuring the sustained operations and continuity of the airfield operation. Vehicles are maintained to the required road safety standard in accordance with best practice and are replaced when they have reached the end of their useful life. Vehicles are selected based on fitness for purpose, whole life cost efficiency and standardisation. The planned provision of replacement vehicles for the heavy vehicle fleet between 2015 and 2019 will be in accordance with a 10-year fleet optimisation plan.	
Classification : Plant and Equipment	**Overall Capex Type** : Capital Maintenance
Primary Driver : Operational Efficiency	**Secondary Driver(s)** : Sustainability
	
Total Capex Requirement :	€5.70m
Historic Expenditure (pre 2015)	€0.00m
CIP Expenditure (2015 – 2019)	€5.70m
Underpinning Assumptions and Cost Benchmarks	• Replacement costs are based on current market rates.
Opex Impacts	• Fleet maintenance costs will increase if heavy fleet vehicles are not replaced at the end of their useful life. Front line vehicle such as Fire Tenders, Snow and Ice Equipment, Sweeper Fleet and Painting Equipment must remain in service to carry out critical works thus ensuring business continuity. General operation of the airport can be curtailed if vehicles are not functioning efficiently.
Alternative Solutions Reviewed	• Continue to invest via Opex. Sweating the existing fleet assets will have an adverse impact on operational budgets and in addition harbour increased risk to the continuity of airport operations.
Stakeholder evaluation and	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex

consultation status	proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Efficient operation of Dublin Airport through the provision of mobility options that are fit for purpose. • Modern, well maintained heavy fleet vehicles • Fleet optimisation plan
Expected Commencement :	• 2015
Expected Duration :	• 5 Years
Asset life :	• Varies from 5 – 10 Years

CIP 15.6.001 : Runway 16-34 Pavement Rehabilitation	
Project Rationale: Runway 16-34 at Dublin Airport is the cross-wind runway for the airport. The runway acts as the operational runway during significant cross-wind conditions and as the alternative runway when the main runway (10-28) is taken out of service for maintenance. As such Runway 16-34 is a critical piece of airport infrastructure, which is essential to accommodate limited aircraft movements during cross wind conditions, routine maintenance work and the planned overlay of Runway 10-28 in 2016/2017. Runway 16-34 was originally constructed in the 1940s and has been extended and upgraded a number of times between 1949 and 1999. The latest significant upgrade of this runway in 1999 extended the life of the runway by a theoretical design life of 15 years. This upgrade is now life expired. Since 1999, ad-hoc maintenance works have been carried out to retain the runway in service until the overall upgrade of the runway could take place. A Pavement Condition survey of Runway 16-34 in 2013 has determined that the condition of the pavement has now reached the point where a significant improvement programme will be required in order to keep the runway in service. These works include extensive rehabilitation of large portions of the runway surface and the repair of elements of runway drainage systems which have failed.	
Classification : Airfield	**Overall Capex Type** : Capital Maintenance
Primary Driver : Operational Efficiency	**Secondary Driver(s)** : Best Practice (Safety)
	
Total Capex Requirement :	• €24.30

Historic Expenditure (pre 2015)	• €2.80m
CIP Expenditure (2015 – 2019)	• €21.50m
Underpinning Assumptions and Cost Benchmarks	• 8,000m^2 of full depth runway pavement reconstruction. • 124,000m^2 of runway pavement rehabilitation (inlay and resurfacing). • Runway edge drainage channel improvements and replacement at Taxiway intersections. • Design life of upgrade to be 15 years (subject to review if Northern Runway postponed). • No new edge lighting required. • Current length and profile of runway acceptable over the next 15 years. • No centreline lighting required. • Extension of Runway 16-34 RESA not required. • Current configuration of approach lighting acceptable in the short to medium term.
Opex Impacts	• Maintenance repairs on degraded or failed pavements may not be possible due to the severity of the failure and access to the area. Emergency repairs of failed pavements can be up to 400% of the cost of planned pavement replacement and have a short life cycle. This form of emergency replacement should be avoided.
Alternative Solutions Reviewed	• Scheduled and unscheduled localised emergency remedial works, including localised patch repair, band sealing, etc. – risk to serviceability (FOD) and cost prohibitive.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• 8,000m^2 of new full depth runway pavement. • 124,000m^2 of rehabilitated runway pavement. • Runway edge drainage channel improvements and replacement at Taxiway intersections. • Reinstatement of runway and taxiway markings.
Expected Commencement :	• 2018 (Minor works in 2015)
Expected Duration :	• 2 Years
Asset life :	• 15 years

CIP 15.6.002 : Apron Rehabilitation	
Project Rationale: The airfield aprons are a critical element of the airfield network, providing facilities for aircraft to manoeuvre, park and be serviced. Many of the main aircraft aprons at Dublin Airport date back to before the 1960s and in a number of cases, have reached the end of their useful life. Recent independent condition reports have noted that areas of the aircraft pavement are in poor condition and are in need of rehabilitation. The remaining life on the aprons in question is between 2 and 5 years within which time the aprons will degrade significantly and will ultimately become unserviceable. A number of the pavements are on arterial routes through the apron and, if they become unserviceable in an uncontrolled manner, will cause significant aircraft delays due to re-routing and congestion. Poor or damaged apron pavement is also a source of foreign object damage which is a health and safety risk to the aircraft. Timely interventions to rehabilitate failed aircraft aprons are critical to the safeguarding of the airline and airport business. It is proposed to carry out a number of pavement rehabilitation projects between 2015 and 2019 in a planned and timely manner in order to replace damaged pavement before they become a business interruption or health and safety risk and thereby safeguard the airport business.	
Classification : Airfield	**Overall CapEx Type** : Capital Maintenance
Primary Driver : Infrastructure Integrity	**Secondary Driver(s)** : Best Practice (Safety)
	
Total Capex Requirement :	• €21.00m

Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €21.00m
Underpinning Assumptions and Cost Benchmarks	• Full reconstruction of failed pavement in Pavement Quality concrete required • Allowance for asphalt finish to areas of taxilane • Local rationalisation of drainage may be necessary • No new electrical fittings required • Night-time working in a number of areas will be required • Works to be carried out in discrete portions to minimise operational disruption • Costs based on recent apron reconstruction projects.
Opex Impacts	• Maintenance repairs on degraded or failed pavements may not be possible due to the severity of the failure and access to the area. • Piecemeal emergency replacement of failed pavements cost approximately €300 per sqm and generally have a life cycle of less than 10 years. • On a whole life cycle cost over 30 years therefore, the cost of piecemeal emergency pavement replacement would be in excess of 400% that of planned replacements and should be avoided. • Opex costs of ad-hoc repairs will reduce as a result of this investment.
Alternative Solutions Reviewed	• Piecemeal ad-hoc replacement (see above)
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Replacement of 30,000m^2 of failed stand pavement with new, integrated pavements • Replacement of 54,000m^2 of failed apron pavement with new, integrated pavements • Reinstatement of airfield ground lighting and guidance signage • Reinstatement of ground markings
Expected Commencement :	• 2015
Expected Duration :	• 5 years
Asset life :	• 25 Years

CIP 15.6.004 : Airfield Lighting Upgrade (Runway 10/28)

Project Rationale:

The electrical infrastructure (primary and secondary cabling, civil infrastructure, approach lighting) supporting Runway 10-28 and associated taxiways is now 25 years old and was installed as part of the original Runway construction back in 1988.

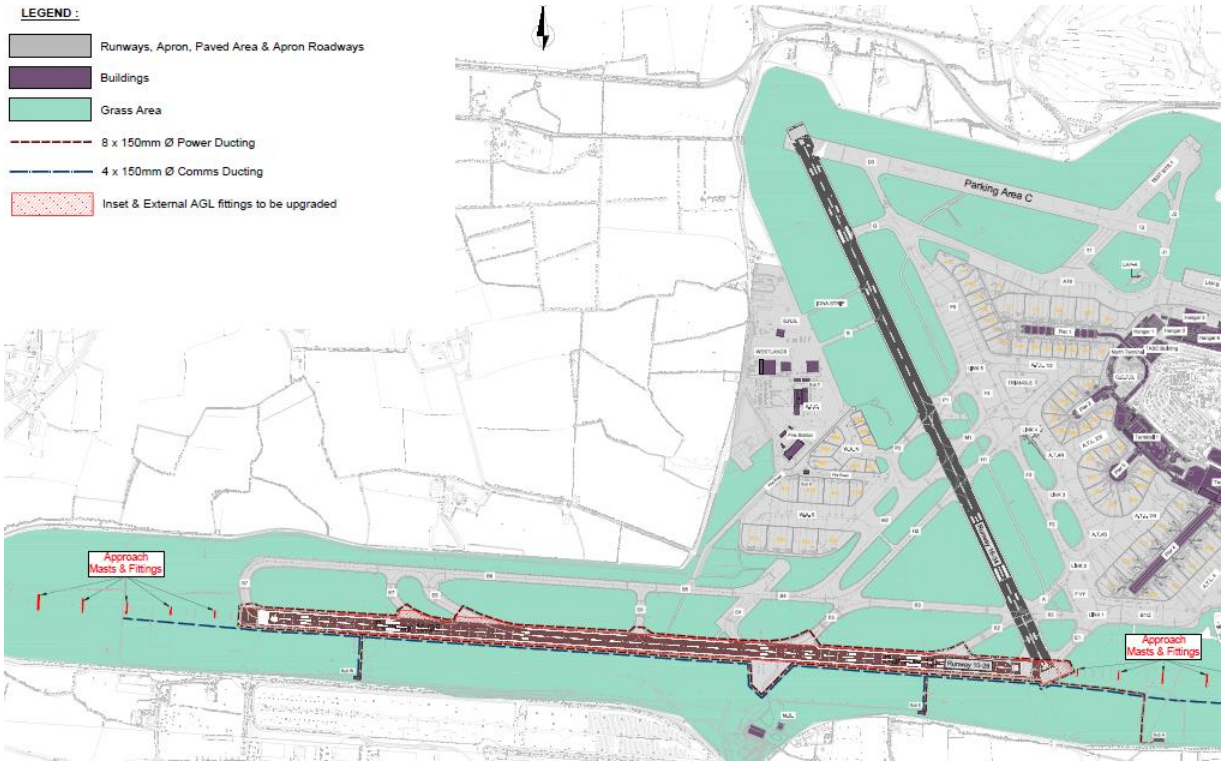
Asset assessments and health reviews of the lighting infrastructure supporting Runway 10-28 undertaken in 2012 identified potential weaknesses and vulnerabilities. Furthermore, over the last 12-18 months there have been a number of failures within the components of the infrastructure.

These weaknesses and vulnerabilities can be attributed to 1) electrical cable installation approaching end of life, 2) capacity issues with the civil infrastructure, 3) poor drainage of the existing infrastructure which is now contributing to on-going infrastructure failures, 4) on-going safety issues and hazards for maintenance crews maintaining airfield infrastructure.

In addition to the above the asset health review identified areas of parts obsolescence and installations that are no longer compliant with existing and most current regulations. These non-compliances can be attributed to the fact the infrastructure was designed and installed in the late 1980s and over the last 25 years regulation and standards have evolved.

This project and necessary investment is essential to ensure Runway 10-28 (lighting) serviceability for the next 20 years.

Classification : Airfield	**Overall Capex Type** : Capital Maintenance
Primary Driver : Operational Efficiency	**Secondary Driver(s)** : Best Practice (Safety)

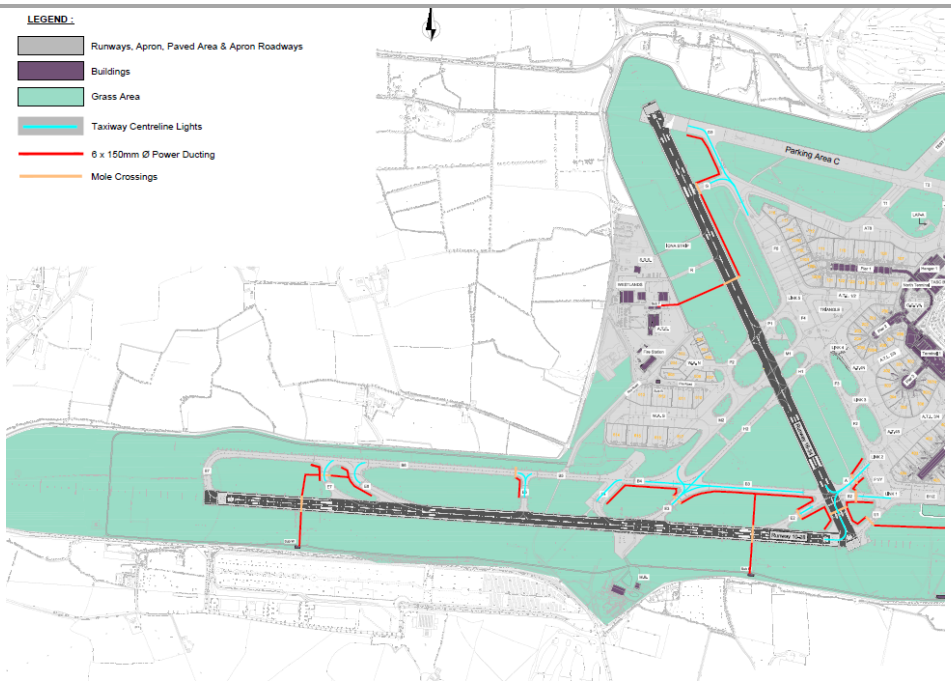


Total Capex Requirement :	• €9.10 million
Historic Expenditure (pre 2015)	• €0.00
CIP Expenditure (2015 – 2019)	• €9.10m million
Underpinning Assumptions and Cost Benchmarks	• DAA Cost Database • Night working • Parallel System Requirements
Alternative Solutions Reviewed	• On-going preventative and reactive maintenance via opex budgets which is not sustainable from a cost perspective. • Maintenance operations to existing manholes are unsafe.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• New approach lighting and masts at Runway 10 and Runway 28. • Runway inset fittings replaced with LEDs • +10 Km of trenching • +75km ductwork and cables • +300 Manholes
Expected Commencement :	• 2015
Expected Duration :	• 2.5 Years
Asset life :	• 20 years

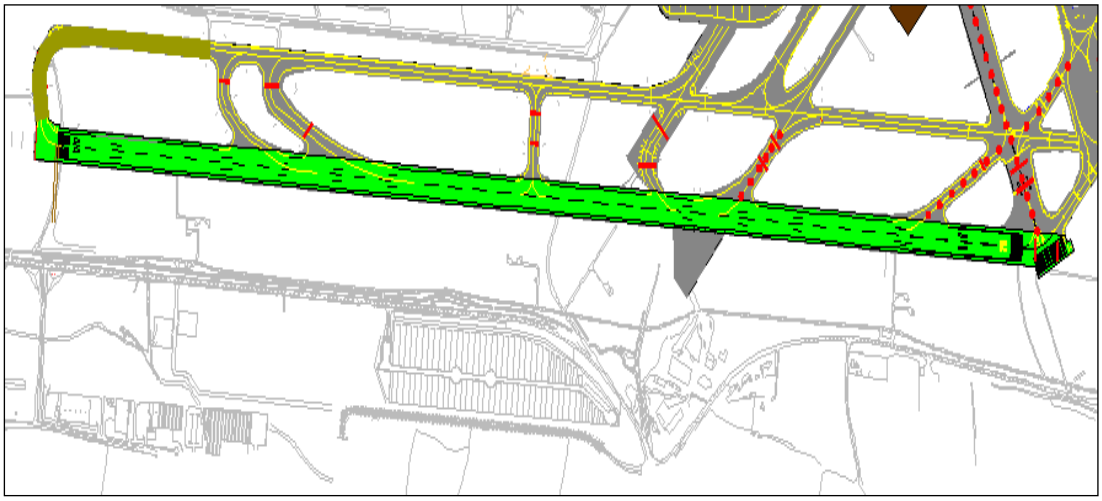
CIP 15.6.006 : Airfield and Apron Roads	
Project Rationale: The Airfield and Apron Roads are provided to allow safe and efficient access for airport and airline personnel, ground handling agents, contractors, suppliers, authorised persons and equipment to all parts of the airfield without entering active aircraft areas such as runways, taxiways, aprons and stands. The apron road is provided as an integrated part of the aircraft apron to allow immediate access to aircraft, while the perimeter road is constructed on the perimeter of the greater airfield to give unrestricted access of the airfield to security, fire service and asset care teams. Collectively the apron and perimeter roads combine to form a critical element of the airfield infrastructure, acting as safe corridors for airside activities for all authorised airside users. The majority of the apron roadway was constructed on or before 1960 when the apron was constructed. A recent condition report has identified areas of the apron road which are about to fail or have already reached the end of their functional life. When these areas fail or become unserviceable, the disruption to apron activity is significant and the Health and Safety risk to aircraft from Foreign Object Debris or Foreign Object Damage (FOD) is also increased. The perimeter road was constructed in the 1980s with the introduction of Runway 10-28. Sections of the perimeter road are currently in very poor condition and have a limited remaining life, leading to increased maintenance and a risk of Foreign Object Damage from loose material. If these areas are not addressed and the perimeter road becomes unserviceable, airport vehicular traffic will have to be diverted to use the active aircraft taxiways, thereby causing disruption to aircraft movements and a higher risk of operational errors, FOD and disruption. This project proposes the timely rehabilitation of these roadways to ensure the smooth and efficient operation of the airport by protecting the vehicular routes throughout the apron and airfield, thereby avoiding any increased safety risk, aircraft delays and overall business interruptions. The rehabilitation of the roadways will be undertaken on a business criticality basis subject to in-depth condition reporting and risk analysis. It is expected that 7,000sqm of Apron Road and 15,000sqm of Perimeter Road will need to be replaced between 2015 and 2019 based on current condition reports.	
Classification : Airfield	**Overall Capex Type** : Capital Maintenance
Primary Driver : Infrastructure Integrity	**Secondary Driver(s)** : Best Practice (Safety)
	
Total Capex Requirement :	• €1.70m
Historic Expenditure (pre 2015)	• €0.00m

CIP Expenditure (2015 – 2019)	• €1.70m
Underpinning Assumptions and Cost Benchmarks	• Full reconstruction of failed apron road pavement in Pavement Quality concrete required • Structural bituminous overlay used where possible on perimeter road to avoid need for full reconstruction. • Local rationalisation of drainage may be necessary but no additional surface water attenuation. • Costs based on recent apron and perimeter road reconstruction projects. • No new electrical fittings required • Night-time working in a number of areas may be required. • Works to be carried out in discrete portions to minimise operational disruption.
Opex Impacts	• Maintenance repairs on degraded or failed road pavements may not be possible due to the severity of the failure and access to the area.
Alternative Solutions Reviewed	• Piecemeal ad-hoc replacement of road pavement as required as detailed above.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Full pavement evaluation to confirm remaining structural life and schedule for rehabilitation. • 7,000m^2 of apron and perimeter road rehabilitation • Rehabilitation of apron road for a minimum of 30 years and perimeter road for 15 years. • Reinstatement of Airfield Lighting and surface markings as required
Expected Commencement :	• 2015
Expected Duration :	• 5 years
Asset life :	• 15 – 30 years

