DublinAirport

Capital Investment Programme 2020 +

Submission to CAR

Issued: 6th February 2019

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EXECUTIVE SUMMARY

CIP 2020+
This Capital Investment Programme (CIP) presents Dublin Airports (DAP) proposals for capital investment at Dublin Airport for the period 2020-2024. These proposals have been reviewed by our airline customers in an extensive programme of consultation (details provided in Chapter 1). Every effort has been made to develop the projects within this CIP in line with the principles of efficient capital expenditure, facilitating forecast demands and stakeholder views.

The proposed projects detailed within the CIP have been developed following an extensive Masterplan exercise, an internal due diligence process, a series of pre-consultation meetings with key stakeholders and formal stakeholder consultation. The delivery of this programme would enable Dublin Airport to develop in a sustainable manner and accommodate 40 million passengers per annum (mppa) in what represents the next step of a bigger plan in which the airport can accommodate 55 mppa.

Passenger growth and future demand
Dublin Airport has experienced strong traffic growth since the existing Regulatory Determination (covering the period 2015-2019) was finalised in 2014. Annual passengers of 21.7m in 2014 experienced double-digit growth in 2015 (15.4%) and 2016 (11.4%). Supporting this growth in 2016, for example, was the introduction of 19 new routes and additional capacity on 31 existing routes. In 2017, 14 new routes were introduced, and extra capacity was added to 39 existing routes, bringing annual passengers very close to 30m. In July 2018 a new monthly record was set with a peak throughput of 3.3m passengers, contributing to an overall throughput of 31.5m passengers in 2018.

More recently however, certain downside risks have emerged in the form of Brexit and rising oil prices, for example. At present, strong Irish originating traffic is managing to offset the declines in British outbound passengers but there is considerable uncertainty on how Brexit will affect demand over the course of the next Regulatory Determination. In recent months, a

number of airlines have ceased to exist, and profit warnings have been issued to other airlines, but it is not known exactly how these developments will impact on our future demand profile.

It is imperative that the airport is adequately positioned to accommodate 40 mppa by the end of the next Determination period, or shortly thereafter, if we are to avoid a situation whereby inadequate infrastructure is in place to cater for demand. This CIP consultation document therefore sets out the necessary investment that is required to realise the collective opportunity that exists to achieve 40 mppa at Dublin Airport over the medium term.

Quality of service and passenger experience
Service quality at Dublin Airport is high on our agenda and our strategy demands a sustained focus on understanding and meeting key needs of passengers as growth cannot be sustained without acceptable levels of service quality. Moreover, airports are ranked on a broad range of service quality measures and a percentage of our annual revenue is at stake if we do not meet certain targets set by the Commission for Aviation Regulation. It follows that future capital

investment and new infrastructure needs to be progressed with a keen focus on fundamental passenger needs and key drivers of satisfaction. In accordance with this, the proposed projects set out within this CIP have been designed in line with our commitment to deliver a good level of service quality and enhance the experience of the passenger.

Capacity assessments

Dublin Airport regularly assesses capacity across the key processing facilities. These assessments focus on the core facilities required to process passengers in addition to parking and manoeuvring aircraft across the airfield. A recent capacity assessment highlighted the below operational processors, as critically requiring immediate enhancements:

- Contact and Bus Gates
- Stands
- T1 and T2 Check-in
- T1 and T2 Central Search
- US Preclearance Facilities
- T1 Baggage Reclaim
- T1 and T2 Immigration Facilities
- T1 and T2 Transfer Facilities
- T1 and T2 Departure Lounge
- Long-Term and Short-Term Car Parking
- T1 Kerbs
- T1 and T2 Hold Baggage Screening

This assessment also flagged that the above facilities do not have sufficient capacity headroom or an adequate level of service quality to support the projected growth in the short term. Targeted solutions have therefore been required to alleviate emerging capacity deficits and bottleneck issues in the airport system. In line with this, the proposed projects within this CIP are designed to minimise any such deficits or bottlenecks over the medium term and ensure that service quality is not compromised.

Cost estimates and deliverability

The proposed projects in this CIP submission comprise 74 Core and 18 revenue generating commercial projects with an estimated combined cost of approximately €567m. This submission also contains 25 capacity projects that are estimated to cost €1.016bn for terminal related projects and €214m for airfield related projects. These costs represent our latest best estimate of costs and will form the basis of efficiency assessments with the Commissions independent cost consultants. The independent efficiency assessments will output draft and final reports in 2019 setting out the Commissions view of what is representative of reasonable and efficient cost estimates.

The delivery of the CIP from 2020 will require significant coordination involving a wide range of stakeholders. Many of the proposed projects within this submission will require planning permission and, by its very nature, this can lead to challenges and other unrelated delays. Furthermore, while we are actively preparing our procurement department for a more significant capital investment programme, it is important to be cognisant that a significant upturn in Irish construction will adversely impact procurement. It follows that the delivery timelines outlined for each project in this submission are also best estimates and subject to change.

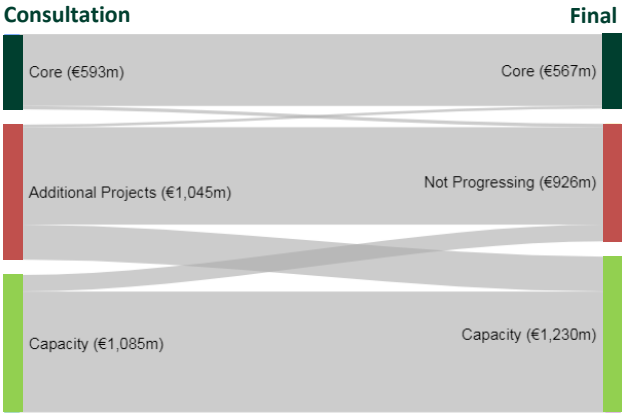
As projects are proposed and developed in response to identified needs, not all project proposals are at the same level of development at the current time. daa will continue to explore new and improved options over the course of the CIP. This approach, combined with necessarily changing emergent circumstances 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.

Project groupings

From the outset the projects within CIP2020 have been grouped into broad categories that reflect the nature of the investment required. For Consultation purposes three project groupings were considered, namely ‘Core’, ‘Capacity’ and ‘Additional Projects for Consideration’.

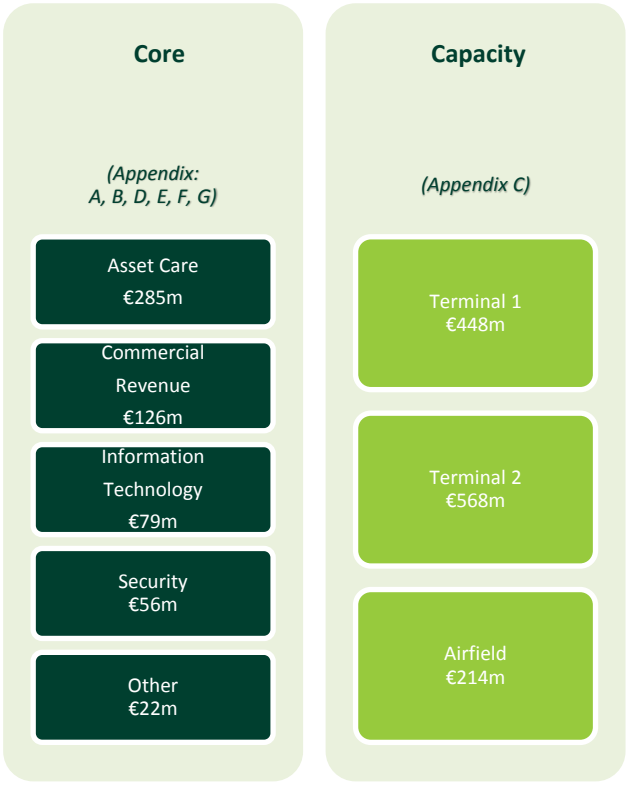
Following formal Consultation, the three groups were re-assessed to refine the overall suite of projects proposed as part of CIP2020. Figure 1 shows how the three original groupings were refined to only two groups; Core and Capacity.

Figure 1: Change to CIP proposal since Consultation



The two project groups being proposed as part of CIP2020, and their granular breakdown, are shown in Figure 2. A summary of the 117 projects which makeup the entire CIP are set out overleaf.

Figure 2: Summary of project groupings.



Summary

The airport is a key economic facilitator and driver not only for its immediate catchment area but for the island of Ireland. We are conscious of direction given in the National Aviation Policy to provide infrastructure that will facilitate promoting Dublin Airport as an international hub which we believe this capital programme facilitates while also meeting the needs of carriers operating in the point-to-point market. This capital investment programme will enable future growth to meet the needs of stakeholders to accommodate 40mppa.

We look forward to working with all airport stakeholders over the duration of this Capital Investment Programme in the delivery of these projects.

Figure 3: Summary of Asset Care CSF Proposed Projects

Appendix A - Asset Care (CSF)		
CIP Number	**Project Title**	**Cost €m**
CIP.20.01.001	Southern Runway (10R/28L) Delethalisation Programme	€2.2
CIP.20.01.002	Apron Rehabilitation Programme	€37.0
CIP.20.01.003	Airfield Taxiway Rehabilitation Programme	€19.0
CIP.20.01.004	Apron Road Rehabilitation Programme	€4.6
CIP.20.01.006	Airfield Southern Perimeter Road Upgrade Programme	€4.6
CIP.20.01.008	Runway Approach Lighting Mast Improvement Programme	€11.1
CIP.20.01.009	Aerodrome Ground Lighting (AGL) Improvement Programme	€4.7
CIP.20.01.010	Airfield Lighting Control & Management System Improvement Programme	€4.9
CIP.20.01.012	AGL Substation T Development Programme	€3.7
CIP.20.01.015	High Mast Lighting Improvement	€0.7
CIP.20.01.016	Airfield Maintenance Base Improvement Programme	€4.5
CIP.20.01.018	Campus Buildings Critical Maintenance	€1.5
CIP.20.01.020	Terminal 1 Façade, Roof & Spirals	€25.8
CIP.20.01.022	Terminal 1 Storm Water Drainage System	€1.1
CIP.20.01.023	Piers & Terminals Critical Maintenance	€1.9
CIP.20.01.024	Skybridge Rehabilitation	€1.2
CIP.20.01.034	Campus Roads Critical Maintenance	€6.8
CIP.20.01.039	Airport Roads Critical Maintenance	€5.1
CIP.20.01.046	Staff Car Parks Critical Maintenance	€1.7
CIP.20.01.049	Public Carpark Critical Maintenance	€2.4
CIP.20.01.056	Campus Facilities & Landside Snow Base Upgrade	€2.9
CIP.20.01.065	Airport Heavy Fleet & Equipment Replacement	€11.0
CIP.20.01.069	Airport Light Vehicle Fleet Replacements and Augmentation	€2.4
CIP.20.01.071	Electric Charger Network Facilities	€1.6
CIP.20.01.074	Advance Visual Docking Guidance System (5G, Pier 1 & Pier 2)	€5.3
CIP.20.01.087	AGL Fibre Optic Communication Network Improvement Programme	€2.0
CIP.20.01.099	RWY 16/34 Lighting for Low Visibility Procedures (LVP)	€5.5
CIP.20.07.013	Airfield Redesignation	€1.5
CIP.20.07.032	Unit Load Device (ULD) Storage	€5.0
TOTAL		**€181.9**

Figure 4: Summary of Asset Care Mechanical & Electrical Proposed Projects

Appendix B - Asset Care Mechanical & Electrical (M&E)		
CIP Number	**Project Title**	**Cost €m**
CIP.20.02.001	Medium Voltage (MV) Electrical Network	€6.3
CIP.20.02.002	Second Medium Voltage (MV) Connection Point	€1.0
CIP.20.02.004	Passenger Boarding Bridges (Maintenance & P3 Enhancement) & Fixed Electrical Ground Power	€18.1
CIP.20.02.005	Lift Upgrade Programme - Terminal and Multi-Storey	€6.2
CIP.20.02.006	Airport Water & Foul Sewer Upgrade	€5.0
CIP.20.02.007	Life Safety Systems (LSS) Upgrade Programme Terminal and MSCP Buildings	€10.1
CIP.20.02.008	Terminal Buildings HVAC Upgrade	€17.8
CIP.20.02.009	Campus Buildings: Mechanical, Electrical & LSS Upgrade	€9.5
CIP.20.02.010	Pier 3 Life Extension Works - Mech, Elec and Foul Drainage	€14.0
CIP.20.02.013	Small Energy Projects	€4.8
CIP.20.07.030	Large Energy Project - Photovoltaic Farm	€10.0
TOTAL		**€102.8**

Figure 5: Summary of Commercial Revenue Proposed Projects

Appendix D - Commercial		
CIP Number	**Project Title**	**Cost €m**
CIP.20.04.001	Car Parking Management System (Maintenance & upgrade)	€3.1
CIP.20.04.002	Car Hire Consolidation Centre	€14.0
CIP.20.04.003	New Food & Beverage Fit-out (T1X)	€2.1
CIP.20.04.004	Digital Advertising Infrastructure	€2.2
CIP.20.04.005	Long Term Car Parking - Eastland's (2000 spaces)	€5.9
CIP.20.04.006	Terminal 1 Multi-Storey Car Park Block B (480 spaces)	€18.8
CIP.20.04.007	Terminal 2 Multi-Storey Car Park (680 spaces)	€15.1
CIP.20.04.009	Staff Car Park	€6.0
CIP.20.04.016	Platinum Services Upgrade Works	€2.1
CIP.20.04.017	Airline Lounges - Expansion, Upgrade & New	€11.4
CIP.20.04.018	Fast Track Improvements	€1.7
CIP.20.04.021	West Apron - Accommodation & Welfare Facilities	€4.5
CIP.20.04.023	Food & Beverage Provision & Fit-out – Post CBP	€3.2
CIP.20.04.025	Commercial Property Refurbishment	€8.0
CIP.20.04.030	New Kitchen in Terminal 2	€3.0
CIP.20.07.010	Office Consolidation & Refurbishment (primarily Level 4 & 5, Terminal 1)	€15.0
CIP.20.08.001	Retail Refurbishments, Upgrades and New Developments	€8.0
CIP.20.08.002	Retail Marketing & Media Installation	€1.5
TOTAL		**€125.6**

Figure 6: Summary of Information Technology Proposed Projects

Appendix E - Information Technology		
CIP Number	**Project Title**	**Cost €m**
CIP.20.05.001	Airfield Optimization	€5.9
CIP.20.05.002	Digital Passenger Experience	€1.8
CIP.20.05.003	Integrations and Data	€5.1
CIP.20.05.004	Baggage Systems	€1.3
CIP.20.05.005	Business Efficiency	€6.2
CIP.20.05.006	Commercial Systems	€2.3
CIP.20.05.007	Reliability, Safety, Security & Compliance	€8.2
CIP.20.05.008	Operational Devices (Support & Maintenance)	€1.8
CIP.20.05.009	Network Components - Lifecycle & Growth	€6.9
CIP.20.05.010	Passenger Processing (excl. Security Screening)	€11.0
CIP.20.05.011	Security Technology Innovation (Biometrics & FOD Detection)	€5.0
CIP.20.05.012	Servers and Storage - Lifecycle & Growth	€5.6
CIP.20.05.014	User Devices (Desktops, Mobile, Telephone, Radio)	€3.7
CIP.20.05.015	New Data Centre Hosting Location	€4.0
CIP.20.05.016	Microsoft Enterprise	€6.0
CIP.20.05.020	Innovation Fund	€4.0
TOTAL		**€78.6**

Figure 7: Summary of Security Proposed Projects

Appendix F - Security		
CIP Number	**Project Title**	**Cost €m**
CIP.20.06.001	Cabin-Baggage X-Ray Replacement & EDS Upgrade	€14.6
CIP.20.06.007	Full Body Scanners	€1.9
CIP.20.06.009	ATRS – Additional Lane in Terminal 1	€0.6
CIP.20.06.014	Screening and Logistics Centre	€13.4
CIP.20.06.015	Intrusion Detection Systems for Dublin Airport Boundaries	€4.0
CIP.20.06.016	Surface Road Blockers & Temporary Mobile Barriers	€1.0
CIP.20.06.022	Redevelopment of Training Facility (ASTO)	€1.2
CIP.20.06.025	Detection: Explosive Detection Dogs (EDD) and Mobile X Ray Unit	€0.2
CIP.20.06.030	VCP Automation to Enable Remote Screening	€0.7
CIP.20.06.031	Autopass - T1 Replacement & T2 Install	€1.8
CIP.20.06.036	TSA - X-Ray & FBSS Replacement	€0.4
CIP.20.06.041	Security Screening Equipment - End of Life	€4.5
CIP.20.06.042	ATRS - Central Search Areas (T1 and T2)	€11.7
CIP.20.06.044	Replacement of T1 Controllers for Access Control System	€0.5
TOTAL		**€56.4**

Figure 8: Summary of 'Other' Proposed Projects

Appendix G - Others		
CIP Number	**Project Title**	**Cost €m**
CIP.20.07.001	Programme Management	€4.0
CIP.20.07.002	Minor Projects (projects generally under €100k, water pump replacements, gate area repairs etc.)	€12.5
CIP.20.07.004	Metro Coordination	€0.5
CIP.20.07.014	Terminal Operations Improvement Projects	€4.9
TOTAL		**€22.0**

Figure 9: Summary of Proposed Capacity Projects

Appendix C - Capacity		Terminal 1	Terminal 2	Airfield
CIP Number	**Project Title**	**Cost €m**		
CIP.20.03.004	Gate Post 9 Expansion (West Lands)			€9.2
CIP.20.03.006	Terminal 1 Kerbs	€13.6		
CIP.20.03.011A	Terminal 1 Check-In	€30.2		
CIP.20.03.012	Terminal 1 Central Search - Relocation to Mezz Level	€42.6		
CIP.20.03.013	Terminal 1 Departure Lounge (IDL) Reorientation and Rehabilitation	€42.4		
CIP.20.03.015	Terminal 1 Baggage Reclaim Upgrade & Alterations	€22.2		
CIP.20.03.016	Terminal 1 - Rapid Exit Arrivals	€2.2		
CIP.20.03.017	Terminal 1 Shuttle, bus lounges and injection points	€2.8		
CIP.20.03.018	Terminal 1 - Immigration Hall	€1.5		
CIP.20.03.020	Terminal 2 Check-in Area Optimisation		€14.8	
CIP.20.03.021	Terminal 2 Central Search Area Expansion		€5.6	
CIP.20.03.028	Terminal 2 Early bag store and transfer lines		€27.9	
CIP.20.03.029	New Pier 5 (T2 and CBP Enabled)		€323.6	
CIP.20.03.030	Expansion of US Pre-Clearance Facilities		€50.3	
CIP.20.03.031	South Apron Expansion (Remote Stands, Taxiway and Apron)		€89.8	
CIP.20.03.033A	Enablement of Pier 3 for Precleared US bound passengers		€8.5	
CIP.20.03.034	Pier 3 Immigration (Upgrade & Expansion)	€1.4	€4.3	
CIP.20.03.036	North Apron Development – Pier 1 Extension (Module 1) & Apron 5H PBZ	€175.3		
CIP.20.03.043A	Terminal 1 Piers - New Airbridges (6NBE / 3WB)	€33.9		
CIP.20.03.049	De-icing pad at Runway 10R			€5.0
CIP.20.03.051B	West Apron Vehicle Underpass - Pier 3 Option			€171.0
CIP.20.03.052	Surface Water Environmental Compliance	€25.5	€25.5	
CIP.20.03.054	New Remote Apron 5M - 17 NBEs	€54.1	€18.0	
CIP.20.03.057	Airside GSE Charging Facilities (Ground Handlers)			€5.0
CIP.20.03.071	Hydrant Enablement - Pier 2 & 3			€23.7
TOTAL		**€447.8**	**€568.4**	**€213.9**

1 STAKEHOLDER CONSULTATION

1. STAKEHOLDER CONSULTATION

This section outlines the stakeholder consultation that took place as part of this CIP submission. A series of pre-consultation meetings took place with key stakeholders in advance of formal consultation. Our CIP 2020+ Consultation Document was issued to airport stakeholders on 25th October 2018 and presentations with stakeholders took place from 3rd December 2018 to 6th December 2018.

Certain elements of this section are redacted for general publication as several stakeholder submissions were marked as 'Confidential'.

1.1. Consultation Process

Dublin Airport has consulted extensively with airport stakeholders on capacity requirements and other essential capital investment requirements (CORE projects required for the day-to-day running of the airport over the next 5 years) as part on the next regulatory period from 2020. Our consultation involved the following three phases;

(a) Pre-consultation with key airport stakeholders in Q2, Q3 and Q4 2018.

(b) Capital Investment Programme 2020+ consultation in Q4 2018. This included the issue of the *CIP 2020+ Consultation Document* on 25th October 2018 to airport stakeholders, and

(c) Presentation to airport stakeholders from 3rd December to 6th December 2018 at Dublin Airport.

Following the above consultation, the closing date for written responses was 21st December 2018. Dublin Airport received ten written responses to this consultation (which represented a total of 12 individual organisations who operate at Dublin Airport). A high-level summary of these ten responses is included in Figure 11 below.

In addition, the Commission for Aviation Regulation (CAR), who chaired the consultation meetings, issued draft minutes and action items on 14th December 2018. These were then issued as final minutes on 11th January 2019 with no material changes from the draft issue.

Dublin Airport issued a response *(CIP 2020 – Consultation Meeting Actions / Clarifications* – Attached as Appendix J*)* to the action items contained in these minutes on 20th December 2018 and requested that airport stakeholders respond with any supplementary comments by 11th January 2019. Supplementary comments were received from one airport stakeholder on 11th January 2019.

1.2. Formal Consultation Summary

Over a four-day period between the 3rd – 6th December 2018 a consultation process was held, chaired by the Commission for Aviation Regulation (CAR) during which Dublin Airport presented it proposed capital projects for CIP 2020+. Over the four days projects were presented in two broad categories, CORE projects (required to keep the airport operational on a day-to-day basis over the next 5 years – c.€0.6bn), and Capacity projects (required to accommodate growth – c.€1.1bn).

In addition, a number of other projects were also presented for consideration by airport stakeholders and possible inclusion in the final CIP submission to CAR.

The aim of the consultation process was to provide further clarity on the proposed CIP 2020 projects while allowing stakeholders the opportunity to provide their views and request additional clarification on project details.

Figure 10: Piers & Stands presentation – 6th December 2018

Attendance over the four days reflected a wide range of airport stakeholders and a list of airport stakeholders in attendance at various times over the 4-day consultation period is as follows;

[redacted]

The attendance by airport stakeholders reflected over 80% of passenger throughput. The consultation process over the four-day period consisted primarily of presentations. The capacity presentations on day 3 and day 4 were supplemented with models and drawings to provide greater clarity and insight into the individual projects.

A summary of stakeholder responses is provided between Sections 1.3 and 1.10 below and an overall high-level summary is detailed in Figure 11 below;

Figure 11: Airport Stakeholder Summary of Consultation

[redacted] Supports / Does not object / No Comment

[redacted] Partially Supports

[redacted] Objects

Project Grouping	Airport Stakeholder									
	1	2	3	4	5	6	7	8	9	10
Asset Care (CSF)	[redacted]									
Asset Care (M&E)	[redacted]									
Capacity	[redacted]									
Commercial	[redacted]									
Security	[redacted]									
Information Technology (IT)	[redacted]									
Other	[redacted]									
Projects Under Consideration	[redacted]									

The following sections provides a summary of all consultation feedback following formal consultation. Stakeholder feedback is described using the following symbols:

Figure 12: Stakeholder Feedback Legend

Stakeholder Feedback	Symbol
Supports / Does not Object	
Partially Supports	
Objects	
No Comment	

1.3. Asset Care Civil Structural Fleet (CSF) - Consultation Summary

A summary of the Asset Care CSF consultation responses is detailed in Figure 13 below.

Figure 13: Stakeholder Consultation – Asset Care CSF

Asset Care CSF	Airport Stakeholder
Project Title	
Southern Runway (10R/28L) Delethalisation	
Apron Rehabilitation	
Airfield Taxiway Rehabilitation	
Apron Road Rehabilitation	
Airfield Southern Perimeter Road Upgrade	
Runway Approach Lighting Mast Improvement	
Aerodrome Ground Lighting (AGL) Improvement	
Airfield Lighting Control & Management System Improvement	
AGL Substation T Development	
High Mast Lighting Improvement	
Airfield Maintenance Base Improvement	
Campus Buildings Critical Maintenance	
Terminal 1 Façade, Roof & Spirals	
Terminal 1 Storm Water Drainage System	
Piers & Terminals Critical Maintenance	
Skybridge Rehabilitation	
Campus Roads Critical Maintenance	
Airport Roads Critical Maintenance	
Staff Car Parks Critical Maintenance	
Public Carpark Critical Maintenance	
Campus Facilities & Landside Snow Base Upgrade	
Airport Heavy Fleet & Equipment Replacement	
Airport Light Vehicle Fleet Replacements and Augmentation	
Electric Charger Network Facilities	
Advance Visual Docking Guidance System (5G, Pier 1 & Pier 2)	
AGL Fibre Optic Communication Network Improvement Programme	
RWY 16/34 Lighting for Low Visibility Procedures (LVP)	
Airfield Redesignation	
Unit Load Device (ULD) Storage	

Three responses were received specifically in relation to Asset Care CSF projects with two stakeholders supportive of the investment in these projects as being necessary to maintain the airports infrastructure.

One stakeholder did not support any investment in this grouping, however this investment is critical to the safe, reliable and efficient operation of the airport over the next 5 years and is therefore included in our CIP 2020+ submission.

Specifically, one stakeholder requested that apron rehabilitation should include remedial works to enable wide-body stand usage on Pier 3 and this is included in the CIP 2020 submission.

One stakeholder also requested additional clarification in relation to the T1 Façade project, and specifically in relation to the spiral ramps and this was addressed in the Dublin Airport response to CAR action items *(CIP 2020 – Consultation Meeting Actions / Clarifications)* issued on 20th December 2018 – Appendix J. As the cost of removing the spiral ramps (some 5,000 tonnes of concrete) was identified as €6.4m, we are including in

our submission to CAR, the original option of repairing the spiral ramps to make safe at a cost of €0.5m

Four stakeholders expressed concern at the shortage of GSE parking and ULD storage facilities, in particular on the North apron area. These concerns are being addressed and an allowance is being included in this CIP 2020 submission under project CIP20.07.032 in Appendix A where the allowance being sought has been increased from €3m to €5m to address.

For details of all changes in Asset Care CSF following consultation refer to Section 4.2 below.

1.4. Asset Care M&E - Consultation Summary

A summary of the Asset Care M&E consultation responses is detailed in Figure 14 below.

Figure 14: Stakeholder Consultation – Asset Care M&E

Asset Care M&E	Airport Stakeholder									
Project Title										
Medium Voltage (MV) Electrical Network										
Second Medium Voltage (MV) Connection Point										
Passenger Boarding Bridges & FEGP										
Lift Upgrade Programme - Terminal and Multi-Storey										
Airport Water & Foul Sewer Upgrade										
Life Safety Systems (LSS) Upgrade Programme Terminal and MSCP Buildings										
Terminal Buildings HVAC Upgrade										
Campus Buildings: Mechanical, Electrical & LSS Upgrade										
Pier 3 Life Extension Works - Mech, Elec and Foul Drainage										
Small Energy Projects										
Large Energy Project - Photovoltaic Farm										

Three responses were received in relation to Asset Care M&E projects with two stakeholders supportive of the investment in these projects as being necessary to maintain the airports infrastructure.

One stakeholder did not support any investment in this grouping, however this investment is critical to the safe, reliable and efficient operation of the airport over the next 5 years and is therefore included in our CIP 2020+ submission.

Specifically, one stakeholder requested clarification on the Photovoltaic Farm-Large Energy Project, and this is addressed under Section 4.3 of this document.