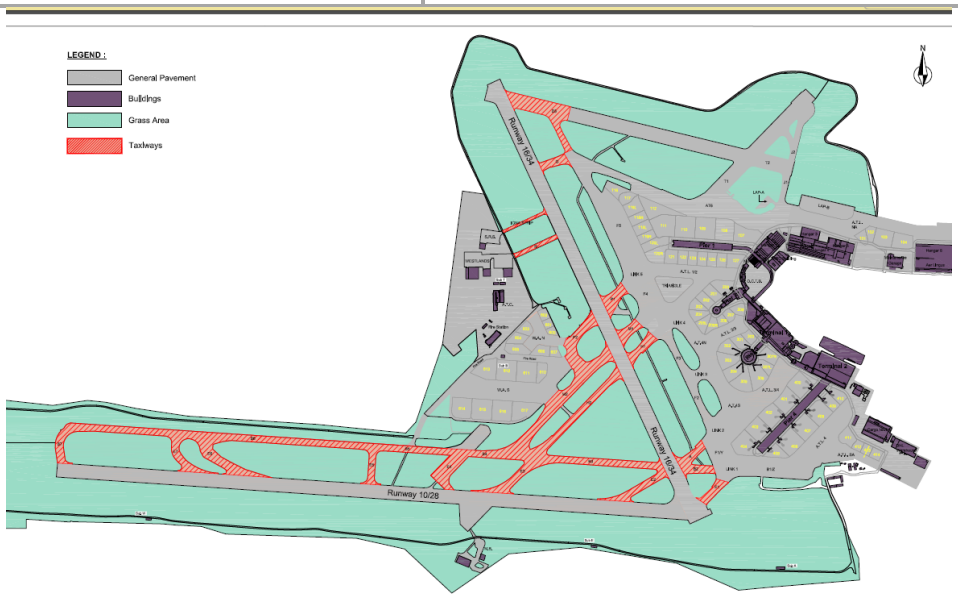
CIP 15.6.009 : Taxiway Airfield Ground Lighting (AGL) Upgrade	
Project Rationale: Runway 10/28 is equipped with all the necessary navigational and lighting aids to allow operations up to and including CAT II/III visibility conditions. ICAO SARPS recommend that taxiways used in the following: (1) runway visual range conditions less than 350m, (2) at night (high traffic density), (3) forming part of a standard taxi route in visibility conditions less than 350m or (4) forming part of a standard taxi route as part of an ASMGCS (Advanced Surface Movement Guidance Control System) be equipped with inset pavement centreline lights. Several taxiways on the airfield namely, A, B2, B3, E2 and E3 have in recent years become critical in their contribution to enhancing runway / taxiway capacity and efficiency. Taxiways B2, B3 and A now form a main artery connecting the runway and the aprons to the east of the airfield and E2, E3 being the main runway exit taxiways during Runway 10 operations. These taxiways are currently equipped with taxiway edge lights and pavement centreline markings (permitted if aircraft traffic density is light), which was the case prior to the airfield reconfiguration works since 2008. Since then, traffic volumes on these taxiways have increased considerably. In addition, the taxiways cannot be used in runway visibility conditions of less than 350m, effectively blocking their use in Low Visibility Conditions. Taxiway D3 currently the main entry taxiway during Runway 16 operations and taxiway G, the main exit taxiway during Runway 34 operations (also used as an apron entry / exit route) and soon to be used for intersection take-offs for commuter aircraft are equipped with taxiway edge lights, while adjacent taxiways are equipped with centreline lights. Equipping the taxiways with centreline lights will enhance safety of airfield operations providing; • greater taxiway visibility at night, particularly during low visibility conditions for pilots and airfield vehicle operators • increased ground manoeuvring guidance accuracy for pilots to follow • provide consistency of use of taxiway lighting aids across the airfield De-commissioning of existing taxiway edge lights along straight portions of these taxiways will be considered in order to reduce future maintenance costs.	
Classification : Airfield	**Capex Type** : Capital Maintenance
Primary Driver : Operational Efficiency	**Secondary Driver(s)** : Best Practice (Safety)



Total Capex Requirement :	• €3.90m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 - 2019)	• €3.90m
Underpinning Assumptions and Cost Benchmarks	• Capacity in electrical duct system and sub-station to facilitate installation • New electrical fittings and cabling required • Modifications to AGL Control system • Night-time working in a number of areas may be required • Works to be carried out in discrete portions to minimise operational disruption
Opex Impacts	• Maintenance of light fittings
Stakeholder evaluation and consultation status	• Aer Lingus Regional / Aer Arann have requested use of taxiway G for intersection take-off operations on Runway 16. • This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• +400 taxiway centreline lights / bases / transformers • +50km cable • +25km ducts
Expected Commencement :	• 201
Expected Duration :	• 2 Years
Asset life :	• 15 Years

CIP 15.6.017 : Runway 10-28 Overlay	
Project Rationale: Runway 10-28 is the main operational runway at Dublin Airport. This runway accommodates up to 95% of aircraft movements at the airport. In 2012 aircraft movements on runway 10-28 totalled 153,974. This figure is expected to rise to 173,000 (based on 95% of forecast total of 182,152) by 2016. In 2010 Runway 10-28 was overlaid with a thin porous friction course (TPFC) to improve its friction quality and extend its useful life by six years. These works were agreed with CAR in 2009 and was included in CIP 2010-2014. This TPFC will become life expired in 2017 and will need to be replaced between 2016 and 2017 in order to keep the runway fully operational. The original concrete runway was constructed in 1960 with an asset life of 40 years. Prior to the installation of the TPFC in 2010, a number of failed concrete slabs within the body of the runway were replaced. Since 2010 further deterioration of the original concrete runway below the TPFC has occurred. Further breakup of slabs beneath the TPFC surface manifesting itself in cracking and surface deterioration. Recent Pavement Condition Index surveys place the runway condition in the "maintenance" category. It is now clear that the original runway is reaching the end of its life and must be receive a structural overlay. The proposed overlay of the runway will take the form of a full structural bituminous overlay, nominally 200mm thick with a new TPFC wearing surface.	
Classification : Airfield	**Overall Capex Type** : Capital Maintenance
Primary Driver : Infrastructure Integrity	**Secondary Driver(s)** : Best Practice (Safety)
Runway 10/28 : Scope of Overlay project (highlighted) 	
Total Capex Requirement :	• €22.30m
Historic Expenditure (pre 2015)	• €0.30m
CIP Expenditure (2015 - 2019)	• €22.00m

Underpinning Assumptions and Cost Benchmarks	• Existing TPFC and Jointmaster material to be removed. • Runway surface to be overlaid with a 200mm (nominal) structural layer complete with tie-ins to existing taxiways and drainage systems. • Minor allowance for replacing original slabs during construction (subject to final inspection). • Design life of upgrade to be 20 years. • Current configuration of approach lighting and Instrument Landing System (ILS) acceptable. • No new edge lighting required. • Night working between 23.00 and 05.00 • Project to be delivered in parallel with 15.6.004 (Airfield Lighting Upgrade) • Current centreline and taxiway lighting to be reinstated • Runway and taxiway markings to be reinstated.
Opex Impacts	• Maintenance repairs will increase annually as the current surface deteriorates between 2015 and 2016. Repairs on degraded or failed sections of the runway pavements will become more intensive as the current TPFC reaches the end of its useful life. Significant repairs to runway may not be possible without significant disruption to airport operations due to access restrictions to the area and runway use. Emergency repairs of failed pavements are up to 400% higher than the of the cost of planned pavement replacement and have a short life cycle. This form of emergency replacement should be avoided.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Overlay of Runway 10-28 with 200mm (nominal) structural bituminous overlay and a grooved surface • Tie-in to all existing taxiways. • Reinstatement of centreline and taxiway lighting. • Reinstatement of runway and taxiway markings.
Expected Commencement :	• 2016
Expected Duration :	• 2 Years
Asset life :	• 15 years

CIP 15.6.055 : Airfield Taxiway Rehabilitation	
Project Rationale: Airfield taxiways are the main routes through the manoeuvring areas of the airfield over which aircraft pass en-route to the runways, aprons or aircraft stands. Airfield taxiways are a critical part of the airfield infrastructure and without them aircraft could not safely and efficiently access the runways, aprons, maintenance facilities and parking stands. The majority of the airfield taxiways were constructed circa 1940s as part of the original airport configuration and in the 1980s as part of the Runway 10-28 development. A number of taxiways have since been overlaid to extend their lives but are now reaching the end of their current useful life. A recent condition report has determined that a number of the airfield taxiways are in a relatively poor condition and will need to be rehabilitated within the next five years. The timely rehabilitation of these taxiways is extremely important to the smooth and efficient operation of the airport by protecting the manoeuvring routes for the aircraft, avoiding aircraft delays and overall business interruptions. The rehabilitation of the taxiways will be undertaken on a business criticality basis subject to in-depth condition reporting and risk analysis. A minimum of six primary airfield taxiways are expected to require rehabilitation over the next five years. Rehabilitation of these taxiways will vary from structural bituminous overlays to full pavement reconstruction and will be carried out following full pavement structural analysis and review. Underlying issues such as pavement level, taxiway alignment, surface drainage and sub-strata weaknesses will also be resolved in order to ensure that the infrastructure investment will reach its full expected life.	
Classification : Airfield	**Overall Capex Type** : Capital Maintenance
Primary Driver : Infrastructure Integrity	**Secondary Driver(s)** : Best Practice (Safety)
	
Total Capex Requirement :	• €16.00m

Historic Expenditure (pre 2015)	• €2.00m
CIP Expenditure (2015 – 2019)	• €14.00m
Underpinning Assumptions and Cost Benchmarks	• Structural bituminous overlay used where possible to avoid need for full reconstruction. • No surface water attenuation. • No new electrical fittings. • Night time working. • Multi construction phasing to minimise route interruptions for taxiing aircraft. • Based on recent pavement overlay and reconstruction projects.
Opex Impacts	• Current maintenance works on these pavements will continue until the pavements are rehabilitated or fail completely. Once the pavements deteriorate to a poor level it will not be possible to maintain the pavements without a significant intervention, which, if undertaken under emergency conditions, would be significantly more expensive than a planned rehabilitation programme and should be avoided if possible.
Alternative Solutions Reviewed	• Piecemeal ad-hoc replacement of pavement as required as detailed above.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Full pavement evaluation to confirm remaining structural life and schedule for rehabilitation. • 70,200m2 of taxiway rehabilitation. • Reinstatement of Airfield Lighting equipment. • Reinstatement of Taxiway markings
Expected Commencement :	• 2014
Expected Duration :	• 6 years
Asset life :	• 25 years

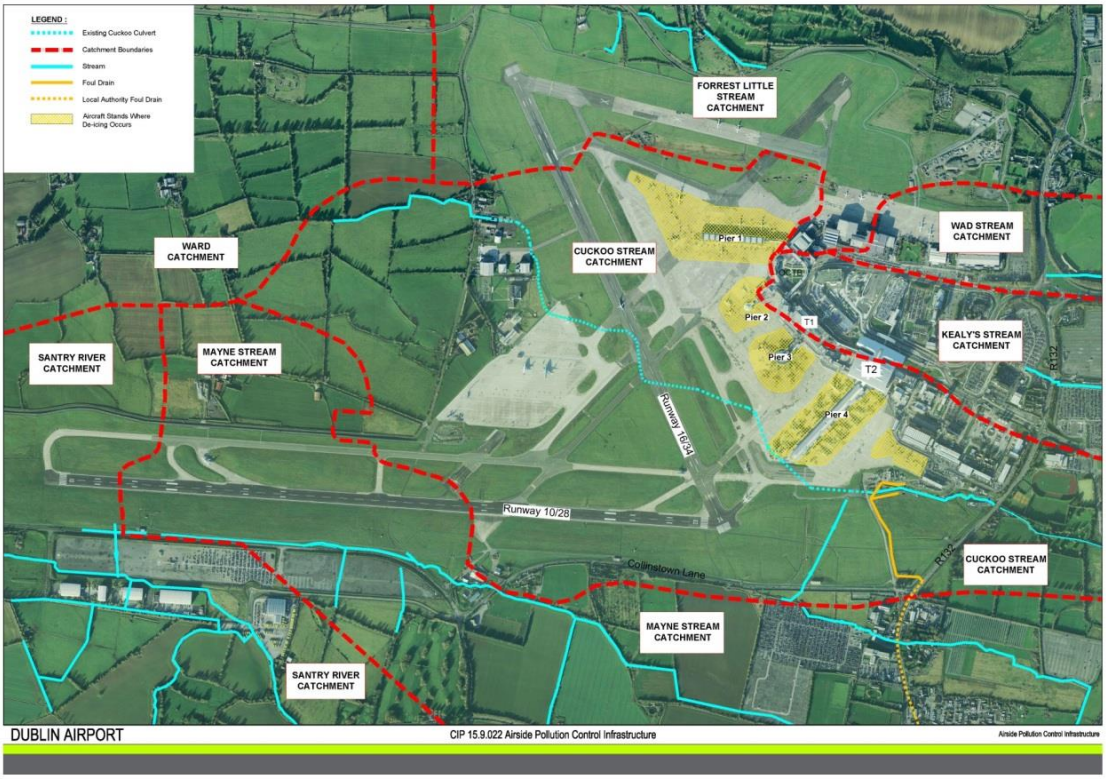
CIP 15.9.022 : Airfield Pollution Control

Project Rationale;

In order to maintain the safety of winter flight operations, airlines and airport authorities use chemical deicing agents on aircraft and airside pavements. These chemicals eventually enter surface water drains and streams and exert a significant environmental load and require careful management to ensure compliance with environmental and planning requirements; including the Water Framework Directive Regulations (WFD), the Dublin Airport Local Area Plan (LAP), Fingal County Council (FCC) discharge licence conditions and planning permissions. The requirements of the WFD and LAP place a significant responsibility on daa to ensure that water courses are protected from de-icing run-off.

To deliver on these requirements, Phase 1 of the Pollution Controls Works in the Cuckoo Stream catchment (11,000m^3 storage tank) was delivered as part of CIP 2006 to 2009. It was planned to deliver the final phases of these pollution control works (additional 18,000m^3 storage in four of the airport sub catchments) through CIP 2010 to 2014, however these works were put on hold pending a review of the significant environmental issues that arose following the two severe winters of 2009/2010 and 2010/2011.

In this regard Greater Toronto Airport Authority was engaged to undertake a detailed review of de-icing activities at Dublin Airport and to review the existing and future planned infrastructure. This review has now been completed and based on the findings of this study and the issuing of a discharge licence by FCC, which contains upper limits on the volume and characteristics of water permitted to be discharged from the airport site to the public sewer, daa now plan to implement the recommended improvement works as set out in this paper in order to comply with regulatory requirements and minimise the impact of contaminated surface water runoff from de-icing activities on the watercourses surrounding Dublin Airport:



Classification : Airfield	**Overall Capex Type** : Capital Maintenance
Primary Driver : Compliance	**Secondary Driver(s)** : Environmental
Total Capex Requirement :	• €20.00m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €20.00m
Underpinning Assumptions and Cost Benchmarks	• Costs are based on the provision of 63,000m3 of additional underground storage tanks. • The new storage requirement has been calculated using a hydraulic deicing model (including aircraft deicer and pavement deicer usage data) and meteorological inputs. Included in the model are the sewer discharge limit values permitted by the FCC licence. • The new facilities will be sized to collect, contaminated runoff from 1 in 10 year winter weather event within the parameters of the FCC Discharge Licence to Sewer. • Estimate for the storage tanks is based on underground reinforced concrete tanks. • For benchmarking purposes, Manchester Airport (similar in size to Dublin Airport in both layout and passenger throughput) has 75,000m3 of storage capacity to deal with runoff from winter operations. • Design life of drainage upgrades and underground pollution tanks to be 30 years.
Opex Impacts	• Provision of additional storage capacity will result in additional running time for the existing pumps which discharge the contaminated runoff to foul sewer. • DAA pays €0.66 per m3 to FCC to discharge contaminated runoff from de-icing activities to the public sewer and in this regard €250k was paid to FCC for discharges from de-icing activities during winter 2012/2013. The discharge costs rate is based on volume and concentration of the final effluent. Increased storage will provide opportunity to reduce the concentration of the final effluent and/or the volume discharged.
Alternative Solutions Reviewed	• Do-Nothing: Risk in the event of environmental non-compliance is that FCC will request that discharges of contaminated runoff to Cuckoo Stream are stopped. Only practical way to ensure this is cessation of de-icing operations. • Options based on providing storage or treatment for runoff from extreme events (1 in 50 years) were investigated. The infrastructure

	required for these events was excessive, e.g. storage requirements in the range of 200,000 - 300,000m3. Cost burden to customers and airport from this option is too high and as a consequence this is not a viable option and consideration was therefore focussed on infrastructure requirements for less extreme events; 1 in 10 years.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process. • Since 2011 extensive discussions have taken place with FCC with regard to the proposals around the management of the contaminated runoff and trigger values for diversion of same to storage to ensure compliance. • Similarly extensive consultations including workshops have taken place with the airlines and their handling agents with regard to (a) informing them of the impact their operations have the watercourses and (b) optimising the de-icing operations and chemical application.
Project Output	• 63,000m^3 of additional storage capacity or equivalent treatment facilities. • 50m^3 storage facility and associated infrastructure for concentrated spent de-icing chemicals (glycol).
Expected Commencement :	• 2016
Expected Duration :	• 2 Years
Asset life :	• Below ground drainage works and pollution tanks: 30 years. • Above ground storage tanks: 15 years

Capital Maintenance Projects - Terminal and Landside

CIP 15.3.001: Landside Infrastructure Utilities

Project Rationale;

DAA is responsible for the provision of heating and water to the terminals and campus buildings.

Under the National Energy Efficiency Action Plan (NEEAP) DAA have signed up to the Public Sector Partnership Programme with Sustainable Energy Authority of Ireland (SEAI). DAA are committed to 33% improvement in energy efficiency by the year 2020. The targets are challenging and require system improvements to assist with achieving committed reductions. DAA have developed an energy strategy and action plan to deliver these savings.

System improvements are in line with requirements to replace equipment that is approaching or exceeding its life expectancy.

In order to continue provision of heating and potable water to terminal and campus buildings in an efficient reliable manner the following works are required:

1. HVAC and MTHW systems improvements T1.

   As part of a survey carried out by SEAI in 2013 a number of recommendations and findings identified system improvements to our HVAC and MTHW systems. Works include alterations to pipe work configurations and upgrades of existing controls.

2. Replacement of Heating System Boilers/CHPs T1.

   Existing boilers and CHP 3 will require replacement in the near future. The project will evaluate latest developments in energy efficient technology along with renewable options and predicted energy prices. It is then proposed to replace boilers and CHP 3 with the most efficient, cost effective solution for heating terminal 1.

3. Energy Projects.

   Each year as part of our Energy Strategy, Action plan and commitment to achieving energy reduction targets, DAA are committed to delivering a number of energy reduction projects with sustainability as the key driver.

Classification : Plant and Equipment	**Overall Capex Type** : Capital Maintenance
Primary Driver : Infrastructure Efficiency	**Secondary Driver(s)** : Sustainability

Boiler/ Heating Systems

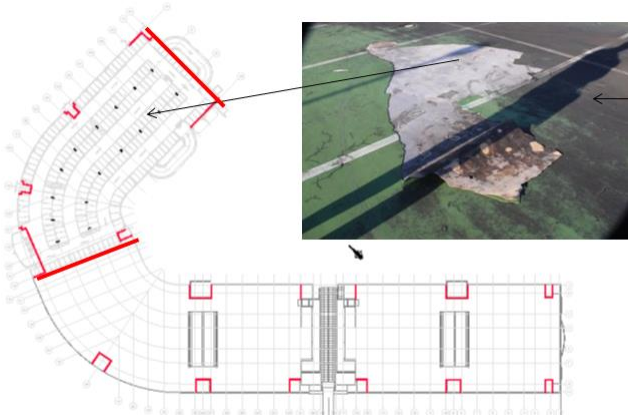
Boiler T1

Total Capex Requirement :	• €4.60m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €4.60m
Underpinning Assumptions and Cost Benchmarks	• DAA Cost database
Opex Impacts	• Reduced energy consumption
Alternative Solutions Reviewed	• End of life cycle of critical components which must be replaced.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Replacement of HVAC and MTHW systems in T1 • Replacement of CHP 3/ Boilers in T1 • Renewable energy projects • Improved airline and passenger experience
Expected Commencement :	• 2015
Expected Duration :	• 5 years
Asset life :	• Upgrade of existing systems – 5 Years • New plant and equipment – 10 Years

CIP 15.3.004: Landside Infrastructure Car Parks	
Project Rationale; DAA is responsible for the maintenance and operation of public and staff car parks at Dublin Airport. It is necessary to carry out essential works on these car parks to allow safe and efficient operation and maintain the assets in good order. Car Parks works include the following: 1. Public Car Park Equipment Upgrades. 2. Long term Car Park Lighting Upgrades. 3. Refurbishment of Multi-story car park Block C Roof.	
Classification : Airport Infrastructure	**Overall Cape Type** : Capital Maintenance
Primary Driver : Infrastructure Integrity	**Secondary Driver(s)** : Safety

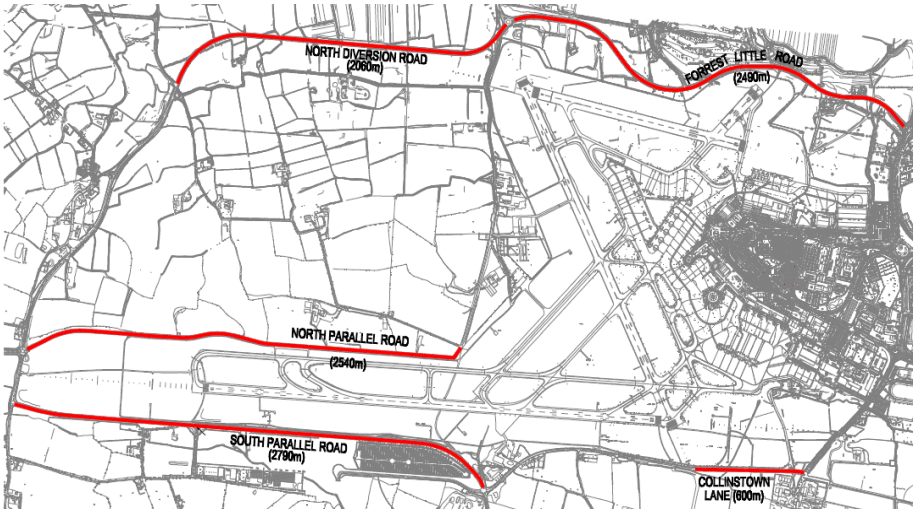
Public Car Park. Barriers and pay-station equipment to be upgraded from 2018.