One stakeholder expressed some concern in relation to the proposed Second MV Connection Point that was included in our consultation on the Additional Projects for Consideration list at an estimated cost of €20-25m. While we are firmly of the view that this project is required, we have decided to scale back this proposed project in terms of the allowance being sought to €1m – this submission does not reflect a narrower scope in relation to the second MV connection point but rather a first step in the process, whereby the reduced allowance would facilitate further analysis and a more detailed design. An allowance of €1m would ultimately deliver a more informed view on what is involved in delivering this project and would ultimately lead to a lower cost, should this project be approved and progressed at a later stage.

For details of all changes in Asset Care M&E following consultation refer to Section 4.3 below.

1.5. Commercial - Consultation Summary

A summary of the Commercial consultation responses is detailed in Figure 15 below. Four responses were received in relation to Commercial projects with one stakeholder supportive of the investment in these projects where they help to reduce airport charges. One stakeholder requested additional clarification in relation to the investment principles and capital costs, on a number of projects, as follows;

- Long Term Car-Parking (2000 spaces)
- Car Hire Consolidation Centre
- Office Consolidation & Refurbishment (primarily Level 4 and Level 5)
- Fast-Track Product Improvement
- Platinum Services

These clarifications are addressed in Section 4.4 of this document and in the project sheets in Appendix C.

One stakeholder did not support any investment in this grouping, however this investment is considered

essential to improving passenger experience, meeting capacity constraints and managing the safe, reliable and efficient operation of the airport over the next 5 years and is therefore included in our CIP 2020+ submission. In addition, investment in this grouping has a direct benefit to airport charges by generating revenue for the Single Till.

Figure 15: Stakeholder Consultation - Commercial

Commercial	Airport Stakeholder
Project Title	
Car Parking Management System (Maintenance & upgrade)	
Car Hire Consolidation Centre	
New Food & Beverage Fit-out (T1X)	
Digital Advertising Infrastructure	
Long Term Car Parking - Eastland's (2000 spaces)	
Terminal 1 Multi-Storey Car Park Block B (466 spaces)	
Terminal 2 Multi-Storey Car Park (680 spaces)	
Staff Car Park	
Platinum Services Upgrade Works	
Airline Lounges - Expansion, Upgrade & New	
Fast Track Improvements	
West Apron - Accommodation & Welfare Facilities	
Food & Beverage Provision & Fit-out – Post CBP	
Commercial Property Refurbishment	
New Kitchen in T 2	
Office Consolidation & Refurbishment	
Retail Refurbishments, Upgrades and New Developments	
Retail Marketing & Media Installation	

Car Hire Consolidation

Certain stakeholders expressed concerns with the Car Hire Consolidation project during the consultation meetings and subsequently, through their written submissions. Car rental is a key commercial business at Dublin Airport and currently subsidises airport charges by c.€0.65 per passenger. Our development consultants (Ricondo) have assessed the existing facility and confirm that demand has significantly outgrown the capacity of the facility (deficit of 1,700 spaces in 2017). In 2018, rental growth has slowed to 3.7% vs passenger traffic growth of 6%. This demonstrates that the car hire facilities are now delivering sub-optimal constrained returns. The wider passenger welfare would be best served by continuing to grow and broaden the car hire service offering and revenues. There is a real risk to this key revenue stream if capacity expansion is not delivered. In the absence of investment, car hire operators have advised that they will seek to move their leisure business offsite (70% of activity).

We are fully aware that certain stakeholders have expressed concerns regarding the attractiveness of the business case for this proposed investment. In an attempt to improve the attractiveness of the investment case, a refined scope and minimum technical solution has been sought, which reduces the capex cost to €14m and improves the business case return, as follows;

- IRR 14%
- NPV €17.7m
- Payback 8.5 years

Further details are included in Section 4.4 and in the project sheet in Appendix C (CIP.20.04.002).

Office Consolidation and Refurbishment project.

The commercial property portfolio is currently operating at a 99% occupancy rate across the airport campus and further revenue increases are challenged by the lack of available capacity that is coming online to rent to prospective clients. In parallel to this, daa utilises seven sites across the campus as office accommodation for the various airport teams. An opportunity exists to centralise 700 daa staff into one office location, so that prime real estate can be leased to commercial clients and earn additional commercial revenue or be demolished to facilitate the development of new pier infrastructure. The preferred location for the centralised daa offices are Levels 4 and 5 in Terminal 1. This location was never suitable for grade A office rental, as the infrastructure was originally designed for carparking. Significant enhancements are required to provide the capacity for 700 staff.

During consultation, certain stakeholders expressed

concerns as to the attractiveness of the business case for this project. As a result, we have reviewed the scope/technical specifications with a view to refining the overall cost and improving the investment return. The capital cost has reduced from €18m to €15m.

The business case also improves as follows;

IRR 8%

NPV €3.3m

Payback 11.5 years

The primary rationale for progressing this investment is to increase the commercial space by relocating staff from key buildings that can be quickly let to commercial clients. Consolidating daa staff will also reduce operating costs and vacate property that is required for demolition. Further details are included in Section 4.4 and in the project sheet in Appendix D (CIP.20.07.010).

1.6. Information Technology (IT) - Consultation Summary

A summary of the Information Technology consultation responses is detailed in Figure 16 below.

Figure 16: Stakeholder Consultation - IT

Information Technology	Airport Stakeholder									
Project Title										
Airfield Optimization										
Digital Passenger Experience										
Integrations and Data										
Baggage Systems										
Business Efficiency										
Commercial Systems										
Reliability, Safety, Security & Compliance										
Operational Devices										
Network Components - Lifecycle & Growth										
Passenger Processing (excl. Security Screening)										
Security Technology Innovation (Biometrics & FOD Detection)										
Servers and Storage - Lifecycle & Growth										
User Devices (Desktops, Mobile, Telephone, Radio)										
New Data Centre Hosting Location										
Microsoft Enterprise										
Innovation Fund										

Four responses were received in relation to Information Technology projects with two stakeholders generally supportive of the investment in these projects. One stakeholder requested additional clarification in relation to the efficiencies gained, on a number of projects, as follows;

- Airfield Optimisation
- Digital Passenger Experience
- Security Technology Innovation (Biometrics and FOD Detection) / IT Passenger Processing

These clarifications are addressed in Section 4.5 of this document and Appendix E.

One stakeholder did not support any investment in this grouping, however this investment is critical to the safe, secure, reliable and efficient operation of the airport including the passenger experience, over the next 5 years, and is therefore proposed in our CIP 2020+ submission.

One stakeholder expressed support for increased use of technology and digital solutions in enhancing the passenger experience, reducing cost and improving efficiency. Two stakeholders also supported increased investment in Self Boarding Gates and Biometric Identification Solutions. In this regard, the allowance for biometrics and passenger technology has increased from €10m to €16m – Reference project sheets CIP.20.05.010 & CIP.20.05.011. These projects are further developed and considered in Section 4.5 and Appendix E.

One stakeholder suggested the establishment of a joint Dublin Airport and airline forum on innovation to facilitate detailed collaboration on various initiatives to take place. Another stakeholder suggested that the IT Innovation fund should be self-funded. Dublin Airport are submitting a revised proposal for an Innovation Fund in the amount of €4m, to maintain the ability to adapt new technology to support growth and enhance the passenger experience.

1.7. Security - Consultation Summary

A summary of the Security consultation responses is detailed in Figure 17 below.

Figure 17: Stakeholder Consultation - Security

Security	Airport Stakeholder
Project Title	
Cabin-Baggage X-Ray Replacement & EDS Upgrade	
Full Body Scanners	
ATRS – Additional Lane in Terminal 1	
Screening and Logistics Centre	
Intrusion Detection Systems for Dublin Airport Boundaries	
Surface Road Blockers & Temporary Mobile Barriers	
Redevelopment of Training Facility (ASTO)	
Detection: Explosive Detection Dogs (EDD) and Mobile X Ray Unit	
VCP Automation to Enable Remote Screening	
Autopass - T1 Replacement & T2 Install	
TSA - X-Ray & FBSS Replacement	
Security Screening Equipment - End of Life	
ATRS - Central Search Areas (T1 and T2)	
Replacement of T1 Controllers for Access Control System	

Two responses were received in relation to Security projects with one stakeholder supportive of the investment in these projects.

One stakeholder did not support any investment in this grouping, however this investment is critical to the safe, secure, reliable and efficient operation of the airport including the passenger experience, over the next 5 years, and is therefore proposed in our CIP 2020+ submission.

One stakeholder requested clarification in relation to the use of biometrics and the alignment between Security and IT. This clarification was addressed in the Dublin Airport response to CAR action items *(CIP 2020 – Consultation Meeting Actions / Clarifications)* issued on 20th December 2018 – Appendix J.

One stakeholder requested that the benefits of the Screening and Logistics Centre be clearly identified, and this is clearly stated in Section 4.6 below.

1.8. Other - Consultation Summary

A summary of the Other Grouping consultation responses is detailed in Figure 18 below.

Figure 18: Stakeholder Consultation – Other Grouping

Other	Airport Stakeholder
Project Title	
Programme Management	
Minor Projects	
Metro Coordination	
Terminal Ops. Improvement Projects	

Two responses were received in relation to Other projects with one stakeholder generally supportive of the investment in these projects.

One stakeholder did not support any investment in this grouping, however this investment is critical to the ongoing operation of the airport including the passenger experience, over the next 5 years, and is therefore proposed in our CIP 2020+ submission. This investment is also essential to the ongoing governance and administration of the CIP 2020+ suite of projects.

These projects are further developed and considered in Section 4.7 and Appendix G.

1.9. Capacity - Consultation Summary

A summary of the Capacity consultation responses is detailed in Figure 19 and Figure 20 below. Projects included in Figure 19 are being included in the final submission to CAR while projects in Figure 20 are not being included in our submission to CAR.

Figure 19: Stakeholder Consultation – Capacity

Capacity	Airport Stakeholder									
Project Title										
Gate Post 9 Expansion										
Terminal 1 Kerbs										
Terminal 1 Check-In (Shoreline)										
Terminal 1 Central Search										
Terminal 1 Departure Lounge (IDL) Reorientation and Rehabilitation										
Terminal 1 Baggage Reclaim Upgrade & Alterations										
Terminal 1 - Rapid Exit Arrivals										
Terminal 1 Shuttle, bus lounges and injection										
Terminal 1 - Immigration Hall										
Terminal 2 Check-in Area Optimisation										
Terminal 2 Central Search Area Expansion										
Terminal 2 Early bag store and transfer lines										
New Pier 5 (T2 and CBP Enabled)										
Expansion of US Pre-Clearance										
South Apron Expansion (Remote Stands, Taxiway and Apron)										
Enablement of Pier 3 for Precleared US bound passengers										
Pier 3 Immigration (Upgrade & Expansion)										
North Apron Development – Pier 1 Extension (Module 1) & Apron 5H PBZ										
Terminal 1 Piers - New Airbridges (6NBE / 3WB)										
De-icing pad at Rwy 10R										
West Apron Vehicle Underpass - Pier 3										
Surface Water Environmental Compliance										
New Remote Apron 5M - 17 NBEs										
Airside GSE Charging Facilities										
Hydrant Enablement - Pier 2 & 3										

Broadly, all of the projects in the above capacity section were either 'supported by stakeholders' or were 'not objected to by stakeholders', with the exception of the following projects;

(a) **Gate Post 9 Expansion** – One stakeholder objected to this project, however this project is critical to the ongoing security of the CPSRA and is required to address the capacity requirements of vehicles accessing the West Apron, in particular the cargo operators that have relocated from the East Apron. This project is therefore being included in the CIP submission to CAR.

(b) **Enablement of Pier 3 for US pre-cleared passengers** – One stakeholder objected to this project, however this project is critical to meet the demand for US Pre-clearance aircraft and is essential for stand flexibility.

One stakeholder supported the development of a US Pre-clearance facility in Pier 3 and alternative pre-clearance processes that could be developed through use of technology. They also supported development that would lead to an improvement in stand flexibility for US pre-clearance.

The project proposed in this submission has been reviewed and refined based on stakeholder feedback and is being submitted at a revised cost of €8.5m based on a revised scope of works as detailed in Section 5.4.6 and the project sheet – Appendix C.

(c) **Terminal 1 Piers – New Airbridges** – One stakeholder objected to this project, however this project is critical to meet the demands of airlines who require Terminal 1 served airbridges.

(d) **West Apron Vehicle Underpass Pier 3** - One stakeholder objected to this project, and one stakeholder had concerns in relation to the Pier 3 option as being the preferred option. This project is critical to enable safe access to the West Apron to service the existing stands on the West Apron and to facilitate the expansion of stands west of Runway 16-34 (Apron 5M). Access to the West Apron will become severely constrained post the opening of the North Runway and a safe, reliable and efficient access must be provided. For further detail refer to project sheet (CIP.20.03.051B).

Following further analysis since the CIP 2020 Consultation Document was issued to stakeholders on 25th October 2018, the Underpass located at Apron 5G option was considered not to be the most optimal option, primarily for the following reasons;

- The remote location at the north western extremity of Apron 5G would render this option 'not ideal' as it is not central to key activity on the East Apron area.
- This option also requires the surface crossing of Apron Taxiway 6 (DS / C / DN) and this will become more challenging once the additional stands are provided in the North Apron (e.g. Apron 5H) and also when the North Runway becomes operational. With the volume of vehicles that would be using the underpass it would result in significant delays and congestion at this crossing point.
- This option is also located on a future parallel taxiway and therefore conflicts with the masterplan at 55mppa.
- As an underpass has a 50-year asset life, it is imperative that the most optimum solution is determined and implemented to avoid nugatory expenditure.
- The underpass option located at Pier 1 is also sub-optimal as this has a significant conflict with pedestrian traffic on the north side of Pier 1 and vehicle traffic accessing the underpass. With the volume of traffic using the underpass this will cause significant delays and also has safety concerns in relation to pedestrians crossing the path of significantly increased vehicle traffic. The mitigation for this would be to build a series of fixed links and nodes (VCC) at each stand on Pier 1 north side which would provide a poor passenger experience. In addition, the location is not optimum as the facilities serving passenger and cargo activity is located either centrally or in the southern end of the East Campus, i.e. baggage halls, bus gates, cargo & catering etc.

The Pier 3 option is more central being located close to both the Terminal 1 and the Terminal 2 baggage halls and other facilities, and therefore represents the most efficient access to the West Apron with the most predictable and shortest journey time. This is therefore the preferred solution.

(e) **Surface Water Environmental Compliance** - One stakeholder objected to this project, however this project is critical to meet the statutory compliance requirements in relation to the disposal and treatment of surface water run-off from Dublin Airport, and in particular the to address the contamination brought about by pavement and aircraft de-icing, required for safe operations.

(f) **New Remote Apron 5M (17 NBEs) -** One stakeholder objected to this project, however this project is critical to meet the forecast stand demand as identified in the Dublin Airport response to CAR action items (*CIP 2020 – Consultation Meeting Actions / Clarifications*) issued on 20th December 2018 – Appendix J).

(g) **Hydrant Enablement Pier 2 / Pier 3** - One stakeholder objected to this project, however this project is being progressed on the basis that providing fuel to contact stands is a key priority for Dublin Airport in order to reduce the amount of activity on stands and to provide a consistent product to all contact stands.

One stakeholder had concerns in relation to the check-in closure times for the North and South PBZ's. This clarification was addressed in the Dublin Airport response to CAR action items *(CIP 2020 – Consultation Meeting Actions / Clarifications)* issued on 20th December 2018 – Appendix J.

A380:

One stakeholder had concerns in relation to the ability to accommodate the Airbus A380 aircraft. There are currently no Code F aircraft operations at Dublin Airport, either on a scheduled or ad-hoc basis. As a result, the development of dedicated Code F infrastructure is not a critical current priority. The new North Runway that is currently under construction will be capable of accommodating unrestricted Code F operations. The expected schedule at 40mppa forecasts a very small number of potential Code F operations. In their current state, the airfield and contact aprons/stands/bridges are not ideally positioned to handle regular Code F activity. The current development plan is shortlisting options for upgrading an existing contact stand to support regular Code F service from 2022, when the new runway is fully operational. We are not currently in a position to specifically submit the exact details of what the preferred solution could be, rather we are continuing to progress the feasibility study to completion. When completed, we will further consult with airport stakeholders to determine if the proposed solution

should be progressed from within the flexible capacity development allowances awarded under CIP 2020.

Six stakeholders expressed concern in relation to lack of suitable de-icing facilities with three stakeholders specifically supporting de-icing facilities. One stakeholder stated that any de-icing pad should cater for initial de-icing and departure from there. An allowance is being included in the CIP 2020 submission for de-icing at Runway 10 under project CIP.20.03.049.

One stakeholder requested inclusion of the following in CIP 2020;

- Transfer baggage belt between T1 & T2 – this is being addressed as part of a separate consultation process on Standard 3 HBS.
- Passenger transfer product T1 – this will be considered in the North Apron Development suite of projects – Reference 5.3.1.

1.10. Additional Projects for Consideration

A summary of the Additional Projects Under Consideration consultation responses is detailed in Figure 20 below. Where projects are progressing from this category they have been reallocated to Figure 19 above and the projects listed under Figure 20 below, are not being included in our submission to CAR.

Figure 20: Stakeholder Consultation – Additional Projects for Consideration

	Airport Stakeholder
Project Title	
Central Island Redevelopment - Corballis Park	
Terminal 1 Check-In (Island 1 & 2)	
Terminal 1 - 6 bay Sorter Replacement	
Terminal 2 Check-in Extension - Expand existing footprint	
Terminal 2 International Departures Lounge -	
Enablement of Pier 3 for Precleared US bound passengers	
North Apron Development – Pier 1 Extension (Module 2)	
North Apron De-icing pad	
Pier 1 Fixed Links and Airbridges	
Pier 2 Wide Body Enablement - Pier Extension	
New West Satellite Pier incl. Airfield	
New Taxiway W	
Rapid Exit Taxiway RWY 10/28	
West Apron Vehicle Underpass - 5G Option	
West Apron Vehicle Underpass – Northern Pier 1 Option	
Engine test facility (Code E)	
Terminal 2 HBS Standard 3	

Terminal 1 Piers – Airbridges

During the stakeholder consultations, we received clear requests for additional airbridge served contact stands to support Terminal 1 carriers. The first request relates to additional dual-airbridge capacity on Pier 3 to support five-star, intercontinental widebody services. We propose to progress this project through the Asset Care (M&E) project submissions. A number of T1 carriers also requested airbridge capability across Piers 1 and 2, both for short haul narrow body services and widebody long-haul operations. The redevelopment and full extension of Pier 2 is very much a live consideration. However, the finished product is ultimately constrained by Runway 16-34 continuing to operate as a live runway. The most logical juncture to assess the future of Runway 16-34 is in 2022, when the parallel runway system is fully operational. Therefore, it would be premature to attempt to redevelop Pier 2 or Pier 3 before this review is complete. In the meantime, the priority is to maximise the installation of additional airbridges across T1 Piers. We are submitting a dedicated project request for €34m to progress additional airbridges across T1 Piers. We propose to fast-track stands 200 and 201 for parallel airbridge access to two full Code C aircraft (or single widebody – prioritised for carriers with premium cabins) and a full gate area refurbishment on the upper level of Pier 2. This project will deliver an improved passenger experience at an efficient cost. A feasibility study will be progressed to determine the optimal pier locations for the allocation of the remainder of this project allowance.

Pier 1: Module 1 & 2:

Additional contact stand capacity is a key focus for CIP 2020+. Dublin Airport presented a long-term vision to develop a full eastern extension to Pier 1. Module 1 of this development is critical to support the capacity required to meet 40mppa by 2025 and we recommend immediate progression of this phase of works. During consultation, stakeholder support was expressed for the progression of module 2 during this CIP period. Subsequent modules are not specifically required from a capacity perspective until post 40mppa. We therefore recommend that statutory planning permission is advanced for the full Pier 1 extension (all modules) as soon as possible, but the construction of subsequent modules is deferred until the 40mppa trigger. This deferred timeline will also provide clarity on the future locations of the MRO facilities, which will undoubtedly be a key consideration in the design/cost of the subsequent modules.

De-icing:

Five stakeholders supported the proposed de-icing facility in the North Apron, however this project is not being included as further analysis on the location is required to ensure this is the most suitable location. As part of this analysis the overall de-icing strategy will be finalised.

1.1. Summary

Dublin Airport appreciates the feedback from airport stakeholders throughout this consultation process and we look forward to working with you over the next 5 years in the delivery of this Capital Investment Programme.

CIP2020+ Project Change Log

Consultation vs Final Submission

CIP Project List
(Appendix A - G)

CIP Number	Project Title	Consultation Document (issued 25 Oct 2018) €m	CIP Document (issued 6 Feb 2019) €m	Delta €m	Project promoted / demoted (Since Consultation)	Comment
CIP.20.01.001	Southern Runway (R10R/28L) Delethalisation Programme	€2.2	€2.2	-		No Change
CIP.20.01.002	Apron Rehabilitation Programme	€44.0	€37.0	-€7.0		Scope prioritised to align with overall construction plan and deliverability - with some works deferred to 2025
CIP.20.01.003	Airfield Taxiway Rehabilitation Programme	€22.0	€19.0	-€3.0		Scope prioritised to align with overall construction plan and deliverability - with some works deferred to 2025
CIP.20.01.004	Apron Road Rehabilitation Programme	€5.6	€4.6	-€1.0		Scope prioritised to align with overall construction plan and deliverability - with some works deferred to 2025
CIP.20.01.006	Airfield Southern Perimeter Road Upgrade Programme	€4.6	€4.6	-		No Change
CIP.20.01.008	Runway Approach Lighting Mast Improvement Programme	€11.1	€11.1	-		No Change
CIP.20.01.009	Aerodrome Ground Lighting (AGL) Improvement Programme	€4.7	€4.7	-		No Change
CIP.20.01.010	Airfield Lighting Control & Management System Improvement Programme	€4.9	€4.9	-		No Change
CIP.20.01.012	AGL Substation T Development Programme	€3.7	€3.7	-		No Change
CIP.20.01.015	High Mast Lighting Improvement	€0.7	€0.7	-		No Change
CIP.20.01.016	Airfield Maintenance Base Improvement Programme	€4.5	€4.5	-		No Change
CIP.20.01.018	Campus Buildings Critical Maintenance	€1.5	€1.5	-		No Change
CIP.20.01.020	Terminal 1 Façade, Roof & Spirals	€25.8	€25.8	-		No Change
CIP.20.01.022	Terminal 1 Storm Water Drainage System	€1.1	€1.1	-		No Change
CIP.20.01.023	Piers & Terminals Critical Maintenance	€1.9	€1.9	-		No Change
CIP.20.01.024	Skybridge Rehabilitation	€1.2	€1.2	-		No Change
CIP.20.01.034	Campus Roads Critical Maintenance	€9.0	€6.8	-€2.3		Scope prioritised to align with overall construction plan and deliverability - with some works deferred to 2025
CIP.20.01.039	Airport Roads Critical Maintenance	€6.9	€5.1	-€1.7		Scope prioritised to align with overall construction plan and deliverability - with some works deferred to 2025
CIP.20.01.046	Staff Car Parks Critical Maintenance	€1.7	€1.7	-		No Change
CIP.20.01.049	Public Carpark Critical Maintenance	€2.4	€2.4	-		No Change
CIP.20.01.056	Campus Facilities & Landside Snow Base Upgrade	€2.9	€2.9	-		No Change
CIP.20.01.065	Airport Heavy Fleet & Equipment Replacement	€14.7	€11.0	-€3.7		Equipment replacement programme prioritised and rationalised to delay replacement of some vehicles to 2025
CIP.20.01.069	Airport Light Vehicle Fleet Replacements and Augmentation	€3.2	€2.4	-€0.8		Equipment replacement programme prioritised and rationalised to delay replacement of some vehicles to 2025
CIP.20.01.071	Electric Charger Network Facilities	€1.6	€1.6	-		No Change
CIP.20.01.074	Advance Visual Docking Guidance System (5G, Pier 1 & Pier 2)	€5.3	€5.3	-		No Change
CIP.20.01.087	AGL Fibre Optic Communication Network Improvement Programme	€2.0	€2.0	-		No Change
CIP.20.01.099	RWY 16/34 Lighting for Low Visibility Procedures (LVP)	€5.5	€5.5	-		No Change
CIP.20.07.013	Airfield Redesignation	€1.5	€1.5	-		No Change
CIP.20.07.032	Unit Load Device (ULD) Storage	€3.0	€5.0	€2.0		Project increased from €3m to €5m following Stakeholder Support in Consultation. Four stakeholders expressed concern at the shortage of GSE parking and ULD storage facilities, in particular on the North apron area.
CIP.20.02.001	Medium Voltage (MV) Electrical Network	€6.3	€6.3	-		No Change
CIP.20.02.002	Second Medium Voltage (MV) Connection Point	-	€1.0	€1.0	▲	Promoted from Appendix H. While we are firmly of the view that this project is required, we have decided to scale back this proposed project in terms of the allowance being sought to €1m – this submission does not reflect a narrower scope in relation to the second MV connection point but rather a first step in the process, whereby the reduced allowance would facilitate further analysis and a more detailed design. An allowance of €1m would ultimately deliver a more informed view on what is involved in delivering this project and would ultimately lead to a lower cost, should this project be approved and progressed at a later stage.
CIP.20.02.004	Passenger Boarding Bridges (Maintenance & P3 Enhancement) & Fixed Electrical Ground Power	€18.1	€18.1	-		No Change
CIP.20.02.005	Lift Upgrade Programme - Terminal and Multi-Storey	€6.2	€6.2	-		No Change