Long Term Car Park Lighting to be replaced with low energy, long life fittings



Block C Roof Membrane 2013

Total Capex Requirement :	• €4.50m
Historic Expenditure (pre 2015)	• €0.00
CIP Expenditure (2015 – 2019)	• €4.50m
Underpinning Assumptions and Cost Benchmarks	• Replace lighting with high efficiency LED fittings
Opex Impacts	• Reduced energy consumption
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• New Public car park lighting • New Pay Stations – 23 • New Ticket Readers – 24 Entry and 17 Exit • 43 New Automated Barriers • New Vehicle Recognition System / Season Card Readers • New Management Station and Controls Upgrade
Expected Commencement :	• 2017
Expected Duration :	• 2 Years
Asset life :	• 10-15 years

CIP 15.3.035: Landside Infrastructure External Roads	
Project Rationale; This project involves the upgrading of elements of DAA owned external roads at Dublin Airport. These roads provide access to critical airport facilities including ATC, Fire Station, airside access posts and remote airline facilities and must be maintained to national road safety standards. Roads included are as follows; External airport roads (South and North Parallel Roads, Northern Diversion Road, Collinstown Lane, Forrest Little Road and Fire Station Road Westland's). These roads remain in the ownership of the DAA as Fingal County Council (FCC) has not yet taken them in charge. It has been planned to negotiate with FCC to have these roads taken in charge in the context of agreeing the capital contributions for the new northern runway and other major airport developments. Pending final agreement with FCC provision is necessary for capital maintenance work. This project is a deferred project from CIP 2010-2014	
Classification : Airport Infrastructure	**Overall Capex Type** : Capital Maintenance
Primary Driver : Infrastructure Efficiency	**Secondary Driver(s)** : Compliance
	
Total Capex Requirement :	• €2.00m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €2.00m
Underpinning Assumptions and Cost Benchmarks	• 2008 Similar Project
Opex Impacts	• Reduced maintenance costs; reduced insurance claims.

Alternative Solutions Reviewed	• The alternative to the proposed planned investment is to repair the roads on an ad-hoc basis as they deteriorate or fall below acceptable road safety standards. However, this will not be sufficient to allow FCC take charge when the opportunity arises.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• 11km of nominal depth overlay • New road markings
Expected Commencement :	• 2017
Expected Duration :	• 1 Year
Asset life :	• 5-7 Years

CIP 15.4.002 : Light Vehicle Fleet

Project Rationale:

The Dublin Airport Light Vehicle Fleet comprises 95 road going vehicles with gross vehicle weights of less than 3,500kgs. The vehicles are used for the safe and efficient operation of the airport and are used by such functions as Airport Police, Fire Service, Security Units, Airport Operations & Asset Care. The mobility of the functions within the airport through the provision of a reliable light vehicle fleet is critical for the efficient, safe and secure operation of the airport.

Vehicles are maintained to the required road safety standard in accordance with best practice and are replaced when they have reached the end of their useful life. Vehicle are selected based on fitness for purpose, whole life cost optimisation and standardisation.

The planned provision of replacement vehicles for the light vehicle fleet between 2015 & 2019 will be in accordance with a 6-year fleet optimisation plan as recommended by third party specialist fleet managers. This plan has optimised the number and type of vehicles in use as well as the nature of the vehicle to ensure they are fit for purpose and are properly maintained to reach their full life cycle.

Classification : Plant & Equipment	**Overall Capex Type** : Capital Maintenance
Primary Driver : Operational Efficiency	**Secondary Driver(s)** : Sustainability

Total Capex Requirement :	€2.20m
Historic Expenditure (pre 2015)	€0.00m
CIP Expenditure (2015 – 2019)	€2.20m
Underpinning Assumptions and Cost Benchmarks	• Fleet size to remain at 95 light vehicles • Fleet optimisation plan will be kept under review and current.
Opex Impacts	• Fleet maintenance costs will increase if vehicles are not replaced at the end of their useful life. Front line vehicle such as Fire Service and Airside Operations must remain in service to carry out critical inspection and “Follow-me”

	roles. General operation and maintenance of the airport can be curtailed if vehicles are not functioning efficiently.
Alternative Solutions Reviewed	• Continued maintenance of existing fleet but daa do not recommend this option for reasons outlined above.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Efficient operation of Dublin Airport through the provision of mobility options that are fit for purpose. • Modern, well maintained light vehicle fleet • Fleet optimisation plan • 79 Vehicle Replacements
Expected Commencement :	• 2015
Expected Duration :	• 5 years
Asset life :	• Varies from 3-5 years

CIP 15.4.005 : T1 Baggage Reconciliation System	
Project Rationale: *A Baggage Reconciliation System (BRS) is a barcode based baggage management system that allows airport operators to track baggage through an airport. Currently at Dublin Airport T2 is equipped with a BRS and the proposal in this paper is to install a similar system into T1.* Implementation of a BRS in T1 will; • Enable future expansion of baggage operations in T1 • Allow for full traceability and auditability of all outbound baggage processed by the T1 Baggage Systems • Facilitate existing and new airlines coming into T1	
Classification : Plant and Equipment	**Overall Capex Type** : Capital Maintenance
Primary Driver : Operational Efficiency	**Secondary Driver(s)** : Best Practice
	
Total Capex Requirement :	• €1.10m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €1.10m
Underpinning Assumptions and Cost Benchmarks	• Benchmarked against T2 Installation
Alternative Solutions Reviewed	• Full CBP (BILS) was investigated but was discounted as it's not currently an Airline requirement. • DAA are currently investigating using an alternative 3g technology that would allow T1 BRS functions at a lower cost by extending the existing T2 network.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.

Project Output	• Extended WiFi coverage • 40 handheld devices • Server upgrades • Software changes and development • BHS Interface (Relay from HBS to BRS) • Training
Expected Commencement :	• 2015
Expected Duration :	• 0.5 Years
Asset life :	• 7 years

CIP 15.4.006 : T1 Critical Equipment Upgrades

Project Rationale;

This project will upgrade key components of a number of business critical systems in T1 including:

- T1 Fire Safety Systems works
- T1 Baggage Handling PLC upgrade
- Pier 3 passenger lifts upgrade
- R22 Gas replacements
- UPS Battery replacements

Fire safety systems in large public buildings are highly complex and must be maintained in accordance with the relevant Irish Standards to provide compliant and safe facilities. Elements of the T1 Fire Safety System including fire dampers; smoke detectors; heat detectors; I/O units, cabling will need to be replaced in the short term. In addition the emergency lighting system to the baggage make-up hall and other back of house areas needs to be replaced. Fire Safety Systems require continuous investment to ensure the terminal is fully compliant and failure to carry out this project could lead to non-compliance with a risk of closure to certain areas.

The existing baggage handling PLC systems were installed in the early 2000s and are reaching the end of normal asset life and must be replaced. Reliable baggage systems are critical to efficient operation and T1 and they must be replaced during the period 2015-2019.

The existing lifts at gates in Pier 3 were first installed in the early 1970s, they have been extensively maintained but they have now reached end of life and must be replaced. Due to the age of this equipment spare parts are no longer in manufacture.

This project also includes €70,000 for replacing refrigerant gas R22 from AC systems in T1 which is a mandatory requirement and €100,000 for replacing life expired UPS battery systems to ensure continuity of supply to critical services.

Classification : Plant and Equipment	**Overall Capex Type** : Capital Maintenance
Primary Driver : Operational Efficiency	**Secondary Driver(s)** : Best Practice

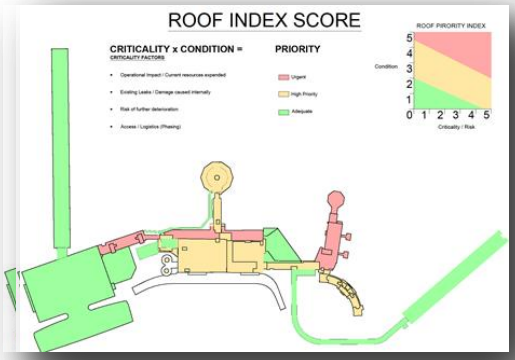
T1 Baggage PLC

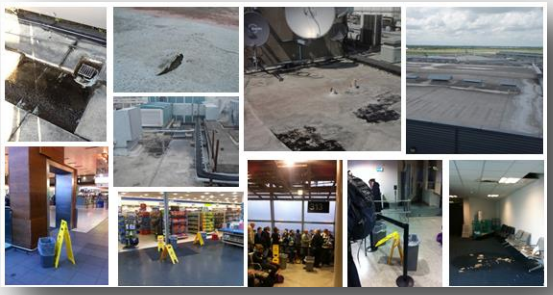
T1 Fire Panel

Pier 3 Passenger Lift

Total Capex Requirement :	• €6.0m
Historic Expenditure (pre 2015)	• €0.0m
CIP Expenditure (2015 – 2019)	• €6.0m
Underpinning Assumptions and Cost Benchmarks	• Working in live terminal environment • Airside works • Integration to existing systems • Phasing • Night time working
Opex Impacts	• Failure to invest in these business critical systems could lead to significant disruption to T1 operations
Alternative Solutions Reviewed	• These are essential equipment upgrades
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• New emergency lighting installations to Baggage Hall, Areas 4 and 5 • Replacement smoke detectors • Replacement heat detectors • Replacement I/O units • Replacement life expired cabling • Replacement fire dampers • Replacement and upgrade to lifts installation in Pier 3 • Replacement PLC's to baggage system
Expected Commencement :	• 2015
Expected Duration :	• 5 Years
Asset life :	• Fire Safety Systems 15 years • Baggage PLCs 15 years • Lifts 30 years

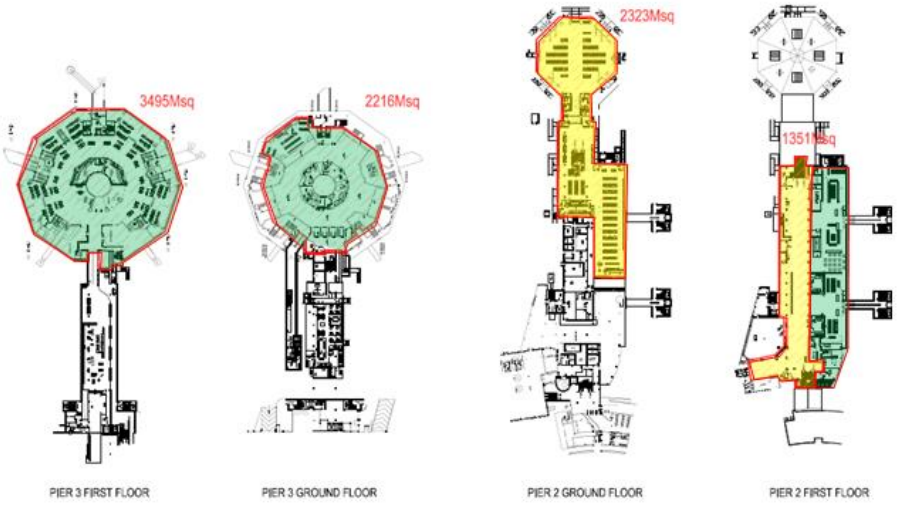
CIP 15.7.102 : T1 Roof Upgrades	
Project Rationale: Terminal 1 has been in operation since 1971 and some of the associated Piers have been in operation since the early 1960s. The waterproof membrane and roof build-up on a number of the roof surfaces have reached the end of their asset lives and are beginning to degrade, resulting in leaks into the terminal buildings and piers at a number of locations. Work is on-going at present on refurbishment to the street (6 Bay and 8 Bay) and does not form part of this paper. An overview of scope of works included in this capex proposal are highlighted in Phase 2 and Phase 3 below.	
Classification : Piers and Terminals	**Overall Capex Type** : Capital Maintenance
Primary Driver : Operational Efficiency	**Secondary Driver(s)** :





Total Capex Requirement :	• €7.90m (Phases 2 and 3)
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €7.90m (Phases 2 and 3)
Underpinning Assumptions and Cost Benchmarks	• Costs are benchmarked on the tender return rates for Phase 1 which was tendered in 2013. • Working around and maintaining existing live services
Opex Impacts	• Reduction in overall OPEX maintenance costs over 20 years. Reduction in heat loss through roof fabric of c.30%, resulting in some energy saving.

Alternative Solutions Reviewed	• Management / Maintenance solution discounted as the roofs will continue to degrade causing potential damage to the building structure while leaks continue. • Investigation of multiple alternative products and specifications resulted in selection of the proposed solution due to robustness and long life.
Stakeholder evaluation and consultation status	• Consultation on Phase 1 carried out in 2013 - €1.5m. Consultation on Phases 2 and 3. • This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• New roofing membrane with a manufacturer and installer warranty of 20 years. Standard warranties will apply to all other installations.
Expected Commencement :	• 2015
Expected Duration :	• 3 Years
Asset life :	• 20 Years

CIP 15.7.104 : HVAC / BMS Upgrades and Replacements T1	
Project Rationale: Heating Ventilation and Air-Conditioning (HVAC) plant and equipment provide essential space control of the internal environment of the heating and cooling within Terminal and Piers. Various components critical to reliable operation will become life expired and must be replaced, e.g. HVAC in Pier 3 originally installed in mid 1970s and HVAC Pier 2 originally installed in early 1990s in addition much of Pier 2 public areas are not provided with air-conditioning. Generally these systems comprise centralised air handling plants with heating and cooling coils and associated distribution air ducting and grilles for full climate control. Heating source is by pumped piped systems, heating water generation in T1 Energy Centre. Further it is proposed to replace the older generations of the HVAC Building Management System (BMS). This BMS performs the high level controls and monitoring including supervisory control and data acquisition for all main HVAC systems in T1 and associated Piers. It consists of primary servers with GUI workstations and mobile devices and it has network connectivity to distributed outstations. It was originally installed in the early 1990s and has been extended and modified over the years, and will become life expired within the next 5 years.	
Classification : Piers and Terminals	**Overall Capex Type** : Capital Maintenance
Primary Driver : Infrastructure Integrity	**Secondary Driver(s)** : Sustainability
Pier 2 and 3 HVAC Scope New System Upgraded System  	
Total Capex Requirement :	• €7.40m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €7.40m
Underpinning Assumptions and Cost Benchmarks	• Previous tendered similar works, particularly in Pier300

	• Working airside in live terminal • Shift working
Opex Impacts	• End of life cycle of critical components which must be replaced. • Systems will become unreliable, causing severe disruption to airport operations and business. • P & L will be impacted by costly emergency repairs if the proposed replacements do not proceed when needed.
Alternative Solutions Reviewed	• These are essential equipment upgrades
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• HVAC Pier 300, replace • HVAC Pier 200 new areas and replace existing to first floor • T1 HVAC BMS System Upgrades
Expected Commencement :	• 2017
Expected Duration :	• Phased over 3 years
Asset life :	• 25 years

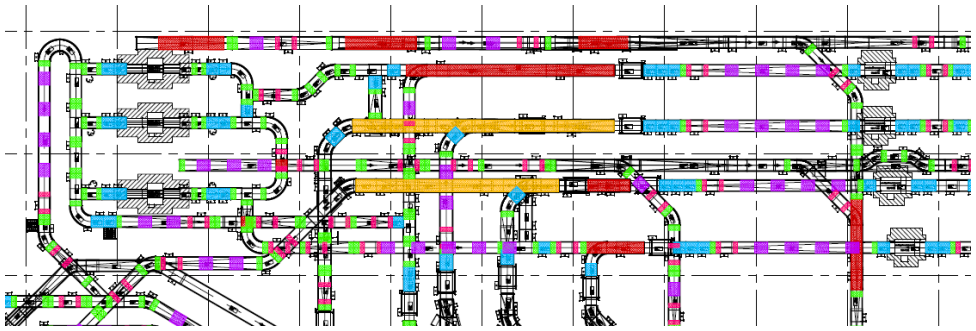
Business Development Projects

CIP 15.2.017: Consolidated Staff Car-park	
Project Rationale : Staff Car Parking is currently fragmented over the airport campus and now at capacity. Car park users regularly have difficulty in locating a space at peak demand times. Much of the current staff parking is located on potential revenue development sites in prime locations within the campus. This project provides for the consolidation of staff car parking into one large car-park providing 2,000 spaces single location at Eastlands. This will maximise efficiency of land use and operational costs.	
Classification: Airport Infrastructure	**Overall Capex Type**: Business Development
Primary Driver: Operational Efficiency	**Secondary Driver(s)**: Commercial Opportunity

Locations of existing staff car-parking facilities

Total Capex Requirement :	• €1.50m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €1.50m
Underpinning Assumptions and Cost Benchmarks	• 2000 spaces • Gravel parking • Asphalt circulation corridors • Road-markings

	• High mast lighting • Bus-shelters
Alternative Solutions Reviewed	• Leave parking provision as is.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• 2000 staff car spaces
Expected Commencement :	• 2015
Expected Duration :	• 1 Year
Asset life :	• 25 years

CIP 15.4.003 : T2 HBS Standard 3	
Project Rationale: *In Ireland, as with most European States with large Airports, the mandatory screening of all outbound hold baggage is managed via a 5 level Hold Baggage Screening (HBS) system based on EDS (Explosive Detection System) technology integrated into the Baggage Handling System (BHS) at each Airport.* *The use of EDS technology in European Airports is regulated by the European Commission via Directives enacted throughout the member states. There are currently three Standards for EDS screening equipment.* *The* existing Terminal 2 HBS system was brought into operation in November 2010 deployed with a mix of Standard 2 and Standard 3 EDS. These Standard 2 EDS are due to expire on 1 September 2020 currently (in line with Regulation (EU) No 185/2010 and amending Regulation (EU) No 1087/2011). In addition the EDS screening machines currently deployed have an asset life of 10-12 years and will be end of life by 2020-22. The DAA will also investigate the possibility of prolonging the use of the existing Standard 2 equipment to 2022 if permissible by the appropriate authority. This project comprises the upgrade of the existing T2 baggage systems to deploy Standard 3 EDS systems in line with the current Legislative requirements. The works will involve the replacement of existing EDS screening equipment and upgrades to the existing BHS systems to incorporate the new Standard 3 EDS solution. The HBS systems in use in Dublin T1 has been upgraded to Standard 2 in 2013 and are expected to be maintained to 2022 (DAA expected to request extension from appropriate authority for use to 1 September 2022 as per section 12.4.2.8 of Regulation (EU) No 1087/2011). The lead-in time for the delivery of this upgrade is estimated at 18-24 months currently, including design, tender, construction and commissioning. The upgrade works will be phased to minimise operational impacts. This investment will bring the Terminal 2 HBS systems at Dublin Airport in line with the current EU legislation and in line with other major airports across Europe.	
Classification : Plant and Equipment	**Overall Capex Type** : Business Development
Primary Driver : Regulatory	**Secondary Driver(s)** : Best Practice
	
Total Capex Requirement :	• €13.0m

Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €13.0m
Underpinning Assumptions and Cost Benchmarks	• Existing BHS system to be maintained in current operational layout. • Existing HBS screening equipment to be replaced for inline Standard3 EDS screening machines (based on current machines on market). • Requirement to incorporate Level 3 holding loop in BHS system to service new screening operation. • Cost data derived from recent Project costs from 2008 T2 Project and 2013 HBS Upgrade Project.
Opex Impacts	• The new screening machines will have an increased opex cost per annum based on additional maintenance requirements.
Alternative Solutions Reviewed	• As legislative driven no alternate options available. With emerging technologies there may be alternative design solutions to meet Standard 3 requirements at the point in time where this project goes into detailed design.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Dedicated OOG Screening Machine - Standard 3 EDS • Transfers / Re-Flight Screening Machine – Standard 3 EDS • Replacement of 4 existing Standard 2 EDS with Standard 3 EDS • Replacement of Standard 3 screening facility with Level 3 BHS holding loop
Expected Commencement :	• 2018
Expected Duration :	• 2 Years
Asset life :	• 10-12 years

CIP 15.4.004 : Central Search Area – New Technologies

Project Rationale:

The terminal central search areas are an essential component of our operations at Dublin Airport. As well as the requirement to operate efficiently and smoothly they must first and foremost comply with both EU and International Compliance Regulations with respect to air travel security.