CIP Number	Project Title	Consultation Document (issued 25 Oct 2018) €m	CIP Document (issued 6 Feb 2019) €m	Delta €m	Project promoted / demoted (Since Consultation)	Comment
CIP.20.02.006	Airport Water & Foul Sewer Upgrade	€5.0	€5.0	-		No Change
CIP.20.02.007	Life Safety Systems (LSS) Upgrade Programme Terminal and MSCP Buildings	€14.1	€10.1	-€4.0		Scope prioritised to align with overall construction plan and deliverability - with some works deferred to 2025
CIP.20.02.008	Terminal Buildings HVAC Upgrade	€17.8	€17.8	-		No Change
CIP.20.02.009	Campus Buildings: Mechanical, Electrical & LSS Upgrade	€9.5	€9.5	-		No Change
CIP.20.02.010	Pier 3 Life Extension Works - Mech, Elec and Foul Drainage	€14.0	€14.0	-		No Change
CIP.20.02.013	Small Energy Projects	€4.8	€4.8	-		No Change
CIP.20.07.030	Large Energy Project - Photovoltaic Farm	€10.0	€10.0	-		No Change
CIP.20.03.004	Gate Post 9 Expansion (West Lands)	€9.2	€9.2	-		No Change
CIP.20.03.006	Terminal 1 Kerbs	€19.9	€13.6	-€6.3		Scope refined to focus on forecourt and bus laydown. Infrastructure coordination requirements with Metro removed until following CIP.
CIP.20.03.011	Terminal 1 Check-In (Island 1 & 2)	€23.7	-	-€23.7	▼	Project replaced with Terminal 1 Check-In (Partial shoreline) (CIP.20.03.011A)
CIP.20.03.011A	Terminal 1 Check-In (Partial shoreline)	-	€30.2	€30.2	▲	Promoted from Appendix H following stakeholder support at consultation. Replaces CIP.20.03.011
CIP.20.03.012	Terminal 1 Central Search - Relocation to Mezz Level	€49.8	€42.6	-€7.2		Cost updated following additional information and cost refinement (remeasure).
CIP.20.03.013	Terminal 1 Departure Lounge (IDL) Reorientation and Rehabilitation	€42.9	€42.4	-€0.5		Cost updated following additional information and cost refinement (remeasure).
CIP.20.03.015	Terminal 1 Baggage Reclaim Upgrade & Alterations	€39.1	€22.2	-€16.9		Scope (including finishes) revised to provide a minimum technical solution
CIP.20.03.016	Terminal 1 - Rapid Exit Arrivals	-	€2.2	€2.2	▲	Promoted from Appendix H following stakeholder support at consultation. Project has potential to reduce congestion on current egress.
CIP.20.03.017	Terminal 1 Shuttle, bus lounges and injection points	€2.0	€2.8	€0.9		Cost updated following additional information and cost refinement (remeasure).
CIP.20.03.018	Terminal 1 - Immigration Hall	-	€1.5	€1.5	▲	New Project. Identified during Consultation as critical to Immigration process for all development plans on Pier 1 & 2.
CIP.20.03.020	Terminal 2 Check-in Area Optimisation	€9.8	€14.8	€5.0		Revised scope to better meet airline needs following consultation - check-in desks with collector belt connection increased from 4 to 6.
CIP.20.03.021	Terminal 2 Central Search Area Expansion	€13.6	€5.6	-€7.9		Cost updated following additional information and cost refinement (remeasure).
CIP.20.03.028	Terminal 2 Early bag store and transfer lines	€27.9	€27.9	-		No Change
CIP.20.03.029	New Pier 5 (T2 and CBP Enabled)	€304.1	€323.6	€19.6		Cost updated following additional information and cost refinement (remeasure). T2 Immigration re-orientation (CIP.20.03.024) included as part of revised allowance.
CIP.20.03.030	Expansion of US Pre-Clearance Facilities	€46.4	€50.3	€3.9		Cost updated following additional information and cost refinement (remeasure).
CIP.20.03.031	South Apron Expansion (Remote Stands, Taxiway and Apron)	€95.8	€89.8	-€6.0		Cost updated following additional information and cost refinement (remeasure).
CIP.20.03.033A	Enablement of Pier 3 for Precleared US bound passengers	-	€8.5	€8.5	▲	Promoted from Appendix H. The project proposed in this submission has been reviewed and refined based on stakeholder feedback and is being submitted at a revised cost of €8.5m to reflect the modified scope of works.
CIP.20.03.034	Pier 3 Immigration (Upgrade & Expansion)	€6.1	€5.7	-€0.3		Cost updated following additional information and cost refinement (remeasure).
CIP.20.03.036	North Apron Development – Pier 1 Extension (Module 1) & Apron 5H PBZ	€187.9	€175.3	-€12.6		Cost updated following additional information and cost refinement (remeasure).
CIP.20.03.040	North Apron De-icing pad	€6.1	-	-€6.1	▼	This project is not being included as further analysis is required to ensure this is the most suitable location. As part of this analysis the overall de-icing strategy will be finalised.
CIP.20.03.043A	Terminal 1 Piers - New Airbridges (6NBE / 3WB)	-	€33.9	€33.9	▲	Promoted from Appendix H. We propose to fast-track stands 200 and 201 for parallel airbridge access to two full Code C aircraft (or single widebody – prioritised for carriers with premium cabins) and a full gate area refurbishment on the upper level of Pier 2. This project will deliver an improved passenger experience at an efficient cost. A feasibility study will be progressed to determine the optimal pier locations for the allocation of the remainder of this project allowance.
CIP.20.03.049	De-icing pad at Runway 10R	-	€5.0	€5.0	▲	Promoted from Appendix H following stakeholder support at consultation.
CIP.20.03.051A	West Apron Vehicle Underpass – Northern Pier 1 Option	€85.0	-	-€85.0	▼	Project replaced with West Apron Vehicle Underpass Pier 3 (CIP.20.03.051B)
CIP.20.03.051B	West Apron Vehicle Underpass - Pier 3	-	€171.0	€171.0	▲	New Project. This project was not included in the CIP Consultation Document but was presented during formal Consultation. The Pier 3 option is more central being located close to both the Terminal 1 and the Terminal 2 baggage halls and other facilities, and therefore represents the most efficient access to the West Apron with the most predictable and shortest journey time. This is therefore the preferred solution.
CIP.20.03.052	Surface Water Environmental Compliance	€51.0	€51.0	-		No Change
CIP.20.03.054	New Remote Apron 5M - 17 NBEs	€60.1	€72.1	€12.0		Revised Scope. Following further design greater efficiency (and utilisation of available apron area) was identified. The original 10 NBEs at €60.1m is now better refined to provide 17NBEs at €72m.
CIP.20.03.057	Airside GSE Charging Facilities (Ground Handlers)	€5.0	€5.0	-		No Change
CIP.20.03.071	Hydrant Enablement - Pier 2 & 3	-	€23.7	€23.7	▲	Promoted from Appendix H. Following stakeholder support this project has been included in the CIP. The scope has increased to cover both Pier 2 & Pier 3 (The original estimate only included Pier 3)
CIP.20.04.001	Car Parking Management System (Maintenance & upgrade)	€3.1	€3.1	-		No Change
CIP.20.04.002	Car Hire Consolidation Centre	€18.1	€14.0	-€4.1		Revised Scope. Full Parking allowance maintained while provision of Central Car Hire facilities reduced. Certain stakeholders expressed concerns regarding the attractiveness of the business case for this proposed investment. In an attempt to improve the attractiveness of the investment case, a refined scope and minimum technical solution has been sought, which reduces the capex cost to €14m and improve payback from 12 yrs to 8.5yrs.

CIP Number	Project Title	Consultation Document (issued 25 Oct 2018) €m	CIP Document (issued 6 Feb 2019) €m	Delta €m	Project promoted / demoted (Since Consultation)	Comment
CIP.20.04.003	New Food & Beverage Fit-out (T1X)	€2.1	€2.1	-		No Change
CIP.20.04.004	Digital Advertising Infrastructure	€2.2	€2.2	-		No Change
CIP.20.04.005	Long Term Car Parking - Eastland's (2000 spaces)	€5.9	€5.9	-		No Change
CIP.20.04.006	Terminal 1 Multi-Storey Car Park Block B (466 spaces)	€18.8	€18.8	-		No Change
CIP.20.04.007	Terminal 2 Multi-Storey Car Park (680 spaces)	€15.1	€15.1	-		No Change
CIP.20.04.009	Staff Car Park	-	€6.0	€6.0	▲	Promoted from Appendix H following stakeholder support for provision of Staff Carpark.
CIP.20.04.016	Platinum Services Upgrade Works	€2.1	€2.1	-		No Change
CIP.20.04.017	Airline Lounges - Expansion, Upgrade & New	€11.4	€11.4	-		No Change
CIP.20.04.018	Fast Track Improvements	€1.7	€1.7	-		No Change
CIP.20.04.021	West Apron - Accommodation & Welfare Facilities	€4.5	€4.5	-		No Change
CIP.20.04.023	Food & Beverage Provision & Fit-out – Post CBP	€3.2	€3.2	-		No Change
CIP.20.04.025	Commercial Property Refurbishment	€8.0	€8.0	-		No Change
CIP.20.04.030	New Kitchen in Terminal 2	-	€3.0	€3.0	▲	New Project. Not included in Consultation Document but presented during Consultation in December 2019. Project has a strong return - IRR OF 26%, Payback 6.5years & NPV €8.7m.
CIP.20.07.010	Office Consolidation & Refurbishment	€18.0	€15.0	-€3.0		Revised Scope. During consultation, certain stakeholders expressed concerns as to the attractiveness of the business case for this project. As a result, we have reviewed the scope/technical specifications with a view to refining the overall cost and improving the investment return. The capital cost has reduced from €18m to €15m.
CIP.20.08.001	Retail Refurbishments, Upgrades and New Developments	€8.0	€8.0	-		No Change
CIP.20.08.002	Retail Marketing & Media Installation	€1.5	€1.5	-		No Change
CIP.20.05.001	Airfield Optimization	€7.9	€5.9	-€2.0		Scope refined following consultation. Reduction of €2m to SWIM and AOP proposals. Deliverability of full suite of SESAR initiatives within CIP period contributor to reduction in scope.
CIP.20.05.002	Digital Passenger Experience	€1.8	€1.8	-		No Change
CIP.20.05.003	Integrations and Data	€7.1	€5.1	-€2.0		Scope refinement following consultation. Reduction predominately driven by revised BI platform allowance. Prioritisation of funds elsewhere (Self Boarding Gates and Biometric identification Solutions).
CIP.20.05.004	Baggage Systems	€1.3	€1.3	-		No Change
CIP.20.05.005	Business Efficiency	€6.2	€6.2	-		No Change
CIP.20.05.006	Commercial Systems	€2.3	€2.3	-		No Change
CIP.20.05.007	Reliability, Safety, Security & Compliance	€8.2	€8.2	-		No Change
CIP.20.05.008	Operational Devices (Support & Maintenance)	€1.8	€1.8	-		No Change
CIP.20.05.009	Network Components - Lifecycle & Growth	€6.9	€6.9	-		No Change
CIP.20.05.010	Passenger Processing (excl. Security Screening)	€7.0	€11.0	€4.0		Collective increase of €6m across CIP.20.05.010 & CIP.20.05.010 driven by strong Stakeholder support for increased investment in Self Boarding Gates and Biometric identification Solutions. CIP.20.05.010 increase allows for wider rollout of self-boarding gates (from 25 to 129) over the next CIP Period
CIP.20.05.011	Security Technology Innovation (Biometrics & FOD Detection)	€3.0	€5.0	€2.0		Collective increase of €6m across CIP.20.05.010 & CIP.20.05.010 driven by strong Stakeholder support for increased biometric investment. CIP.20.05.011 increase allows for increase in Biometric devices to support wide biometric adoption (800 devices)
CIP.20.05.012	Servers and Storage - Lifecycle & Growth	€5.6	€5.6	-		No Change
CIP.20.05.014	User Devices (Desktops, Mobile, Telephone, Radio)	€3.7	€3.7	-		No Change
CIP.20.05.015	New Data Centre Hosting Location	€4.0	€4.0	-		No Change
CIP.20.05.016	Microsoft Enterprise	€6.0	€6.0	-		No Change
CIP.20.05.020	Innovation Fund	-	€4.0	€4.0	▲	New Project. Not included in Consultation Document, however following discussions during consultation we are including an Innovation fund in the amount of €4m, to maintain the ability to adapt new technology to support growth and enhance the passenger experience.
CIP.20.06.001	Cabin-Baggage X-Ray Replacement & EDS Upgrade	€14.6	€14.6	-		No Change
CIP.20.06.007	Full Body Scanners	€1.9	€1.9	-		No Change
CIP.20.06.009	ATRS – Additional Lane in Terminal 1	€0.6	€0.6	-		No Change
CIP.20.06.014	Screening and Logistics Centre	-	€13.4	€13.4	▲	Promoted from Appendix H. The capital request of this project has reduced from €18.9m to €13.5m following project refinement post consultation.
CIP.20.06.015	Intrusion Detection Systems for Dublin Airport Boundaries	€4.0	€4.0	-		No Change
CIP.20.06.016	Surface Road Blockers & Temporary Mobile Barriers	€1.0	€1.0	-		No Change
CIP.20.06.022	Redevelopment of Training Facility (ASTO)	€1.2	€1.2	-		No Change

CIP Number	Project Title	Consultation Document (issued 25 Oct 2018) €m	CIP Document (issued 6 Feb 2019) €m	Delta €m	Project promoted / demoted (Since Consultation)	Comment
CIP.20.06.025	Detection: Explosive Detection Dogs (EDD) and Mobile X Ray Unit	€0.2	€0.2	-		No Change
CIP.20.06.030	VCP Automation to Enable Remote Screening	€0.7	€0.7	-		No Change
CIP.20.06.031	Autopass - T1 Replacement & T2 Install	€1.8	€1.8	-		No Change
CIP.20.06.036	TSA - X-Ray & FBSS Replacement	€0.4	€0.4	-		No Change
CIP.20.06.041	Security Screening Equipment - End of Life	€4.5	€4.5	-		No Change
CIP.20.06.042	ATRS - Central Search Areas (T1 and T2)	€11.7	€11.7	-		No Change
CIP.20.06.044	Replacement of T1 Controllers for Access Control System	€0.5	€0.5	-		No Change
CIP.20.07.001	Programme Management	€6.5	€4.0	-€2.5		Reduction to Programme Management allowance - allowance refined following full review of portfolio management approach to fixed suite of project. Improved efficiency by grouping of projects.
CIP.20.07.002	Minor Projects	€14.5	€12.5	-€2.0		Reduction to Minor Project allowance - allowance now allows for €2.5m pa. Inclusion of Innovation Fund since consultation has allowed for portion of the Minor Projects allowance to be reduced.
CIP.20.07.004	Metro Coordination	€0.5	€0.5	-		No Change
CIP.20.07.014	Terminal Operations Improvement Projects	€5.9	€4.9	-€1.0		Scope prioritisation and refinement carried out following consultation has resulted in a revised allowance.
CIP.20.07.031	Terminal 2 HBS Standard 3	€21.0	-	-€21.0	▼	Being carried out under separate consultation process.
TOTAL		**€1,678.2**	**€1,797.4**	**€119.2**		

CIP Project List
(Appendix H)

CIP Number	Project Title	Consultation Document (issued 25 Oct 2018) €m	CIP Document (issued 6 Feb 2019) €m	Delta €m	Project promoted / demoted (Since Consultation)	Comment
CIP.20.02.002	Second Medium Voltage (MV) Connection Point	€20.0	-		▲	Promoted from Appendix H to Appendix B following stakeholder support at consultation. Replaces CIP.20.03.011
CIP.20.04.009	Staff Car Park	€6.0	-		▲	Promoted from Appendix H to Appendix Following stakeholder support at consultation for provision of Staff Carpark.
CIP.20.04.013	Central Island Redevelopment - Corballis Park	€10.3	-			Project not being included at this stage as higher priority Commercial projects prioritised.
CIP.20.06.014	Screening and Logistics Centre	€18.9	-		▲	Promoted from Appendix H to Appendix F. The capital request of this project has reduced from €18.9m to €13.5m following project refinement post consultation.
CIP.20.03.011A	Terminal 1 Check-In (Partial shoreline)	€29.9	-		▲	Promoted from Appendix H to Appendix C following stakeholder support at consultation. Replaces CIP.20.03.011
CIP.20.03.016	Terminal 1 - Rapid Exit Arrivals	€1.3	-		▲	Promoted from Appendix H to Appendix C following stakeholder support at consultation. Project has potential to reduce congestion on current egress.
CIP.20.03.019	Terminal 1 - 6 bay Sorter Replacement	€9.4	-			Project not included in Submission . To be considered as part of Terminal Development post 2024.
CIP20.03.020A	Terminal 2 Check-in Extension - Expand existing footprint	€30.0	-			Project not included in Submission . Current capacity requirements addressed more efficiently by CIP.20.03.020 - see Appendix C.
CIP.20.03.022	Terminal 2 International Departures Lounge - Level 35 Reoptimisation	€13.4	-			Project not included in Submission . To be considered as part of Terminal Development post 2024.
CIP.20.03.024	Terminal 2 Immigration Hall - Reorientation (Merged with CIP.20.03.029)	€2.5	-		▲	Promoted from Appendix H. This project is not visible in Appendix C as it was merged with CIP.20.03.029. This was highlighted as critical to support the New Pier 5 development during consultation.
CIP.20.03.033	Enablement of Pier 3 for Precleared US bound passengers	€49.4	-			Promoted from Appendix H to Appendix C. The project proposed in this submission has been reviewed and refined based on stakeholder feedback and is being submitted at a revised cost of €8.5m to reflect the modified scope of works. CIP 20.03.033A
CIP.20.03.036A	North Apron Development – Pier 1 Extension (Module 2)	€97.7	-			Remains outside of CIP. Module 1 of this development is critical to support the capacity required to meet 40mppa by 2025 and we recommend immediate progression of this phase of works. During consultation, stakeholder support was expressed for the progression of module 2 during this CIP period. Subsequent modules are not specifically required from a capacity perspective until post 40mppa. We therefore recommend that statutory planning permission is advanced for the full Pier 1 extension (all modules) as soon as possible, but the construction of subsequent modules is deferred until the 40mppa trigger. This deferred timeline will also provide clarity on the future locations of the MRO facilities, which will undoubtedly be a key consideration in the design/cost of the subsequent modules.
CIP.20.03.043	Pier 1 Fixed Links and Airbridges	€14.0	-			Remains outside CIP. Alternative proposal (CIP.20.03.043A) included in Appendix C to address Airbridge requirements.
CIP.20.03.043A	Terminal 1 Piers - New Airbridges (6NBE / 3WB)	€51.7	-		▲	Promoted from Appendix H to Appendix C. We propose to fast-track stands 200 and 201 for parallel airbridge access to two full Code C aircraft (or single widebody – prioritised for carriers with premium cabins) and a full gate area refurbishment on the upper level of Pier 2. This project will deliver an improved passenger experience at an efficient cost. A feasibility study will be progressed to determine the optimal pier locations for the allocation of the remainder of this project allowance.
CIP.20.03.043B	Pier 2 Wide Body Enablement - Pier Extension	€196.8	-			Project not included in Submission. Remains outside CIP. Alternative proposal (CIP.20.03.043A) included in Appendix C to address Airbridge requirements. The redevelopment and full extension of Pier 2 is very much a live consideration. However, the finished product is ultimately constrained by Runway 16-34 continuing to operate as a live runway. The most logical juncture to assess the future of Runway 16-34 is in 2022, when the parallel runway system is fully operational. Therefore, it would be premature to attempt to redevelop Pier 2 or Pier 3 before this review is complete.
CIP.20.03.045	New West Satellite Pier incl. Airfield	€351.0	-			Project not included in Submission . Project to be considered in subsequent Capital Investment Programmes after dedicated vehicular access is provided to the West of RWY 16/34.
CIP.20.03.047	New Taxiway W	€30.3	-			Project not included in Submission. Project to be considered in subsequent Capital Investment Programmes once activity increases east of RWY 16/34 (increase in taxi utilisation following completion of North Runway) .Current capacity assessment does not prioritise Taxiway W.
CIP.20.03.048	Rapid Exit Taxiway RWY 10/28	€7.5	-			Project not included in Submission. Stakeholder feedback has suggested the construction of E5 RET should only be considered after the opening of the North Runway. Constructing E5 RET during this CIP period (one runway) would have too great an impact on airfield operations. Overall benefit still under evaluation.
CIP.20.03.049	De-icing pad at Runway 10R	€5.0	-		▲	Promoted from Appendix H to Appendix C following stakeholder support at consultation.
CIP.20.03.051	West Apron Vehicle Underpass - 5G Option	€79.0	-			Project not included in Submission. Remains outside CIP. Alternative proposal (CIP.20.03.051B - Pier 3 Underpass) included in Appendix C to address 16/34 underpass requirements. The remote location of the 5G underpass at the north western extremity of Apron 5G renders this option 'not ideal' as it is not central to key activity on the East Apron area. The 5G underpass also requires a surface crossing of Apron Taxiway 6 (DS / C / DN) and this will become more challenging due to increased traffic once the additional stands are provided in the North Apron (e.g. Apron 5H) and also when the North Runway becomes operational.
CIP.20.03.055	Engine test facility (Code E)	€10.0	-			Project not included in Submission. Remains outside CIP.
CIP.20.03.070	Terminal 2 CBP Make-up and Baggage Hall entrance (Merged with CIP.20.03.030)	€1.0	-		▲	Promoted from Appendix H. This project is not visible in Appendix C as it was merged with CIP.20.03.030. This project is a critical part of the overall CBP Baggage project CIP.20.03.030.
CIP.20.03.071	Hydrant Enablement - Pier 2 & 3	€10.4	-		▲	Promoted from Appendix H to Appendix C. Following stakeholder support this project has been included in the CIP. The scope has increased to cover both Pier 2 & Pier 3 (The original estimate only included Pier 3)
TOTAL		**€ 1,045.4**	**-**	**-**		

CIP Project List
(Projects Removed - demoted from Appendix A - G)

CIP Number	Project Title	Consultation Document (issued 25 Oct 2018) €m	CIP Document (issued 6 Feb 2019) €m	Delta €m	Project promoted / demoted (Since Consultation)	Comment
CIP.20.03.011	Terminal 1 Check-In (Island 1 & 2)	-	-		▼	Project replaced with Terminal 1 Check-In (Partial shoreline) (CIP.20.03.011A)
CIP.20.03.040	North Apron De-icing pad	-	-		▼	This project is not being included as further analysis is required to ensure this is the most suitable location. As part of this analysis the overall de-icing strategy will be finalised.
CIP.20.03.051A	West Apron Vehicle Underpass – Northern Pier 1 Option	-	-		▼	Project not included in Submission. Remains outside CIP. Alternative proposal (CIP.20.03.051B - Pier 3 Underpass) included in Appendix C to address 16/34 underpass requirements. The Pier 1 underpass option is considered sub-optimal as it has a significant conflict with pedestrian traffic on the north side of Pier 1 and vehicle traffic accessing the underpass. With the volume of traffic using the underpass this will cause significant delays and also has safety concerns in relation to pedestrians crossing the path of significantly increased vehicle traffic. The mitigation for this would be to build a series of fixed links and nodes (VCC) at each stand on Pier 1 north side which would provide a poor passenger experience. In addition, the location is not optimum as the facilities serving passenger and cargo activity is located either centrally or in the southern end of the East Campus, i.e. baggage halls, bus gates, cargo & catering etc.
CIP.20.07.031	Terminal 2 HBS Standard 3	-	-		▼	Being carried out under separate consultation process.
TOTAL		**-**	**-**	**-**		

2 STATUS OF CIP 2015 - 2019

2. STATUS OF CIP 2015 – 2019

An update on the status of the current CIP 2015 – 2019 was detailed in the CIP Consultation Document issued to stakeholders on 25th October 2018 and was presented to stakeholders during consultation on 3rd December 2018. This update highlighted additional expenditure in the amount of €60.4m above the original CAR allowance in the 2014 Determination. There were no objections to this additional expenditure voiced during consultation and there were no objections to this expenditure in the written submissions received from stakeholders. daa are seeking this additional expenditure (€60.4m) to be included in the Regulated Asset Base (RAB) as part of the RAB roll-forward principles.

2.1. Background

In the 2014 Determination, a total allowance of €649m was received i.e. €341m identified in six non-triggered capital envelopes/groupings and a further €308m in triggered projects, as determined by CAR. This total allowance (€649m) was received from CAR to enable passenger numbers increase to 24.8m by 2019 and to deliver the North Runway.

With the continued growth, additional expenditure was also sought through a Supplementary Capital Process – Programme for Airport Campus Enhancement (PACE) concluding in June 2018 and CAR approved an additional allowance, subject to certain conditions being met, totalling €269.3m. This increased the total allowed capital spend for the period to €918m (incl. north runway and PACE, which have a delayed remuneration profile) and was designed to meet passenger growth up to 32mppa.

Dublin Airport has committed to optimising the full suite of capital allowances awarded under the 2014 Determination (2015-2019) and is currently focused on delivering the reminder of the CIP in addition to the PACE projects. However, following strong passenger growth, it was apparent that the allowance in the CIP was insufficient to deliver new capacity to meet short term growth. It was necessary to defer a number of non-essential projects and to reprioritise critical 'capacity enabling' projects. In addition, it was necessary to address key compliance projects and ensure successful rehabilitation of key assets. This resulted in additional expenditure of €60.4m which daa are seeking to be included in the Regulated Asset base (RAB) under the Commission's RAB roll forward principles.

The specific projects that have generated this additional expenditure and their associated project grouping are listed in Figure 21.

The rationale for this additional expenditure was detailed in the 'CIP 2020+ Consultation Document' issued to stakeholders on 25th October 2018 and was also presented during consultation on 3rd December 2018. There were no objections noted during consultation and there were no written objections received from stakeholders. We believe that the necessary overspend is justified and efficient and in line with the Commission's RAB roll forward principles.

Figure 21: 2014 Determination – Additional Expenditure

Project	Additional Expenditure	Project Grouping
Runway 10-28 Overlay & Associated Lighting	€28.6m	Airfield Maintenance
High Mast Lighting	€2.1m	Airfield Maintenance
MV Cable Replacement	€1.2m	Airfield Maintenance
Taxiway Re-designation	€1.4m	Airfield Maintenance
Critical Equipment Upgrade	€10.0m	Terminal & Landside Maintenance
Departures Floor Structural Works	€6.6m	Terminal & Landside Maintenance
US Preclearance Lounge	€3.3m	Commercial
Programme Management	€0.6m	Other
Extension of CPSRA to Airfield	€6.6m	Business Development
Total	**€60.4m**	

2.2. Project Summary

A summary of the projects necessitating this additional expenditure and rationale for development is detailed below;

Runway 10/28 Overlay and Associated Lighting (€28.6m)

This was a critical project in the 2015–2019 CIP to ensure the safe operation of aircraft, on what is one of the main assets at Dublin Airport, Runway 10-28. The project delivered a resurfacing of the main runway, associated taxiways and the installation of new ground lighting. The project also included the delethalisation of manholes and other buried structures within the runway strip in order to comply with EASA regulations.

Figure 22: Runway 10-28 Overlay

The additional expenditure was brought about by the following changes;

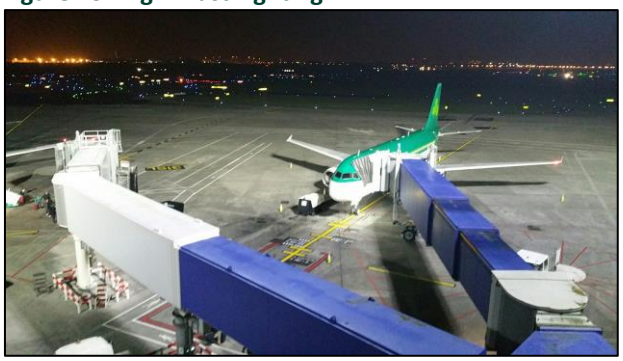
- Delethalisation of buried structures - €2.9m
- Additional scope - € 10.6m
- Increase in Contractors Preliminaries - €9.3m
- Increased adverse weather - €2.5m
- Additional Taxiway re-designation - €1.0m

This project was successfully delivered and protects Dublin Airport's main asset, Runway 10-28, with minimum maintenance over the next 15 years and a significant reduction in risk of unplanned closures.

High Mast Lighting Upgrade (€2.1m)

The High Mast Lighting Upgrade project was an essential project that was required for Dublin Airport's transition application from the existing national aerodrome licence to the EASA European Certificate. This project addressed a non-compliance associated with existing lux-levels on 71 high mast lights to ensure Dublin Airport was in compliance with EASA standards and therefore retaining its operating certificate. There was no allowance for this project in the 2015–2019 CIP, as it was not envisaged at that time.

Figure 23: High Mast Lighting



MV Cable Replacement (€1.2m)

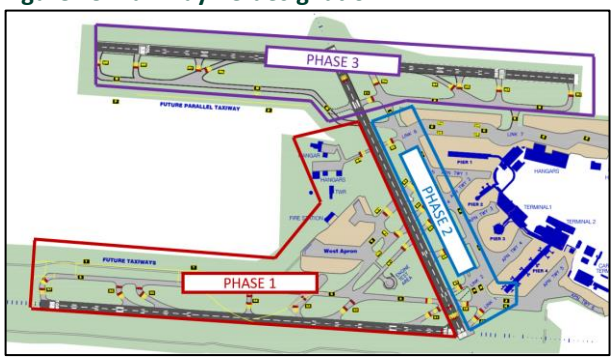
The airfield MV electrical ring main cable dates from the late 1980's and is critical to providing the main electrical supply to the Airfield Ground Lighting systems (AGL) at Dublin Airport. Any disruption to this supply has the ability to seriously impact airport operations both during daylight hours and especially at night. A recent asset health check identified accelerated deterioration in the cable joints and necessitated the cable replacement on the south side of Runway 10-28, in order to provide more reliable and robust AGL infrastructure.

Figure 24: MV Cable Replacement

Taxiway Re-designation (€1.4m)

This project involves the re-designation of Taxiway Signage on the airfield as part of the Air Accident Investigation Unit Report, IRL00911044, issued in 2012 following a Monarch Airlines incident in May 2011. The review, including consultation with stakeholders, following this report was completed in 2015, and this resulted in re-designation of the taxiway network in order to simplify taxi instructions. This approved signage re-designation scheme is gradually being rolled out throughout the airfield. The benefit of this project is less potential for error in pilots interpreting ATC communications.