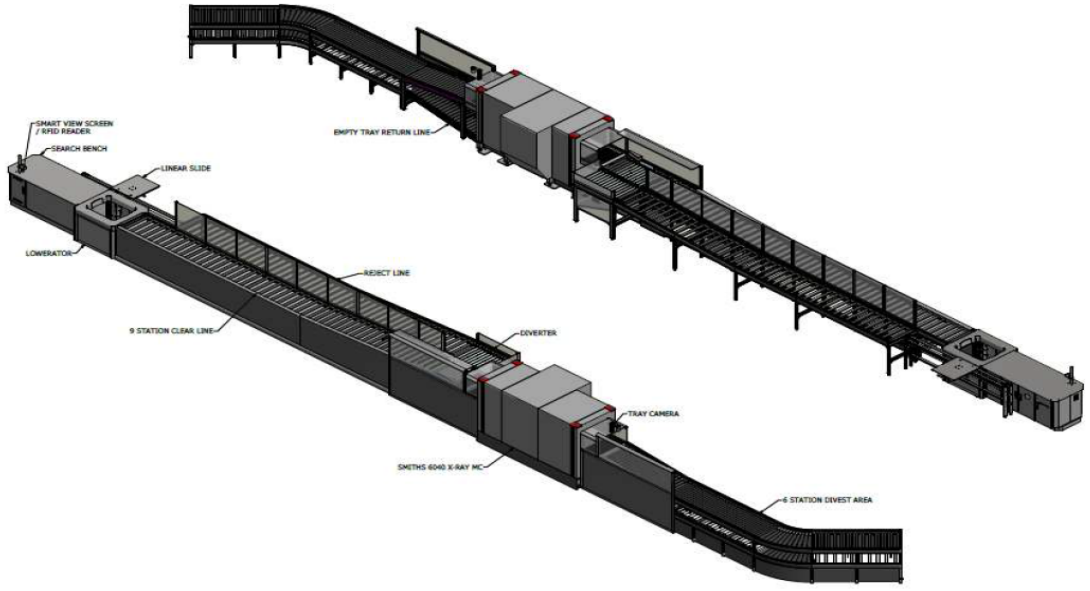
Changes in the EU LAGS Regulations (Liquids Aerosols and Gels) are being introduced in 2014 and 2016, in addition it is also looking increasingly likely that ETD (Explosive Trace Detection) screening will also be introduced by the EU in the next 2 to 5 years. In line with these changes a number of new screening technologies will need to be installed to ensure regulatory Compliance.

It is essential that despite the introduction of these new compliance measures processing throughput is not adversely affected as current CAR queue regulations will still apply. To combat the effects that the new regulations and the projected increase in passenger figures will have on throughput capability, automated lane software and automated tray return solutions will need to be installed. Automated lane software will allow for a lane's performance to be measured effectively thus ensuring that the associated process efficiencies are maximized. In addition to improving throughput rates, the automated tray return systems will also help to reduce the number of work related accidents from the existing manual tray return systems.

This project provides for the upgrading of essential equipment within the existing layouts of the search areas in T1, T2 and T2 transfers.

Projects to address future forecast demand beyond the capacity enabled within this project are addressed elsewhere within these capital investment proposals.

Classification : Plant and Equipment	**Overall Capex Type** : Business Development
Primary Driver : Regulatory	**Secondary Driver(s)** : Growth and Operational Efficiency

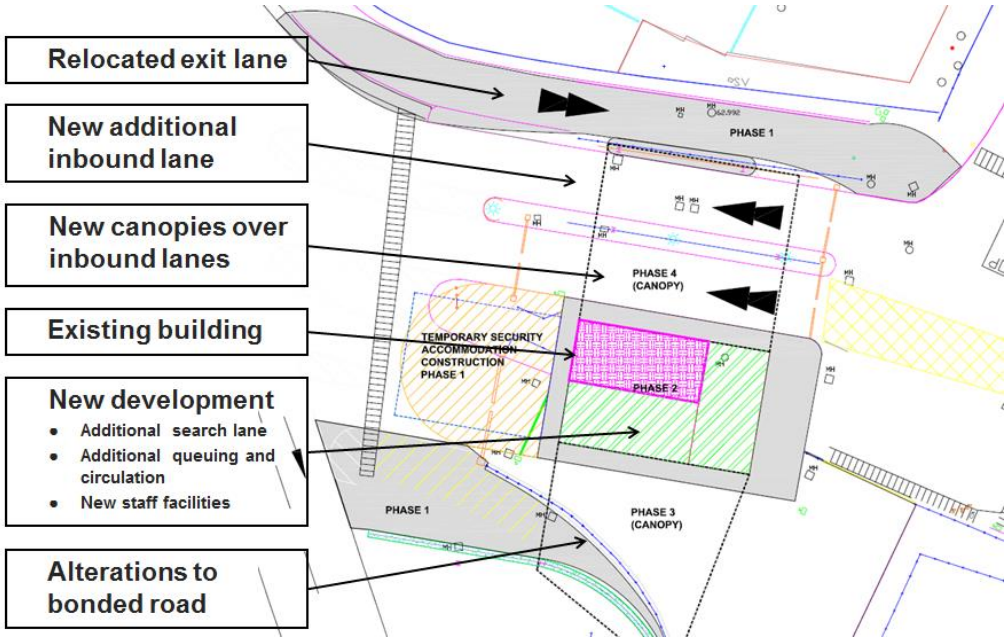


Smart Lane Setup

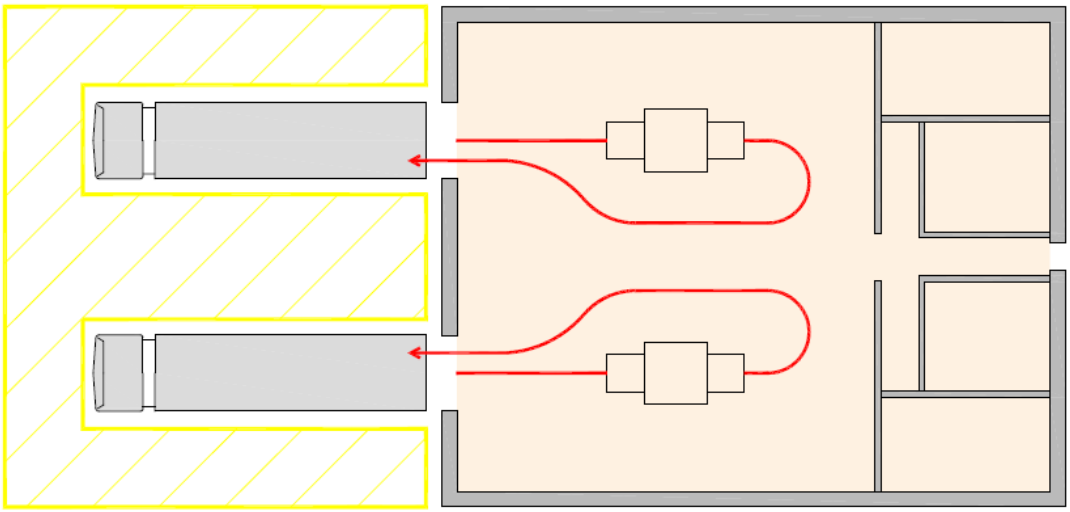
Total Capex Requirement :	• €11.60m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €11.60m
Underpinning Assumptions and Cost Benchmarks	• No further major regulatory changes will be implemented in the next five years.
Opex Impacts	• The new technologies will negate the effects of the additional screening time for LAGS
Alternative Solutions Reviewed	• No alternative solution for installation of LAGS equipment due to compliance regulations. • Manual tray returns installed with no automation. Although this would provide a cheaper alternative it is not feasible due to space constraints, implication on staffing and impact for queue time.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• All existing equipment is replaced in line with legislation. • Automated lanes with associated software. • ETD machines to be installed with network capability • Digital Signage installed. • LAG Machines
Expected Commencement :	• 2015
Expected Duration :	• 2 Years
Asset life :	• 10 Years

CIP 15.6.007 : Airfield Infrastructure Upgrades for New Large Aircraft	
Project Rationale: Dublin Airport is categorised as a code 4E aerodrome in accordance with ICAO Annex 14 classification. The taxiway / apron infrastructure has in general been developed in line to reflect this status. While this category includes aircraft such as the B747-400, the infrastructure in parts, constructed in the 1980's and 90's does not facilitate the efficient manoeuvring of more recent additions to the large aircraft category. Aircraft such as the B777-300ER and the A340-600 are at the upper end of the category and while acceptable in the context of their wing-span, their long wheel base requires a significant pavement area in which to manoeuvre efficiently and safely. Some of the existing taxiway alignments including taxiway intersection areas were designed based on the much more manoeuvrable B747-400 as the design aircraft. These more recent aircraft types are more onerous to taxi on the taxiways / aprons with pilots having to use on-board cameras together with pilot judgemental over-steering to assist their operation on the ground. This project increases the width at some key intersections to overcome these issues. It is the airport's responsibility to ensure the safe and efficient operation of all aircraft on the airfield, regardless of size.	
Classification : Airfield	**Overall Capex Type** : Business Development
Primary Driver : Business volume growth	**Secondary Driver(s)** : Operational efficiency
	
Total Capex Requirement :	• €1.50m

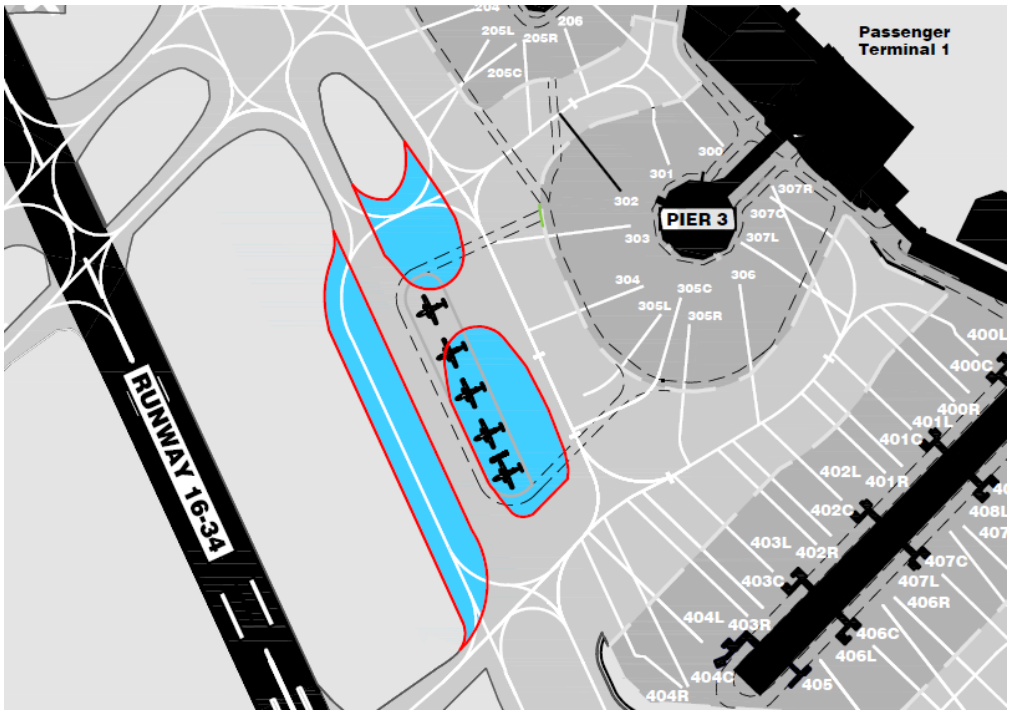
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €1.50m
Underpinning Assumptions and Cost Benchmarks	• Full taxilane construction • Night working • Multiple Phase • Minor alterations to existing lighting systems
Alternative Solutions Reviewed	• No viable alternatives proposed.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• 3,000m2 of Taxilane fillets • Alterations to AGL
Expected Commencement :	• 2017
Expected Duration :	• 6 Months
Asset life :	• 25 Years

CIP 15.6.021 : Cargo Gate Redevelopment	
Project Rationale: Due to capacity, compliance and staff welfare issues a need to upgrade the Cargo Gate has been identified. The gate redevelopment will allow for an increase in the processing capability of persons and vehicles which will address both capacity and compliance issues. An important element of improving efficiencies and staff morale at the gate will be the development of onsite welfare facilities for staff. Currently staff that require the use of welfare facilities must leave the post and go across the road into an Aer Lingus facility. In addition staff are driven to and from the post from the Terminal for breaks and end/start of shifts. Over an average week 20 Coordinator/Supervisors hours are lost due to the transporting of staff to and from the Cargo Gate. Key business benefits that will be delivered by this project include: • Increased capacity for person and vehicle throughput for both bonded and non-bonded deliveries. • Additional space at the Gate will address some compliance concerns. • Reduction in weekly wastage of half a FTE at Coordinator/Supervisor due to taxiing of staff back and forth to the Terminal for breaks. • The provision of welfare facilities onsite will raise staff morale thereby increasing compliance rates and customer service provision at the gate.	
Classification : Airfield	**Overall Capex Type** : Business Development
Primary Driver : Capacity	**Secondary Driver(s)** : Operational Efficiency
 **Indicative Layout**	
Total Capex Requirement :	• €1.80m

Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €1.80m
Underpinning Assumptions and Cost Benchmarks	• Extension costs are benchmarked from other industry and airport campus projects. • Additional lanes to increase vehicle throughput and extension of existing footprint of structure with inclusion of onsite welfare facilities for staff • Phased construction while Cargo Gate is in operation. • Provision for temporary security accommodation during construction.
Opex Impacts	• It is expected that there will be no additional opex costs and there will be a saving of half a FTE Coordinator/Supervisor through the provision of onsite facilities.
Alternative Solutions Reviewed	• Increase person screening capacity, this would not address the vehicle capacity issue or the staff welfare issues. • Increase vehicle capacity, this would not address the person screening capacity or the staff welfare issues.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Cargo gate will have an additional lane for processing of inbound vehicles and an additional WTMD to increase capability for screening persons. • Onsite staff welfare facilities at Cargo Gate, to bring Gate in line facilities available at the other gates.
Expected Commencement :	• 2015
Expected Duration :	• 1 Year
Asset life :	• 20Years

CIP 15.6.022 : Airport Screening Centre	
Project Rationale; This project will allow for improved efficiencies in the landside/airside logistics operations by creating a dedicated screening centre. This centre will be located on the Dublin Airport Campus and will utilise an existing empty property. The Screening Centre will be a one stop shop for screening of deliveries and provision of permits for unknown supplies wishing to drive from landside to airside. The facility will mitigate the delays that these types of deliveries cause at the gates.	
Classification : Airfield	**Overall Capex Type** : Business Development
Primary Driver : Capacity	**Secondary Driver(s)** : Operational Efficiency
 **Indicative Layout**	
Total Capex Requirement :	• €0.75m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 - 2019)	• €0.75m
Underpinning Assumptions and Cost Benchmarks	• The existing building will not require any significant repairs or alternations. • Existing building will provide adequate external truck access • 2 Cargo screening lines will be provided
Opex Impacts	• It is envisaged that by using a screening centre to screen items before they reach the vehicle control point the requirement for certain deliveries to enter airside through a particular vehicle control point will be eliminated. • This will increase the flexibility for certain VCPs to adjust their opening and closing hours, without adversely affecting access for customers, thereby potentially leading to a reduction in man hours.

Alternative Solutions Reviewed	• Continue to use an off-site third party to manage screening and delivery of goods.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Refurbished Warehouse Space • 2 Cargo screening lines • Staff facilities
Expected Commencement :	• 2015
Expected Duration :	• 1 Years
Asset life :	• 20 Years

CIP 15.6.023 : New Apron Development 300R	
Project rationale: This project provides 5 remote stands for commuter / regional type aircraft such as the ATR42/72 and Avro 85 which would be in closer proximity to Terminal 2 and the proposed new T2 bussing facility than the proposed Apron 5G to the North of Pier 1. Although not strictly required from an aircraft stand capacity perspective, the close proximity to T2 operations would provide the benefits of avoiding duplication of ground handling equipment on different apron areas and provides a more efficient operation through shortened travel distances for regional services bussed to/from T2. It also benefits from the means of aircraft stand entry / exit, which is entirely a self-manoeuvring procedure, thus avoiding push-back operations and the potential to cause delay to both the aircraft on stand and the adjacent apron taxiway.	
Classification : Airfield	**Overall Capex Type** : Business Development
Primary Driver : Operational efficiency	**Secondary Driver(s)** : Capacity
	
Total Capex Requirement :	• €8.2m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 - 2019)	• €8.2m
Underpinning Assumptions and Cost Benchmarks	• Apron to be constructed with concrete finish • Apron to be provided with apron floodlighting and pavement paint markings • Attenuation also provided
Opex Impacts	• Potential opex savings for stakeholders (ground

	handlers/airlines) by avoiding duplication of ground handling equipment due to proximity to T2 • Shorter travel distances for bussing to/from T2
Alternative Solutions Reviewed	• Use of new stands on proposed new Apron 5G – longer travel distances • West apron stands are restricted in use to overnight parking, long-stay, 'tech' aircraft and to provide resilience for circumstances that cause disruption to the daily operation, such as severe weather and special events. Runway 28 / 34 dual runway operational periods (06-30 to 0800hrs) hamper the ability of towing over-night aircraft to the main apron for servicing and boarding passengers • Additional remote stands on the South apron, which require the relocation of significant blocks of infrastructure including cargo terminals, airside maintenance facilities and other miscellaneous elements of infrastructure
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Provision of 5 stands capable of accommodating commuter / regional aircraft types (e.g. ATR72)
Expected Commencement :	• 2015 – 2019 (exact timing of delivery subject to airline requirements)
Expected Duration :	• 2 Years
Asset life :	• 20 Years

CIP 15.6.047: New Apron Development 5G

Project Rationale:

The daa undertakes annual rolling 5-year forecast passenger and aircraft demand versus capacity studies. Using forecast busy day flight schedules, stand demand profiles are generated as part of this process. Conclusions from recent studies continue to highlight the need for additional aircraft parking capacity on the apron east of Runway 16/34.

While the airport has 94 (narrow-body equivalent) stands in total, 71 are available as fully operational stands (contact / remote) on the apron east of Runway 16/34. This apron is used for both passenger and integrator cargo aircraft operations and from time to time, executive aircraft. Current utilisation data identifies during the peak week of 2013 an average daily demand of 71 stands, peaking at 74.

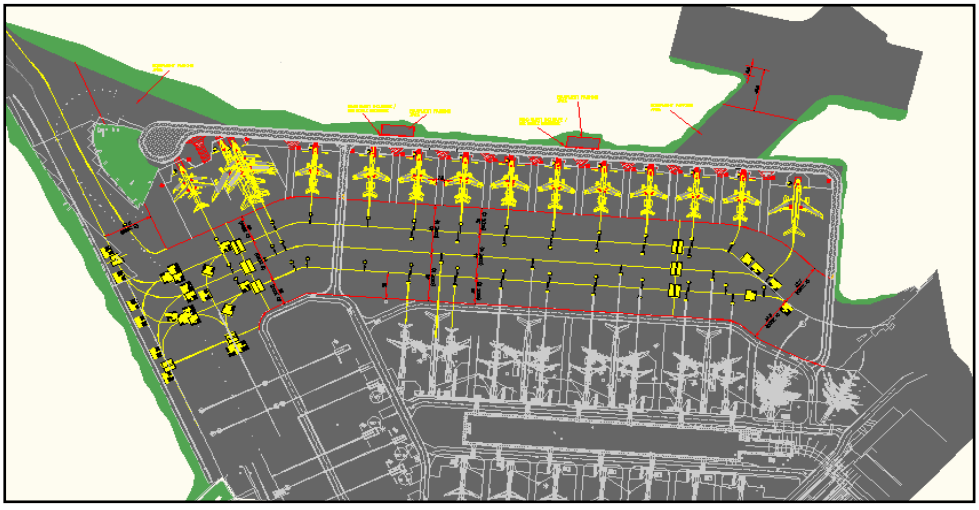
Apron 5G depicted below was intended to be constructed in 2008, but due to a significant downturn in airline demand at the time, the project was deferred until it could be shown that future forecast demand was sufficient to trigger its delivery in a timely manner.

The configuration of the layout incorporates the five existing stands displaced in order to provide the most efficient layout which delivers a net 9 additional stands and greatly increases flexibility and efficiency in the taxiway system, allowing ICAO 'code C' aircraft types to pass in opposite directions, effectively removing the 'cul-de-sac' effect for the most demanding aircraft types operating in this part of the aerodrome, both at Pier 1 and the Hangar area.