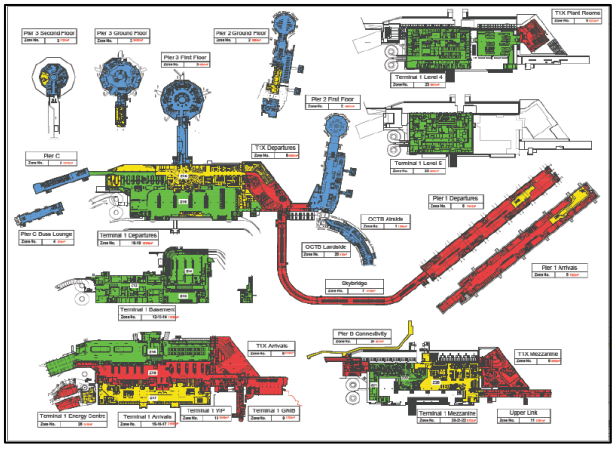
Figure 25: Taxiway Re-designation



Terminal 1 Critical Equipment Upgrades (€10.0m)

The specific allowance under Terminal 1 Critical Equipment Upgrades (CIP 15.4.006) was €3.7m. When the CIP was being prepared in 2013, there was limited understanding of the amount of works required and it was only when a detailed survey was carried out in 2015/2016 that the extent and cost of T1 LSS requirements became apparent. The scope was originally underestimated, and it was envisaged that some works could be deferred to the following CIP 2020. This however was not possible as we needed to ensure Terminal 1 was compliant with a safe operating environment for passengers and staff. The cost of this additional work was €10.0m.

Figure 26: Critical Equipment Upgrade



Terminal 1 departures Floor Structural Works (€6.6m)

The Terminal 1 Departures Floor was found to have some structural defects during the floor refurbishment project and required immediate remediation works to address. This work was carried out on a phased basis to minimise the disruption to airport stakeholders and required the removal of the original 'pot and plank' system and replacement with structural steel beams. The cost of this remediation work was €6.6m.

Figure 27: T1 Departures Floor structural defects

US Preclearance Lounge (€3.3m)

This project delivered a much needed Business Lounge post US Preclearance and provided a significantly enhanced passenger experience, while generating additional commercial revenues (currently generating c.€1m in EBITDA. While there was a business case to support the project, the Commission will consider future revenues from this facility.

This project was fast-tracked to ensure Dublin remained competitive for transatlantic passengers in both the business and transfer markets. The lounge was built on the ground floor at the end of Pier 4, providing a relaxing environment for transatlantic passengers wishing to avail of this facility and over 120,000 passengers are using this lounge per annum.

Figure 28: 51st & Green Lounge

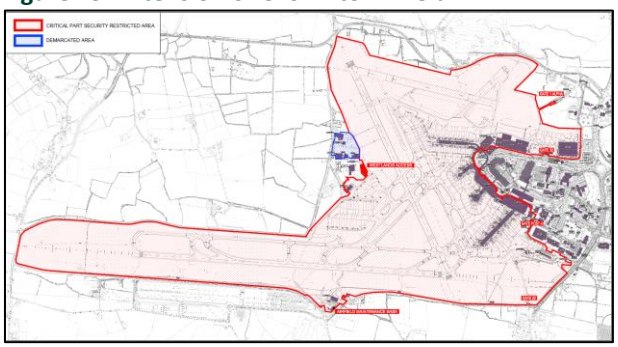
Programme Management (€0.6m)

This covers the costs associated with the management of a portfolio of projects which are ongoing since 2015. These costs will continue to the end of 2019 and are required to manage the interdependencies between projects and provide consistent governance and administration for the delivery of all projects in the current CIP programme. The allowance was to cover the costs associated with programme management of the original €341m capital expenditure. With the increase in capital expenditure of €60.4m, as detailed above, there is a requirement for additional programme management funding, already committed, of €0.6m.

Extension of the CPSRA to Airfield (€6.0m)

The extension of the 'Critical Part of the Security Restricted Area' CPSRA to airfield project provided for a single security standard and therefore allowed for the relocation of cargo services to a more accessible West Apron. Cargo operators fully support the initiative and to date, FedEX and DHL have relocated their full operation to the West Apron. Other cargo operators are also requesting relocation to the West Apron and additional facilities will be required to support the next phase of relocated operations – these are being included in CIP 2020. The relocation of cargo and other services to the West Apron maximises the ability to accommodate passenger services on the eastern campus and to date 4 NBEs are available on the East Apron due to this relocation. At the end of 2019, based on committed expenditure, an additional €6.6m will be spent on this project.

Figure 29: Extension of CPSRA to Airfield



Conclusion

Full remuneration for the necessary additional expenditure of €60.4m as detailed above, is being sought for inclusion in the RAB.

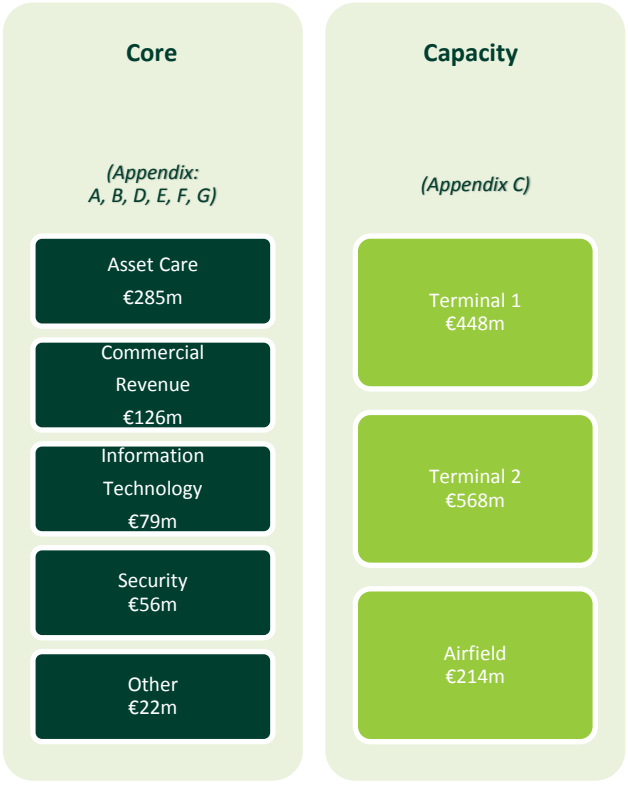
3 PROJECT GROUPING

3. PROJECT GROUPING

3.1. Background

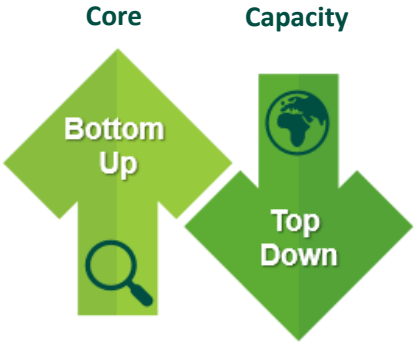
Proposed projects in CIP 2020 have been grouped into envelopes of expenditure which reflect the broad category of investment required in each area and to provide a level of flexibility in capital spend. This level of flexibility was critical in the current CIP, where capex could be reallocated to critical capacity projects in order to meet the passenger demand. The proposed groupings are considered under two broad headings, 'CORE' and 'Capacity' as illustrated in Figure 30.

Figure 30: Proposed Project Groupings



The Capacity pillar is created by means of a top down process. This is achieved by incorporating key Masterplan compatible projects into the CIP which align with our 'common first step' to 40mppa (million passengers per annum). More detail is provided on the capacity grouping in Chapter 5.

Figure 31: The two investment pillars of the CIP



Inversely, the Core pillar is created by means of a bottom-up process. This is achieved by undertaking a forensic review of campus asset registers, condition reports and safety assessments. Regulatory requirements and potential new generation IT equipment are also assessed to prepare the core. The 'core' projects are defined as projects that, irrespective of passenger growth, are required to maintain continued safe and secure operations on a day-to-day basis and provide for technology improvements and the associated passenger expectations.

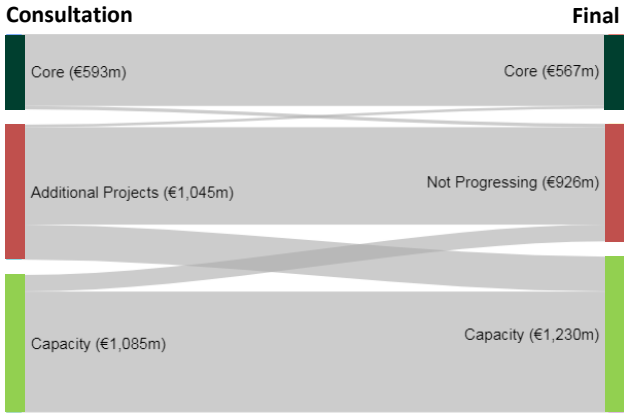
The projects developed under 'core' are well defined and essential to keep Dublin Airport operational, safe, secure and reliable over the next CIP period. In many cases the Core projects are a continuation of current investment plans which have been phased over the past 5 years, e.g. apron rehabilitation, life safety systems upgrades, roof upgrades etc. Core projects are also designed to preserve the life of Terminal 1 which will be 50 years in operation during the proposed CIP period.

3.2. Evolving CIP – Changes to project groups

For consultation purposes, three project groupings were presented in the Consultation Document (issued 25th October 2018). These groups included 'Core', 'Capacity' and 'Additional Projects for Consideration'. The 'Additional Projects for Consideration' represented projects which had not been prioritised by Dublin Airport following an internal due diligence process but still offered infrastructure resilience, alternative development options or commercial revenues.

The three groups were re-assessed following formal consultation in early December 2018 and stakeholder feedback in late December 2018 to refine the overall suite of projects proposed as part of CIP2020. Figure 32 shows how the three original groupings were refined to only two groups; Core and Capacity. The final suite of projects is explained in Chapters 4 and 5.

Figure 32: Change to CIP proposal since Consultation



The following sections outline the role / purpose of each CIP project grouping.

3.3. Asset Care

The first of these groupings, Asset Care provides for the continuation of use of existing facilities and are broadly as a result of ageing assets and essential rehabilitation, including Terminal 1. The total proposed investment in this grouping is €285m across two distinct areas:

- Mechanical & Electrical
- Civil, Structural & Fleet (CSF)

3.4. Information Technology

The second of these groupings, Information Technology (IT), is essential to maintain and develop Dublin Airport as an automated 'digital airport'. It also includes the key infrastructure, controls, and software that support the critical business systems needed for the safe, secure and efficient running of the airport for its customers. This grouping also contains future IT investment to support customer requirements for additional self-service, biometrics, and process automation etc.

In this context, IT has assessed the minimum need for IT capex during the next CIP period at €79m. The IT requirement for CIP 2020 is particularly challenging as Dublin Airport, airlines and other stakeholders look to increase IT investment to ensure a safe, secure and reliable operation, achieve cost savings, drive efficiency and improve the passenger and employee experience.

3.5. Security

The third grouping, Security, is essential to maintain and elevate Dublin Airport as a safe and secure environment for passengers, staff and the general public. These projects will provide an improved passenger experience while on the passenger journey through the airport and address regulatory requirements and associated compliance.

3.6. Commercial Revenue

The Commercial Revenue grouping includes projects that typically generate revenue for the Single Till which offsets aeronautical costs, and in some cases also provides additional capacity, e.g. car parking. The projects within this grouping have been selected on the basis of delivering maximum revenue potential and also providing for an improved passenger experience. Provision of additional and improved car parking and car hire facilities account for a significant amount of the expenditure in this grouping in this CIP period, along with improved lounge facilities to provide a significantly improved product for our customers.

3.7. Other

The 'Other' grouping provides the necessary capital investment to manage the ongoing operation of the airport estate on a short planning horizon through 'Minor Projects' and also allows for the efficient management of the capital investment programme by continuing the Programme Management principles of efficient investment. This grouping also covers some miscellaneous projects which do not naturally fit within the other groupings.

3.8. Capacity

The 'Capacity' grouping represents the investment in new assets required to deliver key infrastructure that will provide the additional capacity requirements from current levels of c.31mppa to c.40mppa. The capacity development plan for CIP 2020, detailed in Chapter 5, has been derived from the Masterplan outputs using a 'top-down' approach where there is a common first step to 40mppa. While 40mppa is unlikely to be reached by 2024, it is essential to have the necessary infrastructure in place to accommodate the growth on the horizon. It generally comprises 4 key areas of development, as follows;

- South Development
- North Development
- Unlocking The West
- Terminal & Landside

Although the four areas of development help identify the geographical spread of proposed capital projects, a simpler 3 group breakdown is proposed as shown in Figure 33. This approach helps identify the required investment to facilitate current passenger forecasts with a specific focus on how growth can be facilitated in both Terminal 1 and Terminal 2.

Figure 33: Capacity Project Groupings

The Terminal 1 focused development supports additional 'point-to-point' traffic mainly for narrow body aircraft, with the ability to accommodate some wide-body operations.

The Terminal 2 focused development is necessary to accommodate the current growth being experienced in transatlantic traffic and to facilitate the forecast growth in this area. This includes facilities to accommodate additional widebody and narrow body contact stands and an expanded US Preclearance facility. It promotes the HUB development as outlined in the National Aviation Policy by accommodating and streamlining transfer passengers, which is experiencing significant growth and is forecast to increase.

The Airfield grouping captures important capex associated with unlocking potential capacity in the west (west of Runway 16-34. With the West Apron

accommodating increased aircraft movements as the East Apron experiences greater levels of utilisation, it is essential that improved access to the West Apron and future apron development on the west of the airfield is accommodated and provided for in this next CIP period. In addition, access to the West Apron will be more challenging and unsustainable with the introduction of the North Runway (10L-28R) in 2021. Access via the perimeter road, currently a 4km (10min) journey will, on completion of the North Runway, become an 8km (20min) journey. The current proposal under PACE to provide a surface access will provide some relief in this regard, however this will not be available during Runway 16-34 operations. It is essential that the West Apron is unlocked to remove this safety concern regarding the surface crossing and provide a sustainable option ultimately for passenger activity on the West Apron.