Benefits include improvement of on-time performance, particularly during busy periods, assisting airlines reduce fuel costs attributable to holding on taxiways and opex costs associated with delays.

Forecast growth for stand demand necessitates the delivery of this critical Airside Infrastructure within the next Capital Investment Programme.

Classification : Airfield	**Overall Capex Type** : Business Development
Primary Driver : Capacity	**Secondary Driver(s)** : Operational efficiency

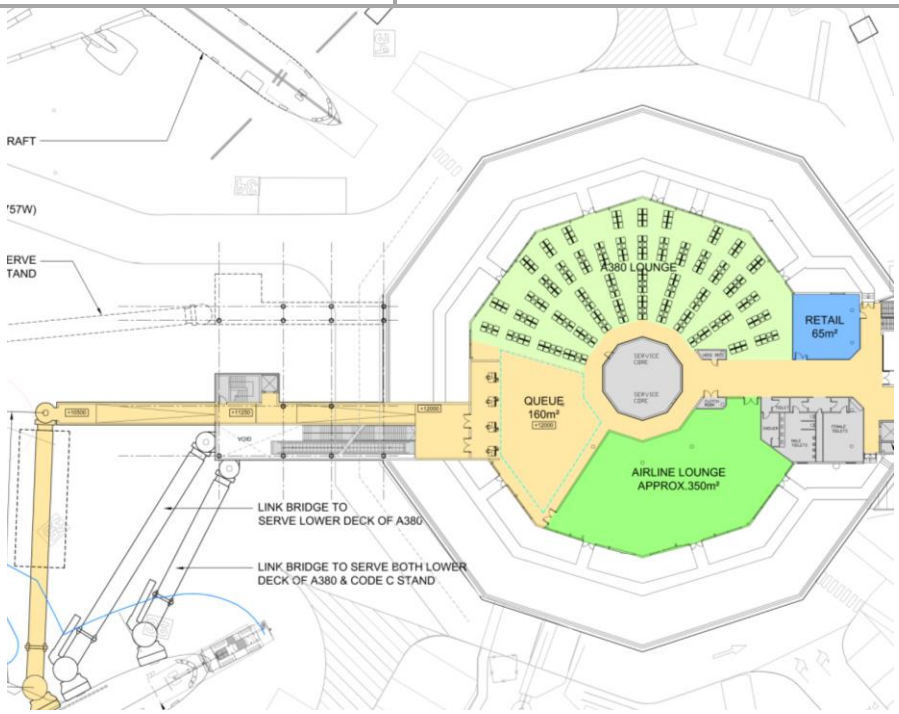


Total Capex Requirement :	• €18.20m

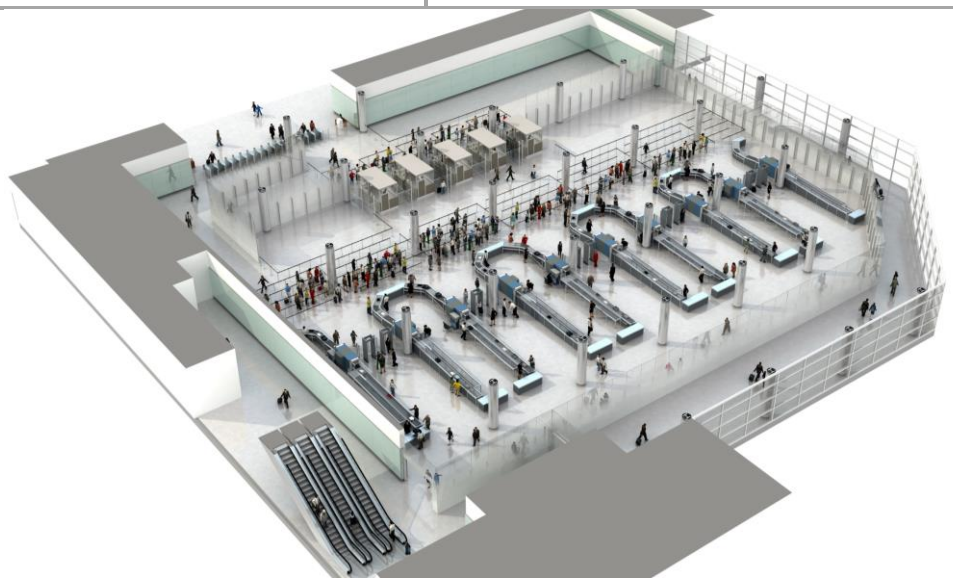
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €18.20m
Underpinning Assumptions and Cost Benchmarks	• Apron to be constructed with concrete finish. • Apron to be provided with AGL, Floodlighting, and pavement markings. • Attenuation also provided. • DAA Cost Database – Derived from tenders received in 2008 adjusted for inflation.
Alternative Solutions Reviewed	• West apron stands are restricted in use to overnight parking, long-stay, 'tech' aircraft and to provide resilience for circumstances that cause disruption to the daily operation, such as severe weather and special events. Runway 28 / 34 dual runway operational periods (06.30 to 08.00hrs) hamper the ability of towing over-night aircraft to the main apron for servicing and boarding passengers • Remote stands on the South apron, which require the relocation of significant blocks of infrastructure including cargo terminals, airside maintenance facilities and other miscellaneous elements of infrastructure
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• 66,160 sq m of aircraft parking • Single configuration design will provide: ➢ 13 stands - maximising ICAO code C aircraft stand configuration *or* ➢ 12 stands - maximising ICAO code E aircraft stand configuration • Apron will provide a net 9 additional stands (ICAO code C maximisation configuration) • Greater efficiency of the taxiway system adjacent to the north side of Pier 1 by providing dual code C taxilanes, allowing simultaneous inbound /outbound traffic flow
Expected Commencement :	• 2015
Expected Duration :	• 18 Months
Asset life :	• 25 Years

CIP 15.7.103 : Fixed Electrical Ground Power Pier 1	
Project Rationale: FEGP is provided at many large/medium-sized European airports to minimize fuel consumption and resulting emissions from aircraft and airport-related sources including ground service equipment (GSE). It significantly reduces the running of aircraft Auxiliary Power Units (APUs) which are noisy and fuel inefficient during block-times as well as eliminated the use of mobile (diesel-powered) ground power units (GPUs). When constructed in October 2007, Pier 1 made allowance for the possible future installation of 400Hz (90kVA) Fixed Electrical Ground Power (FEGP) to serve its 17 contact stands. Pier 1 is mainly used by Code C aircraft on fast turnaround short-haul services to the UK and Continental Europe.	
Classification : Piers and Terminals	**Overall Capex Type** : Business Development
Primary Driver : Operational Efficiency	**Secondary Driver(s)** : Aircraft Fuel Burn and Emissions Reduction
Aerobridge Mounted 400Hz FEGP Units  	Solid state 'head of stand' 400Hz FEGP Boxes 
Total Capex Requirement :	• €1.50m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €1.50m
Underpinning Assumptions and Cost Benchmarks	• Scope of work comprises the installation of 400Hz FEGP units at all 17 contact stands serving Pier 1. • Works to be phased starting with installation and connections on northern stands followed by southern stands. • All-weather operational capability with flexible cables, aircraft connection plugs as well as frequency converters and DC power systems. • Rated power 90kVA with an input current of 135A. • 180kVA of rated power will be required to serve MARS configured stands for Code E aircraft operations.

Alternative Solutions Reviewed	• Continue with GPU • Extend ground power provision to Piers 2 and 3 (Additional CAPEX €2.75m)
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• New solid state, all-weather 400Hz FEGP equipped stands serving Pier 1, reducing ramp clutter and aircraft fuel use and emissions during block turnarounds.
Expected Commencement :	• 2015
Expected Duration :	• 1 Year
Asset life :	• 15 years

CIP 15.7.116 : Pier 3 Flexibility	
Project Rationale: In times of ever-increasing focus on minimising environmental impact, the aviation industry is constantly looking towards the use of more efficient aircraft. Increased fuel efficiency, reduction in emissions and larger payloads all contribute towards reducing their carbon footprint. The arrival of "Code-F" aircraft, such as the Airbus A380 and Boeing 747-8I offer such benefits to airline operators. Airlines utilising Code-F aircraft in their fleet are only able to charter such flights to airports that offer Code-F compatible stands. This proposal will contribute to improving the layout, appearance and functionality of Terminal 1 and will stand to attract such new business to the airport. The addition of Code-F compatibility will offer further opportunity to attract further business from airlines operating code-F type aircraft outside of Dublin.	
Classification : Piers and Terminals	**Overall Capex Type** : Business Development
Primary Driver : Business Volume Growth	**Secondary Driver(s)** : Operational Efficiency
	
Total Capex Requirement :	• €15.00m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 - 2019)	• €15.00m
Underpinning Assumptions and Cost Benchmarks	• Refurbishment of areas affected by reconfiguration only. • Adaptions only to existing services. • Allowance for phasing of works but no allowance for any temporary facilities. • Assumed all work done during normal working hours,

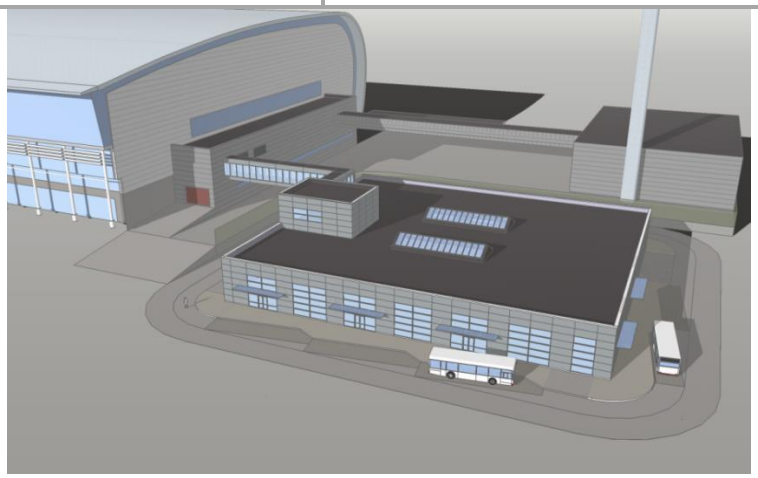
	no allowance for night working. • Costs based on benchmarks from similar projects adjusted to current market prices.
Alternative Solutions Reviewed	• A380 Stand feasibility (including provision of triple-airbridges, increased lounge capacity and stand allocation) carried out on Pier 1 and Pier 4.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process. • daa Aviation Business Development have stated that Emirates are currently investigating the possibility of locating A380s in Dublin due to market demand.
Project Output	• Pier 3 upgraded to facilitate Code-F Aircraft Passenger numbers
Expected Commencement :	• 2015
Expected Duration :	• 2 Years
Asset life :	• 25 Years

CIP 15.7.117 : Transfers Facility	
Project Rationale; This project is required to accommodate forecast transfer pax. volume growth. The project will facilitate the development of the market potential for Dublin to operate as a transfer hub between aircraft Europe/Middle East and North America (US and Canada). Combined attraction of the US pre-clearance facility, Dublin's strong Origin and Destination, US Traffic demand and the optimum geographic location on the periphery of Western Europe are the drivers for developing transfer traffic at Dublin Airport. The new facility has been sized based on a sensitivity analysis of the core growth forecast to be capable of handling forecasted transfer market growth.	
Classification : Piers and Terminals	**Overall Capex Type** : Business Development
Primary Driver : Business Volume Growth	**Secondary Driver(s)** : Operational Efficiency
	
Total Capex Requirement :	• €21.50m
Historic Expenditure (pre 2015)	• €0.00
CIP Expenditure (2015 – 2019)	• €21.50m
Underpinning Assumptions and Cost Benchmarks	• No strengthening of existing foundations or ground floor structure required. • Refurbishment of areas affected by reconfiguration only. • Airside Restrictions. • Adaptions to existing services within adjacent areas local to extension only. • Allowance for phasing of works but no allowance for any temporary facilities. • Assumed all work done during normal working hours, no allowance for night working. • Costs based on benchmarks from similar projects adjusted to current market prices.

Opex Impacts	• Maintenance and repairs costs are estimated to reduce by 5% as a result of having new equipment, upgraded floor finishes etc. • Transfers Options provide 7 additional security lanes, this will raise security staff costs. However, there are opportunities for a more efficient shift pattern.
Alternative Solutions Reviewed	• A number of locations and options for housing a new transfer facility were explored, taking into consideration transferring passenger traffic flows, utilisation of existing security screening infrastructure and physical requirements arising high-growth scenarios.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process. • When surveyed, a number of airlines stated their preferred Minimum Connect Times (MCT). The proposed facility has been designed to reduce processing time through transfers and help reduce MCTs. • Improved T1/T2 passenger connections both airside and landside have been requested, including better way-finding.
Project Output	• 13 Autopass Lanes • 10 Immigration Desks • Area c. 5,184m^2 • 10 Security Lanes • New airside link to Terminal 1 and Terminal 2
Expected Commencement :	• 2019
Expected Duration :	• 1 Year
Asset life :	• 25 years

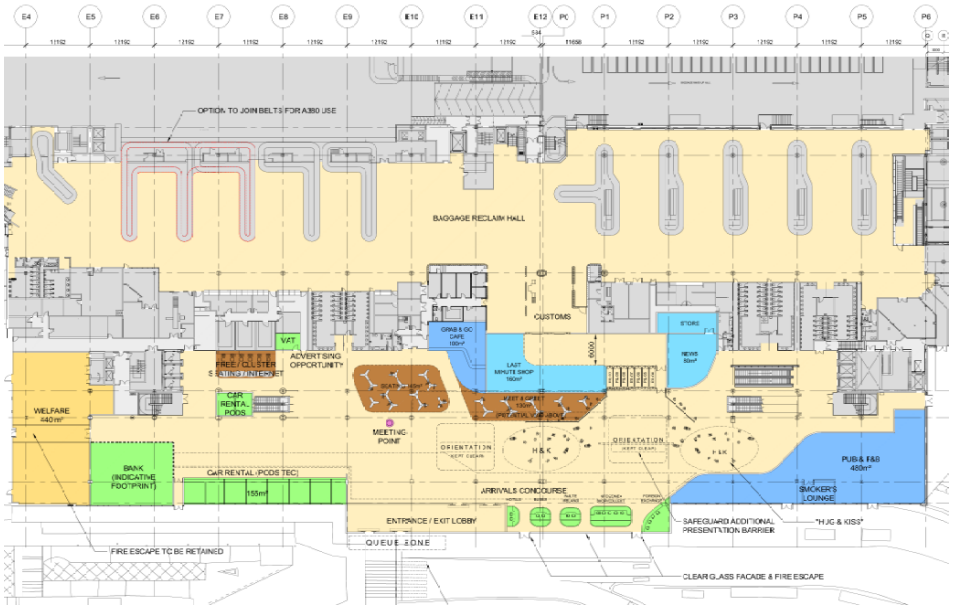
CIP 15.7.119 : T1 Façade Works	
Project Rationale: The original Terminal 1 design from 1970 presented itself as a clearly defined building volume, clad in concrete fins with exposed aggregate surface. In the course of the construction history of Terminal 1, this concept has not stood the test of time. Later additions and refurbishments have resulted in the Terminal facade becoming a collection of different volumes, cladding materials and systems, with the now-aged concrete fins still being the dominant element. The building envelope is in need of refurbishment in order to replace damaged or life expired elements, such as the second floor plant room louvers. This project consists of cleaning, painting and repairing of existing concrete fins, paint existing louvers internally and externally, replace damaged louvers, clean and paint existing metal balustrade.	
Classification : Piers and Terminals	**Overall Capex Type** : Business Development
Primary Driver : Business Volume Growth	**Secondary Driver(s)** : Improved Passenger Experience
 Artists Impression of renewed fins.	
Total Capex Requirement :	• €0.67m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 - 2019)	• €0.67m
Underpinning Assumptions and Cost Benchmarks	• Scope of work comprises the replacement and refurbishment of selected elements of the Building Envelope and Facades • Works to be carried out on a phased basis.

	• Costs based on current market prices applied to approximate quantities.
Alternative Solutions Reviewed	• A number of options have been developed offering different levels of financial affordability.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Refurbished and Refreshed Facade to Terminal 1
Expected Commencement :	• 2015
Expected Duration :	• 1 Year
Asset life :	• 20 years

CIP 15.7.120 : T2 Bus Lounge Facilities	
Project Rationale: A bussing facility is required east of Terminal 2 in order to: • Meet forecast growth of T2 based airlines • Optimise use of existing aircraft stand infrastructure • Increase the flexibility of airline operations • Reduce capital expenditure associated with potential new pier infrastructure This Bussing Facility will maximise the existing terminal capacity enabling access to remote stands.	
Classification : Piers and Terminals	**Overall Capex Type** : Business Development
Primary Driver : Business Volume Growth	**Secondary Driver(s)** : Operational Efficiency
	
Total Capex Requirement :	• €13.30m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 - 2019)	• €13.30m
Underpinning Assumptions and Cost Benchmarks	• New build • Airside restrictions • Assumed all work carried out during normal working hours, no allowance for night working. • Costs based on benchmarks from similar projects adjusted to current market prices.
Alternative Solutions Reviewed	• Numerous potential locations for a new Bussing Facility were considered. These included utilisation of the OCTB as a bussing lounge and also operations based in Piers 4 and 3.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.

Project Output	• Bus lounge facility with a capacity of 9 gates (6 Code-C and 3 ATR72)
Expected Commencement :	• 2016
Expected Duration :	• 2 Years
Asset life :	• 25 years

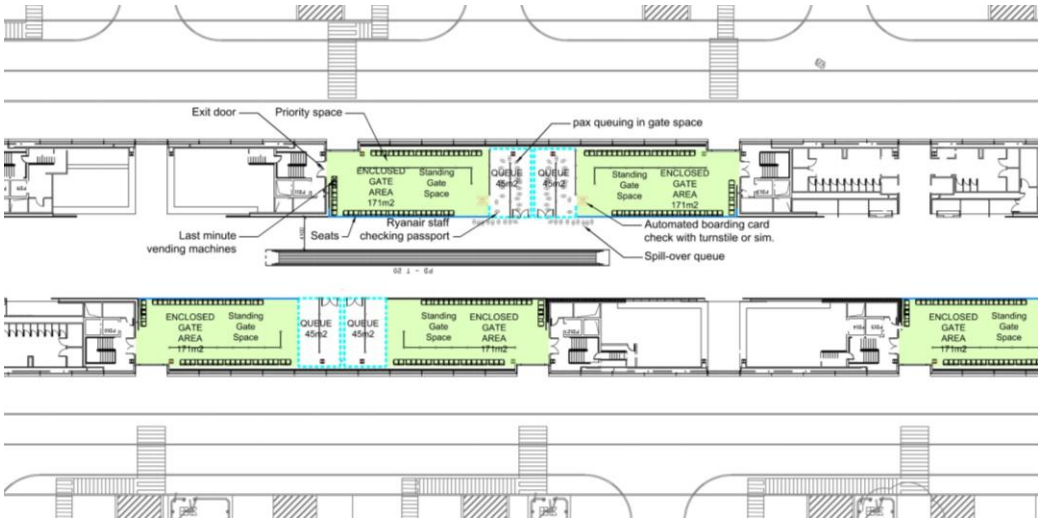
CIP 15.7.121 : T1 Arrivals	
Project Rationale: This project is required to facilitate improved passenger movement and enhance the customer experience, achieving the following aims: • Enhance the look and feel of the area by providing a fresh and unified appearance across the terminal building • Refurbish existing 'tired' facilities • Ensure intuitive passenger flows to the exit and modes of transport via unimpeded exit routes • Provide adequate dwell areas for meeters and greeters and areas to congregate for groups • Provide the required information at the right time • Provide space for additional retail, food and beverage for arriving passengers and 'meeters and greeters' • Provide enhanced commercial opportunities	
Classification : Piers and Terminals	**Overall Capex Type** : Business Development
Primary Driver : Business Volume Growth	**Secondary Driver(s)** : Improve Passenger Experience
 Internal view (existing)	 Internal view (proposed)



Proposed plan

Total Capex Requirement :	• €8.90m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €8.90m
Underpinning Assumptions and Cost Benchmarks	• Assumed no major structural requirements to existing façade where line of façade brought forward. • Food & Beverage / Retail areas fitted out by tenant. • Minor alterations only to forecourt where façade brought forward. • Refurbishment of areas affected by reconfiguration only. • Assumed no replacement of plant required. • Adaptions only to existing services. • Allowance for phasing of works but no allowance for any temporary facilities. • Assumed all work carried out during normal working hours, no allowance for night working.
Opex Impacts	• Maintenance and repairs costs are estimated to reduce by 5% as a result of having new equipment, upgraded floor finish etc.
Alternative Solutions Reviewed	• Various Options considered alternative layouts of F+B areas, zoning for ‘Meeters and Greeters’ and consolidating the lobbies.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process. • Consultation with Stakeholders found requests to provide a fresh, unified look across concourse areas, including Arrivals.
Project Output	• Refurbished Arrivals area post-Customs • New last-chance retail unit post-Customs

	• New entrance lobbies • Improved passenger experience
Expected Commencement :	• 2016
Expected Duration :	• 1 Year
Asset life :	• 25 years

CIP 15.7.122 : Pier 1 Enclosed Gate Rooms	
Project Rationale; This project was instigated following a stakeholder consultation process. A request was put forward to provide holding areas after boarding cards had been checked to facilitate improved efficiency of passenger gate room queuing and boarding for airline customers	
Classification : Piers and Terminals	**Overall Capex Type** : Business Development
Primary Driver : Business Volume Growth	**Secondary Driver(s)** : Operational Efficiency
	
Total Capex Requirement :	• €1.10m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €1.10m
Underpinning Assumptions and Cost Benchmarks	• The proposal would limit the flexibility of use of the pier by limiting gate capacities to Code-C type aircraft. • Working in a live terminal environment.
Alternative Solutions Reviewed	• This proposal was designed to meet a specific request. • The recommendation would be to commence with a trial gate before rolling out the solution to the entire pier.
Stakeholder evaluation and consultation status	• Proposal developed based on airline feedback. • This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• 10 Nr. enclosed gates in Pier 1, each with a single access point and an automated boarding card check.

Expected Commencement :	• 2016
Expected Duration :	• 1 Year
Asset life :	• 15 Years

CIP 15.5.002 : Retail IT	
Project Rationale: daa's Retail back office and till systems were installed during CIP period (2010-2014). To ensure that our systems are robust, up to date and serviceable we must invest not only to maintain the system but also to enhance the ease of use, efficiency and to maintain the hardware and software to the most up-to-date versions available.	
Classification : Revenue	**Overall Capex Type**: Business Development
Primary Driver : Operational Efficiency	**Secondary Driver(s)** : Best Practice

Till system in daa Direct retail units

Development of online shopping for customers

Total Capex Requirement :	• €1.55m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 - 2019)	• €1.55m

Underpinning Assumptions and Cost Benchmarks	• Historic IT Costs
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Develop interface Navision/Online system • Replace POS tills / printers • General maintenance of Retail IT systems
Expected Commencement :	• 2015
Expected Duration :	• 5 years
Asset life :	• 5 Years

CIP 15.08.008: DAA Technology Operation and Lifecycle Management

Project Rationale:

DAA IT is a central service that provides key systems infrastructure, processes and controls that support the delivery of critical business systems needed for the safe and efficient running of the airport for its customers.

DAA IT is responsible for centrally managed infrastructure technology that includes data centers, virtual server platforms, storage, databases, networks, end user devices and desktop support services. IT security and compliance also falls within this arena. This infrastructure is the backbone and nervous system on which all the Airport Systems function.

Most of the capital spend contained in this budget is driven by the replacement and upgrading of existing IT infrastructure, which is typically carried out on a five year cycle for the majority of the IT capital assets

The capital required for 2015 – 2019 totals €15.8 million and is broken down over the following categories :

	Category	€m
1.	Infrastructure and Devices	5.3
2.	Operating Platforms and Integration	5.5
3.	Licensing	3.4
4	Network (Fixed and Wi-Fi)	1.6
	Total	**15.8**

Infrastructure and Devices includes the operation and lifecycle management of data centres, communication rooms, virtual servers and storage needed to support a range of business systems required to run Dublin Airport and associated businesses such as Retail and Car Parks. There are in excess of 2000 client devices (Fixed and mobile) utilised by staff throughout Dublin Airport. In addition more than 800 FIDS screens are deployed to provide departure and arrival information. 1,400 CCTV cameras are also in use. Such devices require replacement over a defined refresh cycle. Ongoing investment will ensure that Dublin Airport and its customers benefit from high levels of on-going availability that is needed for 24/7 operations.

Operating Platforms and Integration includes a range of technology based software such as VMware and Oracle, Integration Broker, IT security, Network Management, Service Desk toolset and telephony.

Licensing includes the necessary software licensing that allows DAA to operate the underlying technology platforms, mainly comprising Microsoft and Oracle technology and databases. Networks include the lifecycle management of the Dublin Airport campus area network. This includes the on-going investment required to maintain cabling, active network equipment and security firewalls that are vital to the day to day operations.

Classification : IT	**Overall Capex Type** : Capital Maintenance
Primary Driver : Operational Efficiency	**Secondary Driver(s)** : Best Practice

Total Capex Requirement :	• €15.80mm
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €15.80m
Underpinning Assumptions and Cost Benchmarks	• Capital cost assumptions are based on market pricing where available or internal technical expert opinion where recent market pricing was not available. Projects are competitively tendered and market discount rates are consistently achieved through this process. • SITA index, benchmarked across 122 airports worldwide indicates that airports spend on IT Capex and Opex in 2013 was 5.43% of turnover. DAA proposed spend is well within these limits. • Market prices and industry standards.
Alternative Solutions Reviewed	• The IT investment proposed in this CIP is the minimum required in order to replace or upgrade hardware and software at the end of the recommended life cycle including T2 which was not part of previous CIP.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Infrastructure and Devices • Operating Platforms and Integration • Licensing • Network (Fixed and Wi-Fi)
Expected Commencement :	• 2015
Expected Duration :	• 5 Years
Asset life :	• 5-7 Years

CIP 15.08.009: DAA Business Systems Investment Plan

Project Rationale:

The daa Group at Dublin Airport consists of a number of business functions that include Dublin Airport Operations, Asset Care, Commercial and Business Support. Each of these functional areas utilise a range of business systems (generally procured and licensed from commercial software vendors) to enable the continuous delivery of services to a broad range of internal and external customers.

The various business systems required by each function are delivered as enterprise solutions where possible. This includes solutions such as Oracle eBusiness Suite (ERP), Business Intelligence, HR and Time and Attendance Systems, Access Control, Telephony and Collaboration Tools.

Business specific solutions are also catered for where required and these include Airport Operations System (AOS), Flight Information Display Systems (FIDS), Queue Measurement Systems (QMS), Autopass, Taxi Management, Car Park Management Systems and Asset Management Systems.

The capital spend contained in this proposal is driven by a combination of replacement and normal course lifecycle upgrades of daa portfolio of business systems. In addition the proposed spend includes a series of new business initiatives that will increase efficiency and/or generate additional revenues.

The capital required to maintain these systems for 2015 – 2019 totals €15.6 million and is broken down over the following categories :

	Category	€m
1.	Dublin Airport Operations	9.2
2.	Asset Care	3.9
3.	Commercial	1.5
4.	Business Support	1.0
	Total	**15.6**

Dublin Airport Operations includes the lifecycle management and functional enhancement of critical systems such as Airport Operations System(AOS). This would ensure that AOS is fully available to support airport operations and that it is always able to meet the on-going needs all stakeholders including airlines, handling agents and ATC. This also applies to other critical systems such as FIDS, QMS, CCTV, Business Intelligence and for airport security systems such as Access Control, Autopass, X-Ray, CCTV and WTMD technologies.

Asset Care includes the lifecycle management and functional enhancement of key support systems that ensure ongoing availability of key services. This includes Baggage Handling,

Building Management, Life Safety systems, Aviation Aids (e.g. airfield lighting) and Maintenance Services. New efficiency initiatives are also planned such as Energy Management systems and Geospatial Information Systems (GIS).

Commercial includes the lifecycle management and functional enhancement of core business activities such as Car Parks, Concessions, Property Management and Advertising and other services such as Airport App, VIP and Executive Lounges. These business systems ensure that the Commercial operation is efficient and is positioned to maximize generation of non-aeronautical revenues.

Business Support includes the lifecycle management and functional enhancement of back office enterprise solutions such as Oracle ERP, HR, Time and Attendance systems, Desktop and Collaboration tools.

Classification : IT	**Overall Capex Type** : Capital Maintenance
Primary Driver : Operational Efficiency	**Secondary Driver(s)** : Best Practice

Total Capex Requirement :	• €15.60m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €15.60m
Underpinning Assumptions and Cost Benchmarks	• On-going investment in Dublin Airport business systems is critical to the safe and efficient running of the airport for its customers and to support the generation of non-aeronautical revenues. • The business system investments proposed in this CIP are the minimum required in order to replace or upgrade hardware and software at the end of the recommended life cycle including T2 systems which were not included in 2010 – 2014 CIP proposal. • Any new business initiatives are justified on the basis that they will deliver greater efficiencies, reduce costs as well as maximising revenue opportunities. • SITA index, benchmarked across 122 airports worldwide indicates that airports spend on IT Capex and Opex in 2013 was 5.43% of turnover. DAA proposed spend is well within these limits. • Market prices and industry standards.
Alternative Solutions Reviewed	• The IT investment proposed in this CIP is the minimum required in order to replace or upgrade hardware and software at the end of the recommended life cycle

	including T2 which was not part of previous CIP.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• See above
Expected Commencement :	• 2015
Expected Duration :	• 5 Years
Asset life :	• 5-7 Years

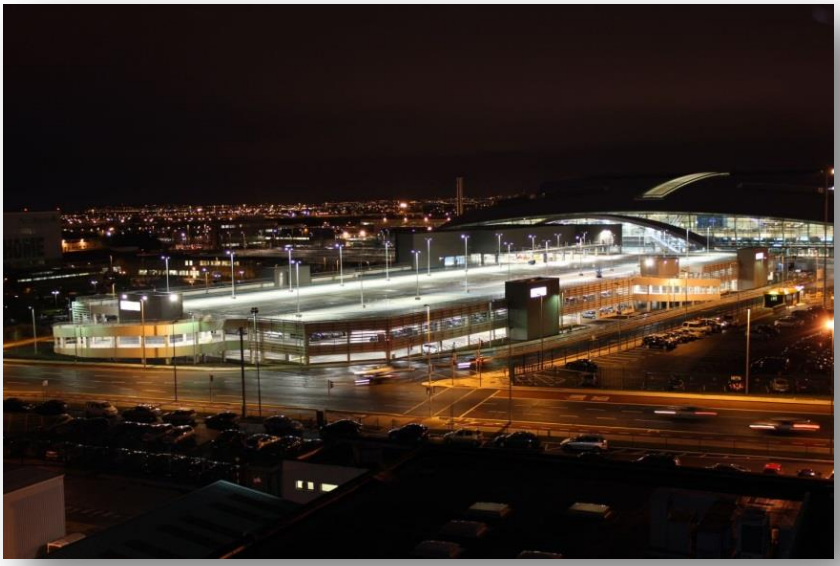
CIP 15.8.009c : Business Innovation Investment	
Project Rationale: daa Group recognises that it must adopt new approaches in order to actively support the growth of air travel and continue to be competitive. In this context the innovative use of Information Technology will be essential to successfully enable and deliver in the following areas: • Lower operating costs • Faster and more efficient passenger flows • New revenue streams, driven by increased retail and services opportunities Business and leisure travelers alike expect the highest level of service. daa wants to use technology and intelligent collaboration for quick, smooth processing combined with optimal security and cost-effectiveness. The objective is to deliver speedier processes – which translate into higher satisfaction rates among passengers, even higher levels of security, lower costs, and increased revenues. A fundamental mindset shift is required from managing a travel 'process' to delivering an integrated travel and leisure 'experience'. Airport services will need to expand further and the provision of ancillary services will deliver additional information and income streams, giving customers more control than ever before over travel and consumer options. Future airport sustainability will be driven by innovation and creativity.	
Classification : Airport Infrastructure	**Overall Capex Type** : Business Development
Primary Driver : Operational Efficiency	**Secondary Driver(s)** : Best Practice
   	
Total Capex Requirement :	• €8.00m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 - 2019)	• €8.00m
Underpinning Assumptions and	• Capital cost assumptions are based on market pricing where available or internal technical expert opinion

Cost Benchmarks	where recent market pricing was not available. All projects are competitively tendered and market discount rates are consistently achieved through this process.
Opex Impacts	• The focus of innovation projects will be the sustainable delivery of Opex cost efficiencies and/or additional revenue
Alternative Solutions Reviewed	• Innovation is about coming up with alternative ways of working and providing customer services
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• By implementing state-of-the-art technology, daa will have the opportunity not only to fulfil customers' complex, changing needs, but also to ensure that its operations are as efficient and cost-effective as possible.
Expected Commencement :	• 2015
Expected Duration :	• A portfolio of innovation projects delivered over a 5 years duration
Asset life :	• 2 – 5 years

Revenue Projects

CIP 15.2.005 : Commercial Hangars Infrastructure	
Project Rationale; There is growing interest amongst General Aviation customers in the development of private aircraft hangars and the daa need to develop services and infrastructure that will enable the future development of hangars for General Aviation – this is proposed for the Westlands precinct. This project allows for a feasibility study and the provision of site infrastructure to facilitate licensing of 4,500m^2 of hangar accommodation in the Westlands.	
Classification: Revenue	**Overall Capex Type**: Business Development
Primary Driver: Commercial Opportunity	**Secondary Driver(s)**: Business Volume Growth
	
Total Capex Requirement :	• €0.63m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €0.63m
Underpinning Assumptions and Cost Benchmarks	• Cost based on provision of infrastructure for up to 3 small hangars.
Opex Impacts	• N/A
Alternative Solutions Reviewed	• N/A
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Provision of utilities, and basic infrastructure to enable private investment in the development of General

	Aviation hangars
Expected Commencement :	• 2015
Expected Duration :	• 6 Months
Asset life :	• 20 years
IRR Exceeds Regulatory WACC	• Yes – 13%
Till Payback less than 5 Years	• No – 7 Years, 5 months
Positive NPV	• Yes - €45k

CIP 15.2.006 : T2 MSCP Phase 2	
Project Rationale: Short Term parking is a unique proposition and a growth area for Dublin Airport Parking. There is no direct competition (unlike Long Term parking) and customers rate the product highly. Indirect competition comes from taxis. We have identified a c. €1.8m pa win by pursuing an aggressive strategy through proactive yield management and our online product. This is a four year strategy and has met its first year targets. One impact of this success is a requirement for additional short term car parking space. At our current price level we are reaching capacity weekly, and maintaining a high average occupancy. Increasing price beyond this limit significantly impacts demand. DAA have already obtained permission to add 753 spaces and a terminal-linked hotel to T2 MSCP in 2009. T2 customers generate the highest yield and greatest demand. Addition of these 753 spaces will bring us up to the maximum allowable short term spaces under the current planning cap.	
Classification: Revenue	**Overall Capex Type**: Business Development
Primary Driver: Business Volume Growth	**Secondary Driver(s)**: Commercial Opportunity
	
Total Capex Requirement :	• €12.30m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €12.30m
Underpinning Assumptions and Cost Benchmarks	• Costs are based on as-built cost for previous phase of the MSCP.
Opex Impacts	• No material impact noted
Alternative Solutions Reviewed	• Do nothing – resultant loss of revenue
Stakeholder evaluation and	• This proposal has been presented to and consulted on

consultation status	with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• 753 Spaces of additional T2 Short Term parking capacity
Expected Commencement :	• 2015
Expected Duration :	• 18 Months
Asset life :	• 25 years
IRR Exceeds Regulatory WACC	• Yes – 13.7%
Till Payback less than 5 Years	• No (8 Years, 2 Months)
Positive NPV	• Yes - €2.06m

CIP 15.2.007 : Cargo Terminal Development and Office Accommodation	
Project Rationale: The proposition is to develop a 'Cargo Central' facility, which would consist of an end-to-end administration centre for Air-Freighted Cargo at Dublin Airport. Currently Cargo administration services have evolved in a fractured manner and include existing services by Airlines, Freight Forwarders, Handlers, Revenue and Customs. Following a feasibility study carried out in association with the Irish Exporters Association it was noted that "Air Freight represents c.1% of volume and 30% of the value of Ireland's imports and exports" (€140Bn in 2012). The administration associated with exports, imports and more recent hubbing of Cargo is ever-increasing in complexity. This is particularly true as the Airlines and Irish industry broaden their reach into new markets. Much of the administration currently takes place in the offices known as Cargo Terminal 1. Within this building the office accommodation is currently 50% vacant and unlettable. This proposal will build on the existing solid foundation of services in Cargo Terminal 1 and extend to services including Financial, Legal / Regulatory Services. It is essentially a 'one-stop-shop' for all Cargo administration. The works will consist of refurbishment of the existing vacant offices of c.1,000m^2 and external upgrades to retain existing tenants and secure new tenants. This would meet current and future needs of the Cargo Administration business at Dublin Airport	
Classification : Revenue	**Overall Capex Type** : Business Development
Primary Driver : Commercial Opportunity	**Secondary Driver(s)** : Best Practice
	
Total Capex Requirement :	€2.20m
Historic Expenditure (pre 2015)	€0.00
CIP Expenditure (2015 – 2019)	€2.20m
Underpinning Assumptions and Cost Benchmarks	• Refurbishment of Cargo Terminal 1 Façade • Refurbishment of c.1,000m2 of office space • Minor external works

Alternative Solutions Reviewed	• Do nothing scenario would leave the vacant offices unlettable and also risk the loss of existing tenants in the future to other offices off-site.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Warehousing and administration offices to service the cargo sector
Expected Commencement :	• 2015
Expected Duration :	• 2 Years
Asset life :	• 10 years
IRR Exceeds Regulatory WACC	• Yes – 13%
Till Payback less than 5 Years	• No – 7 Years, 2months
Positive NPV	• Yes - €232k

CIP 15.2.009 : Consolidated Car Rental Centre	
Project Rationale: Recent growth of the Car Rental industry at Dublin Airport has seen an improvement in the business performance of this concession business and has also seen elements of the infrastructure come under pressure e.g. T 1 Arrivals Road bus stops, customer queuing at the car rental desks etc. OK Consulting conducted a review of the car rental operation at Dublin Airport and found that daa is well positioned to increase its margin share of car rental revenue without damaging the industry through the introduction of a car rental centre. There is a movement towards such developments in major European and US Car Rental airports for a number of reasons (that will also apply in Dublin Airport): • Reduced costs for the car rental operators through the consolidation of operation i.e. no longer require desks in both terminals and bussing operation is consolidated • Improved revenues to the airport a. Financial benefit of cost savings shared with the airport through improved bids b. Airport can regain control of some forward spaces for short-term car-parking • Improved customer experience as the passenger journey is simplified i.e. all car rental customers follow the sign for car rental (not specific brand) and proceed to a single car rental bus pick-up point. Due to the importance of speed and convenience to the business traveller, daa will retain some forward spaces in the T1 and T2 MSCPs for this customer segment • Reduced congestion on the roads outside the terminal buildings as a result of a reduction in buses through consolidation	
Classification : Revenue	**Overall Capex Type** : Business Development
Primary Driver : Business Volume Growth	**Secondary Driver(s)** : Operational Efficiency
	
Total Capex Requirement :	• €10.00m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €10.0m

Underpinning Assumptions and Cost Benchmarks	• Based on a consolidated centre providing a single point for car rental pick-up. • Single storey construction • Reuse of existing infrastructure
Opex Impacts	• Will deliver economies to Car Rental Operators (CROs) and through this mechanism allow them to submit improved bids in future license periods.
Alternative Solutions Reviewed	• Maintain the current operation from both terminal buildings and forward spaces. • Phased approach with Phase 1 the construction of car rental village and consolidation of bussing followed by Phase 2 the consolidation of valeting / car prep and fuelling.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• A consolidated car rental centre providing a single point for car pick-up/return.
Expected Commencement :	• 2016
Expected Duration :	• 1 Year
Asset life :	• 20 years

CIP 15.2.010: Digital Advertising Pods	
Project Rationale: In order to grow our advertising sales revenue and keep pace with the advertising sales market it is essential that we develop a digital advertising solution. Pressure on marketing budgets and technological advancements have resulted in an increased demand from clients for advertising opportunities that can be delivered and activated quickly, without significant production costs and in an innovate and engaging manner. We therefore propose to develop and install a digital advertising platform in T1 and T2. The level of investment required will include the hardware and software necessary to provide a complete digital advertising solution within both terminals.	
Classification : Revenue	**Overall Capex Type** : Business Development
Primary Driver : Commercial Opportunity	**Secondary Driver(s)** :
	
Total Capex Requirement :	• €1.00m
Historic Expenditure (pre 2015)	• €500k
CIP Expenditure (2015 – 2019)	• €500k
Underpinning Assumptions and Cost Benchmarks	• In order to provide a digital solution it is anticipated that DAA will require a digital platform consisting of 150 units in T1 and T2. A software solution will also be required.
Opex Impacts	• N/A
Alternative Solutions Reviewed	• N/A
Stakeholder evaluation and consultation status	• daa envisages consultation with airlines and other stakeholders by presentation of this proposal as part of the formal consultation process.
Project Output	• Development and provision of a fully integrated digital advertising sales platform solution in T1 and T2

Expected Commencement :	• 2015
Expected Duration :	• 6 months
Asset life :	• The asset life will depend on technological developments but it would be expected that the initial units installed would have an asset life of at least 4 years.
IRR Exceeds Regulatory WACC	• Yes – 14.2%
Till Payback less than 5 Years	• Yes – 4 years, 10 months
Positive NPV	• Yes – €437k

CIP 15.2.013 : Commercial Property Refurbishment	
Project Rationale: Provision for the fitting out of office and general airport accommodation across campus, terminals and piers in advance of occupation by rent-paying tenants. Some accommodation is c. 25 - 40 years old and will require significant refurbishment to bring it to the quality, fit-for-purpose standard expected of an international airport. Investment typically includes fitting out of offices, furniture, mechanical and electrical services, life safety systems and IT. Property types include office, industrial, stores and ramp accommodation. These projects are typically required at short notice once a tenancy for a specific area is found and commercial terms agreed. For this reason a detailed schedule of works for 2015 – 2019 does not exist at this time.	
Classification : Revenue	**Overall Capex Type** : Capital Maintenance
Primary Driver : Commercial Opportunity	**Secondary Driver(s)** :





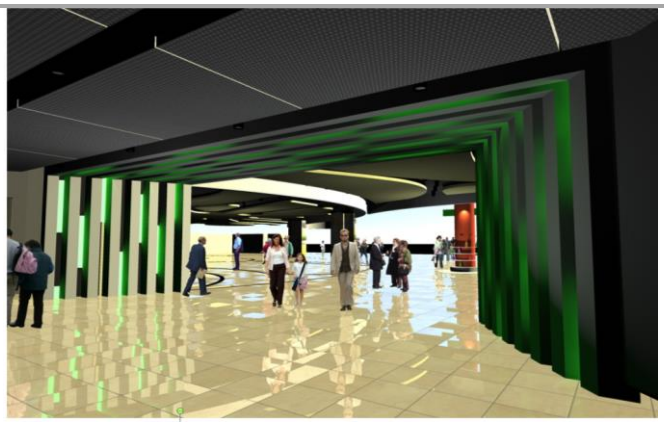

Total Capex Requirement :	• €10.50m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €10.50m
Underpinning Assumptions and Cost Benchmarks	• Costings ranging between €500 to €2,500psqm are dependent on the customer/tenant requirements
Alternative Solutions Reviewed	• Investments to be reviewed on a case by case basis.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.

Project Output	• Quality, fit-for-purpose tenant accommodation • Refurbished or altered office space • Quality, fit-for-purpose ramp accommodation • Refurbished warehousing and stores
Expected Commencement :	• 2015
Expected Duration :	• 5 Years (in non-continuous phases in response to tenant requirements)
IRR Exceeds Regulatory WACC	• Yes – On a case by case basis
Till Payback less than 5 Years	• Yes – On a case by case basis
Positive NPV	• Yes – On a case by case basis

CIP 15.3.006 : Long Term Car-park Resurface	
Project Rationale: There are currently 29,000 Long Term (LT) car-parking spaces available at Dublin Airport, with 19,000 of these owned by daa. The best located of the LT spaces are in the Red Express car-park which is owned by the daa. All of the main providers including daa have gravel surface product. Focus groups and unsolicited feedback from car-park users indicate that roller luggage and gravel surface are not a happy mix and this project looks to differentiate the Red Express car-park from the other LT carparks and justify a price increase of 10%. Differentiators include better busses, vehicle first aid, enhanced lighting (in place), Real Time Passenger Information – (Q1 2014), and the provision of a permanent surface that works with luggage (this project).	
Classification: Revenue	**Overall Capex Type**: Business Development
Primary Driver: Business Volume Growth	**Secondary Driver(s)**: Commercial Opportunity
 Existing Car-park Surface	 Proposed Car-park Surface
Total Capex Requirement :	• €6.70m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €6.70m
Underpinning Assumptions and Cost Benchmarks	• Porous car-park surface • Some alterations to circulation • Road-markings
Opex Impacts	• No material impact noted
Alternative Solutions Reviewed	• Do nothing – no incremental revenue gain
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex

	proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• 5,500 Permanent surfaced car spaces
Expected Commencement :	• 2017
Expected Duration :	• 18 Months
Asset life :	• 25 years
IRR Exceeds Regulatory WACC	• Yes – 14.6%
Till Payback less than 5 Years	• No (5 Years, 8 Months)
Positive NPV	• Yes - €670k

CIP 15.5.001 : Retail Refurbishments	
Project Rationale: Airport retail units are typically open from 4.00 am to 11.00 pm seven days per week, which represent much longer hours and therefore much higher wear and tear than equivalent high street units. Part of T1 also remains open until 1.00am on certain nights for late departing flights. The Retail space at Dublin Airport has historically been refurbished on a five year cycle, in order to counteract the accelerated depreciation of the units and to react to changes in customer demands. There is also a requirement to keep our shopping experience 'fresh' and in line with our competitors on the high street and other International airports where there is also typically a five year life cycle of the retail estate. Compared to the previous CIP period (2009 to 2014), Dublin airport now consists of 2 main Terminal buildings with associated Retail and Concession space embedded within each. Terminal 2 opened to passengers in Q4 2010 and will therefore require a refresh and refurbishment to its Retail estate during the CIP period 2015 to 2019 consistent with a five year cycle. We will also look to potentially expand the Retail offer within Terminal 2, moving part of the offer to the right of passengers as they exit the security screening area with the aim to create a 'walk- through' concept in Terminal 2. In Terminal 1, we are currently undergoing a large refurbishment project which will complete in 2015. This will carry an asset life of 5 years and will result in a minimal requirement for capital investment during this CIP period. However a provision has been included in this project for development of retail opportunities which will implemented as part of the T1 redevelopment strategy. Our concessionaire business, both Retail and Food and Beverage, is a key component of the passenger experience when travelling through either Terminal 1 or Terminal 2. As such we continually require capital to provide basic infrastructure (lighting, air conditioning, ceilings etc.) to new national or international brands that may operate out of Dublin Airport under a tendered concessionaire license agreement.	
Classification : Revenue	**Overall Capex Type**: Business Development
Primary Driver : Commercial Opportunity	**Secondary Driver(s)** : Quality of Service



Proposed Entrance Portal T2 Retail Expansion

Total Capex Requirement :	• €12.10m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €12.10m
Underpinning Assumptions and Cost Benchmarks	• Costs are benchmarked on the rates from tender returns as part of the T1 Retail strategy Phase 1 and 2.
Opex Impacts	• No significant OPEX impacts anticipated at this time.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Expansion of the direct retail unit in Terminal 2 • Refresh of the retail offering generally in Terminal 2 • Pier 4 expand direct retail • Provision for opportunities arising from the outcome of T1 development works • T1 retail refresh 2019 • Annual working capital for the general upkeep of the retail estate.
Expected Commencement :	• 2015
Expected Duration :	• 5 Years (in non-continuous phases)
Asset life :	• 5 Years

Other Projects

CIP 15.6.018 : North Runway Fees and Planning	
Project Rationale: The concept of two east - west parallel runways was established for Dublin Airport in the 1960s. The necessary lands were acquired and the first of these two runways (10R/28L) was delivered in 1989. Passenger numbers grew exponentially over the following two decades and exceeded 23m in 2008. Planning permission for the second parallel runway was granted in 2007. The permission contained two problematic conditions. The first prohibited the use of the proposed new runway between 2300hrs and 0700hrs. This is not practical as it prevents the use of the runway during the busy hour. The second condition limited all airport movements during the 2300-0700 period to 65 movements. This would reduce capacity below what has previously operated at the airport. It is not therefore practical to implement the permission. Notwithstanding the initial decline in passenger numbers over the past five years, the demand for runway slots has continued in peak times. This demand continues to be managed, including through the current review of IAA separation procedures (e.g. DD, ADA) in order to ensure that the available capacity of the existing runway is optimised. However, as the airport has returned to growth since 2011, it is prudent to ensure that an appropriate planning permission is secured, so that additional capacity can be delivered in a timely manner. We are seeking approval for planning application and consulting fees in order to secure an appropriate planning permission. This is prudent having regard to the protracted nature of the planning process. It is not proposed to construct any permitted runway however until such time as the capacity of the existing runway has been exhausted. We would request that in order to design, tender, construct and commission the new runway, that a trigger be identified, post-planning to proceed to construction of the parallel runway at a point in time that will allow for additional capacity to be delivered when required. This project allows for planning fees, design and consulting fees, to deal with the processing of a new runway planning application. This work will enable DAA to be in a position to commence construction without delay once the demand triggers are reached.	
Classification : Airfield	**Overall Capex Type** : Major Infrastructure
Primary Driver : Capacity	**Secondary Driver(s)** : Quality of Service
	
Total Capex Requirement :	• €4.00m

Historic Expenditure (pre 2015)	• €0.00
CIP Expenditure (2015 – 2019)	• €4.00m
Underpinning Assumptions and Cost Benchmarks	• Fees associated with the preparation and lodgement of a new planning application including planning design, EIS, AA, Noise and Traffic studies.
Alternative Solutions Reviewed	• Optimisation of existing runway usage currently being pursued.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Consultancy services as outlined above.
Expected Commencement :	• 2015 +
Expected Duration :	• 5 Years
Asset life :	• NA

CIP 15.6.019 : North Runway Advance House Purchase	
Project Rationale: The concept of two east - west parallel runways was established for Dublin Airport in the 1960s. The necessary lands were acquired and the first of these runways (10/28) was opened in 1989. Passenger numbers since grew to 23.5m in 2008 and despite a period of decline to 2010, have returned to growth over the past three years. Whilst planning permission for the second parallel runway was granted in 2007. The permission contained two problematic conditions. The first prohibited the use of the proposed new runway between 23.00hrs and 07.00hrs. The second condition limited all airport activity during the 23.00-07.00 period to 65 movements. As part of the planning application the DAA also submitted details of and were conditioned to carry out a number of noise mitigation measures outlined in the Environmental Impact Statement. These mitigation measures related to schools and houses which wold be most affected by the construction of a new runway at the airport. Mitigation measures included a voluntary house buy-out scheme for residents whose houses lie within the 69 dBA Leq 16 hour noise contour. This project allows for the advance purchase of some residential properties within the 69dBA contour, should purchase opportunities arise. Notwithstanding that a new planning application will be lodged to address the problematic conditions, it is prudent to make timely provision for an element of advance house purchase. This will allow for opportunities which arise in the market to be captured, particularly before the next economic cycle of property price increases.	
Classification : Airfield	**Overall Capex Type** : Major Infrastructure
Primary Driver : Capacity	**Secondary Driver(s)** : Business Opportunity
Total Capex Requirement :	• €4.25m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €4.25m
Underpinning Assumptions and Cost Benchmarks	• October 2013 House Price Survey by O'Bucalla Estate Agents
Alternative Solutions Reviewed	• Proposal is consistent with that previously conditioned by An Bord Pleanála.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Advanced purchase of some residential properties within the house buyout contour, should purchase opportunities arise
Expected Commencement :	• 2014+

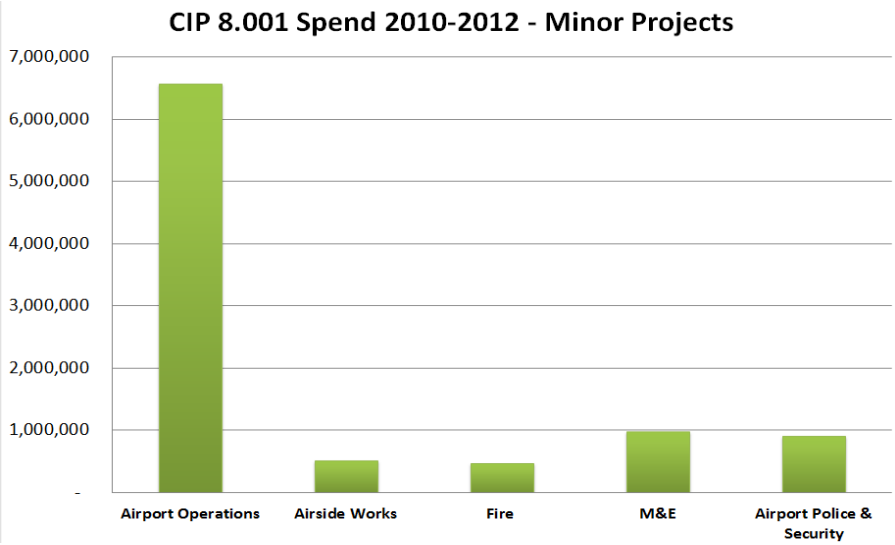
Expected Duration :	• 5 Years
Asset life :	• NA

CIP 15.8.001 : Minor Projects

Rationale;

These projects consist of numerous small value projects that arise on an annual basis and therefore it is not possible to provide a detailed list of projects for the 2015-2019 period at this time. We have analysed the capital spend in this area for the current determination period as currently forecast, broken down by main category and this is set out below in order to provide a outline of the main types of projects undertaken.

A summary of the types of project, within these categories which will be funded by this capital allowance are set out below:-



1. **Airport Operations**
   - General upkeep / upgrade and refurbishment of the external and internal elements of the Main Terminal Building, Piers, Airside and Landside operational buildings
   - Ensure DAA building compliance with current regulatory standards relating to Health and Safety, Fire Strategy and Management systems and Building Regulations
   - Response to ongoing operational / security infrastructural requirements
2. **Airside Works**
   - This allocation provides for unforeseen reactive works including maintenance, refurbishment and/or upgrades to the Runway, taxiways, aprons, parking stands or critical services in the Airside Operational area.

Such works are by their nature, urgent and in the majority of cases, carried out at night to suit the airfield operation. Further works may also be required on foot of annual audits carried out by the IAA.

3. **Fire**
   - This is a general provision for the minor works that ensures that Dublin Airport maintains continued compliance with fire regulation in public buildings
4. **MandE Maintenance**
   - This allocation anticipates unplanned and reactive works including maintenance, refurbishment and / or up-grades to critical services within the Terminal Buildings.
5. **Airport Police and Security**

• This is a general provision for the Airport Police and Security Department that ensures compliance with all applicable regulatory security standards on both the Irish and EU level. This is achieved through upgrade and replacement of equipment and facilities.	
Classification : Other	**Overall Capex Type** : Capital Maintenance
Primary Driver : Operational Efficency	**Secondary Driver(s)** : Quality of Service
Total Capex Requirement :	• €10.00m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €10.00m
Underpinning Assumptions and Cost Benchmarks	• Costs based on historic spend analyses airport operations projects in current and previous CIPs
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• Average 60 small projects per year.
Expected Commencement :	• 2015
Expected Duration :	• 5 Years
Asset life :	• Varies up to 10 Years

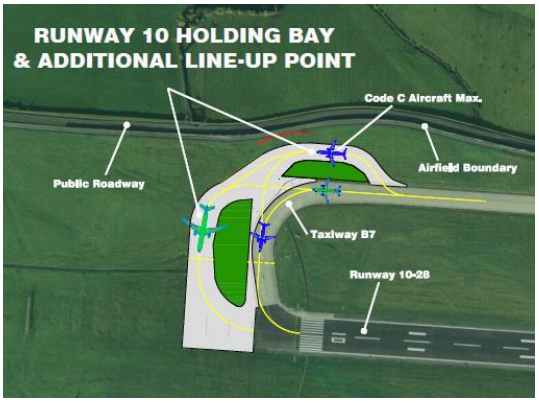
CIP 15.8.200 : Programme Management	
Rationale: This budget contains the cost associated with Programme Management for the 2015 – 2019 period. In this context, Programme Management can be defined as the process of managing the multiple interdependent projects contained in the CIP with the objective of ensuring strategic standardised commonality in approach to managing cost, risk, change control, quality, safety, project reporting and monitoring and controlling all projects within the CIP. Programme Management is independent of Project Management process which is concerned with the planning, organising, design and management of resources to bring about the successful delivery of the individual projects. All DAA projects within the CIP will continue to be delivered using the Programme Management methodology. Programme Management duties to include but not limited to: • Drive compliance with Programme and Project procedures to manage the ongoing capital spend at Dublin Airport and to continue the delivery of projects within budget and on programme. • Integrate cost and schedule through project control procedures and provision of performance metrics. • Drive Risk Management and in particular Risk Mitigation. • Provide Procurement strategy to ensure – best buy in the market place. • Provide interface management to ensure minimal disruption to operations and passengers. • Provide dedicated Programme and Project Environmental and Health and Safety management systems and personnel. • Provide proactive Stakeholder Management across all projects. • Review / Update all procedures to meet on-going requirements.	
Classification : NA	**Overall Capex Type** : Capital Maintenance
Primary Driver : Operational Efficency	**Secondary Driver(s)** :
Total Capex Requirement :	• €3.54m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €3.54m
Underpinning Assumptions and Cost Benchmarks	• FTE of 5 Senior Technical Staff and 2 Support Staff
Opex Impacts	• Minimise operational disruption through careful sequencing of CIP
Stakeholder evaluation and consultation status	• This proposal was presented to airlines and other stakeholders for their consideration during the consultation process on capex proposals for Dublin Airport 2015 to 2019 held Jan – March 2014.

Project Output	• Provide Programme leadership and governance to the 2015-2019 CIP
Expected Commencement :	• 2015
Expected Duration :	• 5 Years
Asset life :	• NA

Triggered Projects

CIP 15.6.012 : Runway 10-28 Extension	
Project Rationale: The current length of the Runway 10-28 at Dublin Airport prohibits direct service to a number of key destinations and international markets. Historically, Dublin has not had sufficient traffic volume to commercially fill applicable aircraft types to these markets. However, it is anticipated that a combination of natural market growth and the introduction of new aircraft technology will create the opportunity for commercially viable flights from Dublin in the next 2-3 years. These markets are typically key hub airports in Asia such as Singapore and Hong Kong, hub airports in emerging markets such as Sao Paolo, or long haul sun destinations such as Cancun and Phuket whose popular product cannot yet be offered in the Dublin market place. It is estimated that up to seven hub airports, producing a traffic volume of 1.2m passengers could be served over a five year period. The key aircraft types for these new operations are likely to be the A350-900 and Boeing 787-900, neither of which has entered commercial service yet. As such, it is not possible to guarantee that these aircraft can operate unrestricted to the key destinations referred to above without a potential runway extension to the existing runway. The ability to offer full payload of passengers and cargo (without penalty restriction) will be critical to the successful attraction of airlines to operate these routes	
Classification : Airfield	**Overall Capex Type** : Business Development
Primary Driver : Business Volume Growth	**Secondary Driver(s)** : Operational Efficiency
Current Reach of R10/28 restricts access to these markets:  	
Total Capex Requirement :	• €55.0m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €55.00m
Underpinning Assumptions and Cost Benchmarks	• This work will require application for planning permission and all associated risks, levies and contributions. • Mitigation costs including; ○ House buyout and insulation programme

	• Intersection of Runway 34 and Runway 28 to be re-profiled. • Alterations and additions to runway lighting system.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	• The construction of a c. 390m runway extension at Runway 28 will deliver increased range potential by providing a runway length increase from 2,637 TORA (Take Off Run Available) to c.3,027 TORA. • Tie-in to all existing taxiways. • Reconfiguration of runway centreline lighting and taxiway lighting and approach lighting. • Reconfiguration of runway and taxiway paint markings and signage.
Expected Commencement :	• 2017
Expected Duration :	• 2 Years
Asset life :	• 30 years

CIP 15.6.013 : Additional Line-up Points on Runway 10-28	
Project Rationale: This project proposes aircraft line-up points at both ends of Runway 10/28 in addition to a holding bay at the 10 end consistent with IAA's proposal to increase declared capacity on the runway to 39 departures in the peak departures hour, should such line-up points be installed. Without this investment, the IAA will currently commit to reaching a maximum of 37 departures in the peak departures hour (subject to aircraft flow from the ramp to the runway not being constrained, and the negotiation of additional Airspace Capacity from NATS UK being successful). These facilities will provide a greater selection capability for ATC to line up aircraft to facilitate wake turbulence requirements, regulated airborne times, improving resilience and increasing the efficient use of Runways 10/28 and 34 (during dual runway operations).While there is no specific service standard for an airport taxiway system it is crucial that delays to aircraft routing between the runways and aprons should be kept to a minimum. These additional line-up points will also assist in: • Reducing taxi times, benefiting airline punctuality by reducing ramp congestion (in the context of the Runway 28 end). • Improving the efficiency and flow of the aircraft circulation system in the vicinity of Pier 4 both for arriving and departing aircraft • Re-engineering the pavement grading on taxiway E1 thereby allowing more efficient aircraft line-up timings for departure punctuality (aircraft weight issue). The incremental increase in peak departure capacity has been established in 4 phases. Three of these are based on operational enhancements; (1) 31 – 33 (reduced DD separations), (2) 33 – 35 (reduced DD separations) & (3) 35 – 37 (increase in NATS airspace capacity). Phase 4 requires the proposed line-up infrastructure. Given the project duration for delivery of both line-up points is estimated to be two years, it is proposed that the trigger is therefore set at two movements less than the 37 (i.e. trigger set at 35 departures), to align with ATC's requirement above.	
Classification : Airfield	**Overall Capex Type** : Major Infrastructure
Primary Driver : Capacity	**Secondary Driver(s)** : Efficiency
	
Total Capex Requirement :	€30.0m

Historic Expenditure (pre 2015)	€ 0.0m
CIP Expenditure (2015 – 2019)	Triggered
Underpinning Assumptions and Cost Benchmarks	• Taxiways to be constructed with concrete finish • Taxiways to be provided with AGL (centreline, edge and stop bars), internally illuminated taxiway information / directional signage and pavement paint markings • Attenuation also provided • Phased construction & Night-time working required • DAA Cost Database
Opex Impacts	No opex impact to daa. Aircraft fuel burn savings modelled based on average reduction in delay of 23 seconds per movement – total €840k p.a. (€9.60 fuel cost per minute and 630 daily movements)
Alternative Solutions Reviewed	As requested by IAA (Air Traffic Service)
Stakeholder evaluation and consultation status	This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.
Project Output	Runway 28 end – Realignment of taxiway E1 and provision of additional line-up point, incorporating all necessary visual guidance infrastructure including taxiway pavement inset ground lighting (incl. stop bars) and internally illuminated information / directional signage. Runway 10 end – Provision of a holding bay and additional line-up taxiway incorporating all necessary visual guidance infrastructure including taxiway pavement ground lighting (incl. stop bar) and internally illuminated information / directional signage
Expected Commencement :	2017
Expected Duration :	2 year
Asset life :	25 years

CIP 15.6.028 : Runway 10-28 Extension and Additional Line-up Points

Project Rationale:

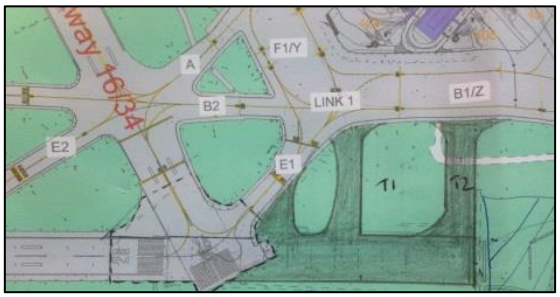
This project looks at the effect of combining the Runway Extension to Runway 28 (CIP 15.6.012 - €55m) and the Additional Line-up Points to both ends of Runway 10-28 (CIP 15.6.013 - €30m).

The aircraft line-up points at both ends of Runway 10-28 in addition to a holding bay at the Runway 10 end are consistent with IAA's proposal to increase declared capacity on the runway from 37 to 39 departures in the peak departures hour.

The runway extension of c.390m and the line-up points will provide a runway pavement length between 3,000m and 3,100m which will enable direct service to a number of key destinations and international markets. These markets are typically key hub airports in Asia such as Singapore and Hong Kong, hub airports in emerging markets such as Sao Paolo, or long haul sun destinations such as Cancun and Phuket whose popular product cannot yet be offered in the Dublin market place.

It is estimated that up to seven hub airports, producing a traffic volume of 1.2m passengers could be served over a five year period. The ability to offer full payload of passengers and cargo (without penalty restriction) will be critical to commercial viability for airlines and hence to the successful attraction of airlines to operate these routes. The key aircraft types for these new operations are likely to be the A350-900 and Boeing 787-900, neither of which has entered commercial service yet. It is estimated that a runway pavement length of between 3,000m and 3,100m will be required subject to detailed assessment of aircraft performance data and obstacle calculations.

Classification : Airfield	**Overall Capex Type** : Major Infrastructure
Primary Driver : Business Volume Growth	**Secondary Driver(s)** : Operational Efficiency



Total Capex Requirement :	• €74.4m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €74.4m
Underpinning Assumptions and Cost Benchmarks	• Runway and Taxiway to be constructed with concrete finish. • Surface water attenuation included. • Phased construction and night time working required • This work will require application for planning permission and all associated risks, levies and contributions.

	• Mitigation costs including; o House buyout and insulation programme • Intersection of Runway 34 and Runway 28 to be re-profiled. • Alterations and additions to runway lighting system. • daa cost database.
Stakeholder evaluation and consultation status	• This proposal has been discussed with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process; further investigation and advancement of the proposal has occurred following consultation.
Project Output	• Provision of additional line-up points at Runway 10 and Runway 28 and the construction of a c.390m runway extension at Runway 28. This will deliver increased range potential by providing a runway pavement length increase from 2,637m to between 3,000m and 3,100m • Tie-in to all existing taxiways. • Reconfiguration of runway centreline lighting and taxiway lighting and approach lighting. • Reconfiguration of runway and taxiway paint markings and signage.
Expected Commencement :	• 2017
Expected Duration :	• 2 Years
Asset life :	• 30 years

CIP 15.6.051 : Northern Runway

Project Rationale:

The concept of two east-west parallel runways was established for Dublin Airport in the 1960s. The necessary lands were acquired and the first of these two runways Runway 10-28 was opened in 1989. Passenger numbers have since increased from 5 million in 1989 to over 20 million in 2013.

In 2009 CAR set the trigger for initiating the Northern Runway project at traffic in excess of 23.5m passengers in any consecutive 12 Month period before 2015. Since 2008, the profile of departing flights has changed with 20% of PAX now departing in the 06.00 and 07.00 slots compared to 18% in 2008 and 15% in 2006. This change in departure-time profile means that there is a higher concentration of departing aircraft in the early morning peak today, than in 2008, which represented the profile from which the existing trigger was set. This reflects the increase in market share of carriers with overnighting aircraft in Dublin. The peak departure period in the morning is the critical period for Dublin Airport, as the airlines with overnighting aircraft in Dublin want to depart as soon as possible.

Over the past five year period runway demand has exceeded capacity at busy times, which has required airlines to operate at times different from requested. daa has looked at squeezing incremental capacity from the existing assets by a range of measures including changes to IAA separation procedures and increased air-traffic control efficiencies. These increases are subject to trial of additional slots and to agreement with NATS UK on airspace restrictions.

Consequently, although runway capacity is somewhat higher in 2013 than it was in 2008, the increase in peak departure demand has maintained the need for additional infrastructure.

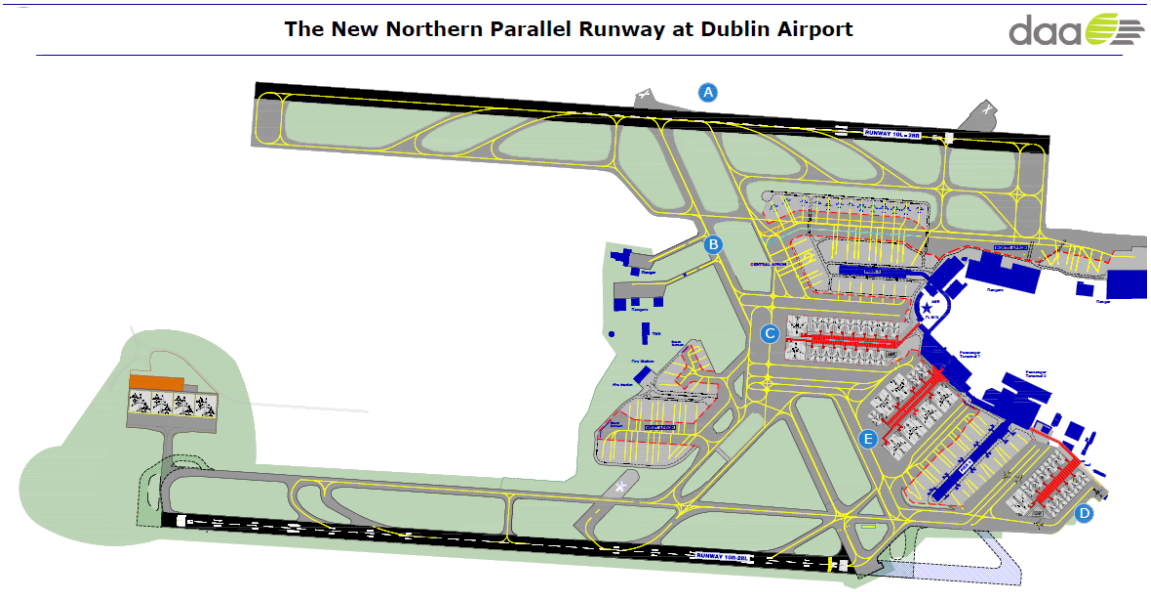
daa submitted a planning application to Fingal County Council in December 2004, and planning permission for a new North Runway was finally granted by An Bord Pleanála in August 2007. However, some of the conditions attached to this permission are highly restrictive from an airfield operations point of view, particularly the inability to use the new runway between 23:00 and 07:00, while restricting the total number of aircraft movements between these hours to 65 daily movements averaged over a 3-month period. There are currently no restrictions on night-time aircraft movements, while the peak departure wave is between 06:00 and 07:00, so a new planning application is currently being prepared in order to seek to have these restrictions removed.

In any event, daa is proposing that construction commencement for this project be linked to the demand triggers as discussed in section 7 of this CIP document.

Since the original planning application was lodged, further consultation has taken place with prospective long haul airlines and the runway length now being proposed is 3,110m to accommodate direct non-stop services to destinations currently out-of-reach of the existing runway, namely to developing economises in Far East Asia and South America.

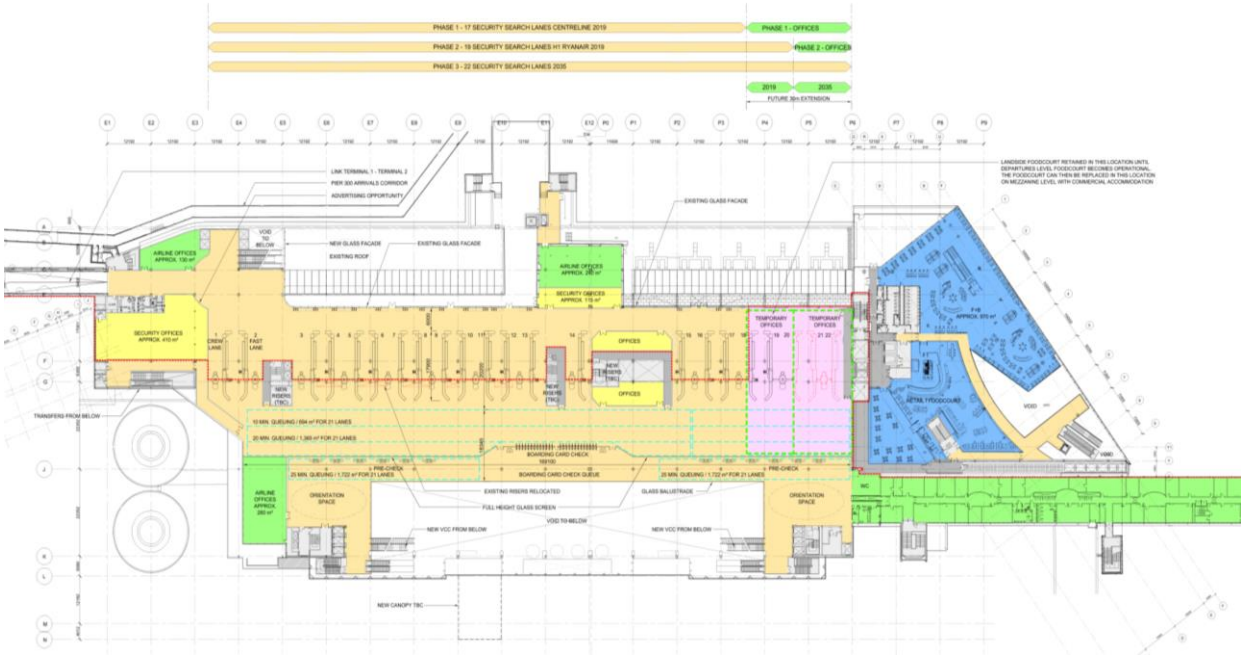
This project allows for the construction costs, mitigation costs and statutory levies associated with the Northern Runway.

Classification : Airfield	**Overall Capex Type** : Major Infrastructure
Primary Driver : Capacity	**Secondary Driver(s)** : Operational Efficiency



Total Capex Requirement :	• €236.80m Above total excludes : • €4.3 million – Studies and Fees for new planning application to address restrictions in current permission. Ref. CIP Nr. 15.6.018 • €4.0 million – Advance House Purchase Ref. CIP Nr. 15.6.019
Historic Expenditure (pre 2015)	• €0.00
CIP Expenditure (2015 – 2019)	• Trigger dependent
Underpinning Assumptions and Cost Benchmarks	• 3110m x 60m runway with two rapid exit taxiways at each end and seven access taxiways. • Concrete pavement construction. • Attenuation included. • Cat III instrumentation at both ends. • Two RETs at each end (4 RETs total) • 2/3 of the site to be landside during construction. • No significant archaeological finds. • This estimate includes for: • Runway Construction Costs • Enabling Works, Road diversions etc. • Statutory Levies • Mitigation Costs
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process.

Project Output	• New Parallel runway 3,110 metres in length, 60 metres in width and associated parallel taxiways. • Clearway 190 metres • Runway End Safety Area 240 metres • 4 Rapid Exit Taxiways, 2 at either end. • 7 Access Taxiways. • Associated drainage, attenuation and pollution control. • Navigational aids and associated aircraft ground lighting to provide for CAT III ILS at both ends.
Expected Commencement :	• Trigger dependent
Expected Duration :	• Planning 30 Months • Construction 36 Months

CIP 15.7.101 : T1 Check-in and Security	
Project Rationale: The current Winter 2013 works to the Terminal 1 security screening area will only provide capacity within this facility to 2016, when combined with projects to improve processing speed. Ultimately, there will still be insufficient space at the current location to meet anticipated future demand and longer queues will result. New regulations for the inspection of Liquids, Gels and Aerosols, due to come into effect post 2016, are likely to require larger machines and slow processing down. As well as this, the existing security screening facility is constrained by service risers leading to the poor layout of queuing zones. Restricted sight lines and limited opportunities to extend queuing areas will ultimately drive down customer satisfaction levels This project involves relocating the existing security screening facility to the mezzanine level of Terminal 1, providing a dedicated security screening facility capable of accommodating 19 longer length search lanes with larger sized equipment and with the ability to expand if required in the future. The project will also enable intuitive way-finding and enhance exterior views with a better provision of natural light. If this project does not proceed, passenger processing times will be significantly affected before 2019. This will be exacerbated by the introduction of Liquids, Gels and Aerosols Regulations as the existing area will not have sufficient size to accommodate the new 18m long search lanes required.	
Classification : Piers and Terminals	**Overall Capex Type** : Business Development
Primary Driver : Business Volume Growth	**Secondary Driver(s)** : Operational Efficiency
	

Total Capex Requirement :	• €38.30m
Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €38.30m
Underpinning Assumptions and Cost Benchmarks	• Extension of existing mezzanine slab can be tied into existing structure with no major remedial works to slab and no additional strengthening works required. • Existing mezzanine strengthened locally to support increased load of new security equipment. • Refurbishment of areas affected by reconfiguration only. • Adaptions only to existing services. • Allowance for phasing of works but no allowance for any temporary facilities. • Assumed all work done during normal working hours, no allowance for night working. • Costs based on benchmarks from similar projects adjusted to current market prices.
Opex Impacts	• Maintenance and repairs costs are estimated to reduce by 5% as a result of having new equipment, upgraded floor, finishes etc. • Based on security staff cost benchmarks, this option could provide efficiency gains of 8.5% on security staff costs as a result of introducing the auto-trays and having more queuing space in the mezzanine level.
Alternative Solutions Reviewed	• There were a total of 25 Options considered but discounted, involving multiple permutations of the Search Facility location, orientation and layout.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process. • When surveyed, 4 Stakeholder Respondents requested improved or adequately staffed security checkpoint facilities.
Project Output	• New enhanced security area • Refurbished check-in area • New location for landside retail and Food and Beverage • 19 Security lanes (18m 'Medium Length')

	• Refurbished landside and airside toilets
Expected Commencement :	• Trigger project – linked to passenger numbers
Expected Duration :	• 2 years
Asset life :	• 25 years

CIP 15.7.111 : Pier 2 Segregation

Project Rationale:

Pier 2 is currently unsegregated, meaning departing and arriving passengers can mix within the pier. At present, a managed solution is in place using anti pass back doors to avoid contamination of other piers and imposing restrictions set out by the Revenue Commissioners in relation to origins and destinations of flights within the pier.

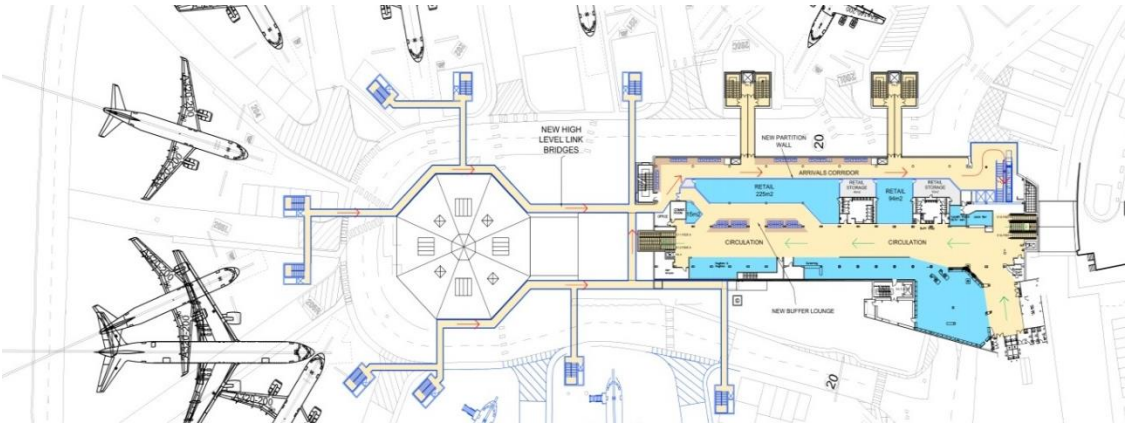
As part of the next CIP (2015-2019), the Revenue Commissioners have requested that daa put forward a proposal for the segregation of the pier:

Conditions of Appointment for Dublin Airport as a Customs Airport by The Revenue Commissioners

2.2 Pier A in its current (March 2010) layout is approved for the integration of inbound and outbound passengers as a temporary arrangement. The temporary approval will be reviewed with a view to implementing full segregation of inbound and outbound passengers on this pier when capital expenditure funding is approved for this purpose as part of the Commission for Aviation Regulation (CAR) determination . The current determination period is January 2010 to December 2013.

The DAA will include a capital expenditure business case to achieve this segregation as part of its capital expenditure proposals for the next determination period.

Classification : Piers and Terminals	**Overall Capex Type** : Business Development
Primary Driver : Regulation	**Secondary Driver(s)** :



Total Capex Requirement :	• €18.00m

Historic Expenditure (pre 2015)	• €0.00m
CIP Expenditure (2015 – 2019)	• €18.00m
Underpinning Assumptions and Cost Benchmarks	• Assumed that gates within pier 2 would be used for departures only. • All arrivals in Pier 2 would enter via the nodes. • Assumed all work done during normal working hours, no allowance for night working. • Costs based on benchmarks from similar projects adjusted to current market prices.
Opex Impacts	• This project would enable deactivating the anti pass back doors which would help reduce maintenance costs.
Alternative Solutions Reviewed	• Alternative proposals considered included the construction of a new pier 2 (+€100m) or • Construction of local injection point and associated building works at the neck of Pier 2 (€250k). This is the preferred solution but must be agreed with Revenue Commissioners.
Stakeholder evaluation and consultation status	• This proposal has been presented to and consulted on with airlines and other stakeholders during the capex proposals for Dublin Airport 2015-2019 consultation process. • When surveyed, 2 stakeholder respondents requested segregation of arriving and departing passengers in Pier 2.
Project Output	• Segregated traffic in Pier 2.
Expected Commencement :	• 2019
Expected Duration :	• 1 Year
Asset life :	• 20 Years