3.9. Flexibility Envelopes

The proposed project groupings where there should be flexibility within the group are as follows;

Figure 34: Flexibility Grouping

The need for flexibility is driven by the following factors;

- A risk-based approach to capital maintenance and the ability to respond to changing risks over a 5-year period
- Project design will mature closer to implementation which may identify issues requiring flexibility not seen at the start of the CIP preparation.
- The need to be able to respond to stakeholder requirements in a dynamic manner over the short to medium term.
- To manage unforeseen requirements that are not possible to plan for over a 5-year period. This could include regulatory and safety requirements.

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. 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. 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, as illustrated in Figure 34.

4 CAPEX PROPOSAL – CORE PROJECTS

4. CAPEX PROPOSAL – CORE PROJECTS

4.1. Background

In the CIP 2020 Consultation Document issued on 25th October 2018, Dublin Airport sought an allowance of €593m for investment in CORE projects, to manage the day to day operation, to ensure all assets are safe, reliable and secure, to provide elevated security, to enhance the passenger experience through digital technology and to generate commercial revenues to offset airport charges, as detailed in Figure 35 below. Additional projects 'under consideration' were also presented during consultation.

Figure 35: Proposed Core Projects – Pre-consultation

Proposed CORE Projects		
Category	**€m**	**Category Overview**
Asset Care Civil/ Structural/ Fleet	€196	Primarily reflecting construction work across the airfield and landside campus.
Asset Care Mechanical & Electrical	€96	Primarily reflecting terminal equipment replacement and energy efficiency projects
Commercial	€106	Primarily Revenue generation projects
IT	€73	IT upgrades and business efficiency improvements
Security	€43	Equipment replacements, security enhancements and regulatory requirements
Others	€79	Minor projects, programme management & operational projects
Total	**€593**	

Following consultation, and based on stakeholder feedback, the revised allowance being sought for investment in the CORE projects is **€567m**, as detailed in Figure 36.

Figure 36: Proposed Core Projects – Post-consultation

Proposed CORE Projects		
Category	**€m**	**Summary of Change**
Asset Care Civil/ Structural/ Fleet (Reduction of €14m)	€182	(a) Reduction in airfield and apron rehabilitation. (b) Reduction in Roads Maintenance. (c) Reduction in Fleet (d) Reallocation of ULD storage from 'Other Projects'
Asset Care Mechanical & Electrical (Increase of €7m)	€103	(a) Reduction in LSS Upgrade Programme (b) Reallocation of Large Energy Project from 'Other Projects. (c) Addition of allowance for feasibility on Second MV Connection Point
Commercial Revenue (Increase of €20m)	€126	(a) Addition of Staff Car Park from projects 'under consideration'. (b) Reduction in Car Hire investment (c) Reallocation of Office Consolidation from 'Other Projects'. (d) Addition of New Kitchen in T2.
IT (Increase of €6m)	€79	(a) Increase in biometrics / passenger experience projects (b) Inclusion of Innovation Fund.
Security (Increase of 13m)	€56	(a) Inclusion of Logistics Centre from projects 'under consideration'.
Others (Reduction of €57m)	€22	(a) Reduction in Programme Management Fees. (b) Reduction in Minor Projects. (c) Reduction in Terminal Operations projects. (d) Removal of HBS Standard 3 – separate consultation process (e) Reallocation of Office Consolidation project to 'Commercial'. (f) Reallocation of Large Energy Project to 'Asset Care M&E'. (g) Reallocation of ULD Storage to Asset Care CSF.
Total	**€567**	

A more detailed summary of changes post consultation is included in each section below.

4.2. Asset Care – Civil / Structural / Fleet

Asset Care (CSF) projects address issues with critical assets ranging from high mast and airfield lighting, roads, heavy & light fleet, car parking to building facades. Following consultation, the proposed project request in this grouping has reduced from €196.4m to €182m and the details of this revised amount are included in the table below, Figure 37.

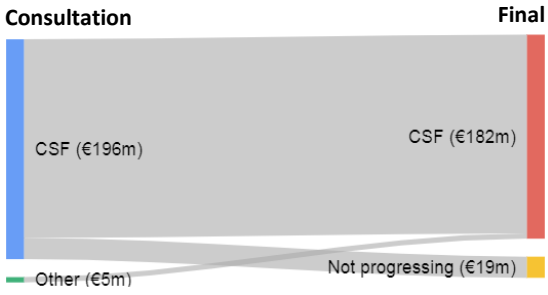


Figure 37: Changes to CSF Proposal since Consultation

Appendix A - Asset Care (CSF)			
Consultation Figure			**€196.4m**
Project Reductions			
	Original	**Proposed**	**Delta**
Apron Rehab	€44.0m	€37m	-€7.0m
Taxiway Rehab	€22.0m	€19.0m	-€3.0m
Apron Rd Rehab	€5.6m	€4.6m	-€1.0m
Campus Rds.	€9.0m	€6.8m	-€2.2m
Airports Rd. Mtn.	€6.9m	€5.1m	-€1.7m
Heavy Fleet	€14.7m	€11.0m	-€3.7m
Light Fleet	€3.2m	€2.4m	-€0.8m
Total			**-€19.5m**
Project Additions			
ULD Storage	€3m	€5.0m	€5.0m
Total			**€5.0m**
Final CIP Total			**€181.9m**

Full details of all projects are included on the project sheets in Appendix A;

Figure 38: Proposed Asset Care – CSF Projects

Proposed Civil / Structural / Fleet Projects		
Project Number	**Project**	**€m**
CIP 20.01.002	Apron Rehabilitation	€37.0
CIP 20.01.003	Airfield Taxiway Rehabilitation	€19.0
CIP 20.01.065	Airport Heavy Fleet & Equipment	€11.0
CIP 20.01.020	T1 Façade, Roof & Spirals	€25.8
CIP 20.07.032	ULD Storage	€5.0
Various	General Projects (Reference Appendix A for full list)	€84.1
Total		**€181.9**

Apron Rehabilitation:

Many of the aprons at Dublin Airport date back to before the 1960's and in a number of cases have reached the end of their useful life. Independent condition reports have found that areas of pavement are in poor condition and need rehabilitation to avoid unplanned closures and disruption as a result of aprons becoming unserviceable. The allowance sought under this category is to continue the annual apron rehabilitation programme and address aprons with a remaining life of between 1 and 5 years. The apron areas included in this category are primarily the South Apron, stands associated with Pier 2 & Pier 3 and Apron Taxiway 1, Apron Taxiway 3 & Apron Taxiway 6.

Airfield Taxiway Rehabilitation

Many of the airfield taxiways at Dublin Airport were constructed between 1940, and the late 1980's as part of the current (Southern) Runway 10-28 development and are approaching the end of their useful life. The allowance sought under this category is to continue the annual airfield taxiway rehabilitation programme and address taxiways with a remaining life of between 1 and 5 years. Independent condition reports have noted that areas of the airfield taxiway pavement are in poor condition and need rehabilitation to avoid unplanned closures and disruption as a result of taxiways becoming unserviceable.

A number of taxiways were overlaid as part of the Runway 10-28 overlay project, however there are a number of additional taxiways that need rehabilitation within the next 5-7 years. The main focus of this project will be Taxiway F1, Taxiway F-Outer, Taxiway B1, Taxiway E1 and Taxiway M2.

The timely and planned rehabilitation of these taxiways is extremely important to the smooth and efficient operation of the airport by protecting the manoeuvring routes for aircraft and avoiding aircraft delays and overall business interruptions.

Heavy Fleet and Equipment

The daa Heavy Fleet Vehicles comprise a broad mix of equipment such as fire tenders, snow and ice equipment (snow ploughs, runway de-icers, snow blowers), airfield pavement sweepers, airfield painting equipment and tractors etc. The heavy fleet consists of some 75 vehicles, distributed between 5 functions including Fire & Emergency, Snow & Ice Operations, Operational Cleaning, Airfield Maintenance, Landside Maintenance and Support. 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. The heavy fleet plan includes the following investment;

- The replacement of 7 current foam tenders with 6 new standardised vehicles.
- The augmentation of the Snow & Ice fleet to allow for the introduction of the North Runway, additional aircraft pavement and to improve the efficiency of snow removal activities on existing pavement.
- Additional glycol collection sweepers, friction tester and maintenance equipment to facilitate an expanded airfield with the introduction of additional airfield pavement and the North Runway.

Terminal 1 Façade Upgrade

The façade of the original 8-bay Terminal 1 building, opened in 1971, is fitted with vertical, precast concrete fins, giving it a distinctive architectural look typical of that era. The building envelope comprising of these concrete fins suffers from age-related defects such as water ingress, corrosion, spalling, heat loss, environmental issues and needs a significant upgrade to maintain the life of the building. An in-depth feasibility study including a full structural survey of the T1 Façade was carried out in 2014 and this survey uncovered extensive degradation of the steel structure of the 8-Bay building as well as localised concrete spalling to the fins on all sides of the 8-Bay building. Immediate remedial works on the steel structure and concrete fins have just been completed as part of CIP 2015-2019 to mitigate immediate safety issues associated with spalling of concrete and the steel super-structure.

The T1 Façade is nearing the end of its useful economic life and the costly maintenance and remedial works are no longer sustainable. A full refurbishment must be carried out to sustain the building into the future and investment is required to re-life the asset and extend the useful service life of the building for at least 15 years. This project will also include the roof of the Terminal 1 8-bay original building.

Unit Load Device (ULD) Storage - Stillage

This project was included in the CIP Consultation Document under the 'Other' project grouping and is being reallocated to Asset Care (CSF) at an increase cost of €2m. This project provides for a new Unit Load Device (ULD) Storage facility at Dublin Airport. The provision of stillage by Dublin Airport for use by the ground handlers and airlines is a key enabler for more efficient use of the apron / airfield. It will also address a safety issues by locking down ULD's during high winds preventing them from being blown around the storage area. This project was supported by two stakeholders during consultation.

4.3. Asset Care – Mechanical & Electrical

Asset Care (M&E) projects focus on mechanical and electrical equipment across the terminals, piers and campus buildings. The investment included in this grouping is essential to ensure the continued operation of an ageing Terminal 1 and Pier 3. Pier 3 will be

required in the next 5-years to continue to provide essential wide-body capacity and requires substantial investment to maintain operations. This grouping also includes energy efficiency projects and services projects dealing with foul water/waste and mains electrical supply to the airport campus. The key projects are listed below, and full details are included on the project sheets in Appendix B;

Following consultation, the proposed project spend request in this grouping has increased from €96m to €103m and the details of this revised amount are included in the table below, Figure 39.

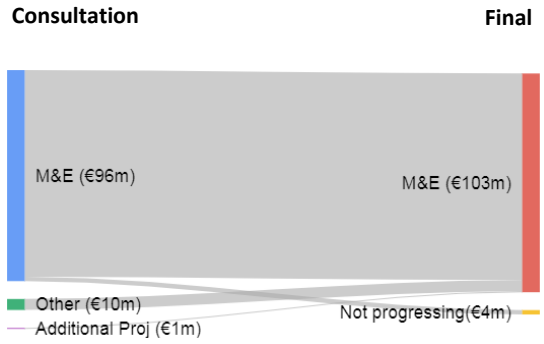


Figure 39: Changes to M&E Proposal since Consultation

Appendix B - Asset Care (ME)			
Consultation Figure			**€95.8m**
Project Reductions			
	Original	**Proposed**	**Delta**
LSS Upgrade	€14.1m	€10.1m	-€4.0m
Total			**-€4.0m**
Project Additions			
2nd MV Connection	€0	€1.0	€1.0m
Large Energy Projects	€0	€10.0m	€10.0m
Total			**€11.0m**
Final CIP Total			**€102.8m**

Figure 40: Proposed Asset Care – Mechanical & Electrical Projects

Proposed Mechanical & Electrical Projects		
Project Number	**Project**	**€m**
CIP 20.02.008	Terminal Buildings HVAC Upgrade	€17.8
CIP 20.02.007	Terminal & MSCP Buildings LSS Upgrade	€10.1
CIP 20.02.010	Terminal 1 Pier 3 Life Extension Works	€14.0
CIP 20.02.004	Passenger Boarding Bridges (PBB) & FEGP	€18.1
CIP 20.07.030	Large Energy Project – Photovoltaic Farm	€10.0
Various	General Projects (Reference Appendix B for full list)	€32.8
Total		**€102.8**

Terminal Buildings HVAC Upgrade

Heating, Ventilation & Air Conditioning (HVAC) is required for passenger and staff comfort, heating of domestic water systems and temperature control of communication rooms and all other occupied locations.

A large portion of the Terminal 1 HVAC distribution is 50 years old and has exceeded end of life and requires replacement. This project is to replace, upgrade and refurbish end of life assets and replace with new HVAC equipment, control systems and infrastructure. The majority of the investment will be for Terminal 1 with smaller projects relating to Terminal 2, which will be almost 15-years in operation at the end of CIP 2020. This upgrade will include the refurbishment of the primary Terminal 1 Energy Centre, including the replacement of primary boilers, CHP, pumps, hot water generators and all associated pipework.

Terminal & MSCP Buildings LSS Upgrade

The Life Safety Systems (LSS) include Fire Alarm, Sprinkler, PAVA and other ancillary systems associated with fire detection, control and evacuation. The availability of LSS systems require continuous investment to ensure the terminals are fully compliant and failure to carry out these works could lead to non-compliance with a risk of closure to certain areas. Due to the criticality of the LSS systems, target compliance must be 100%. Modern LSS systems are heavily technology based and have a shorter design life, requiring more frequent replacement and component overhaul.

This project is to replace, upgrade and refurbish LSS infrastructure across both terminals in order to maintain system availability as required per regulatory service requirements. This project covers Terminals, Piers and the Carparks adjacent to Terminals 1 & 2. The funding sought is to replace ageing assets that are greater than 10 years old in the next CIP period. For example, the Terminal 2 fire safety systems will be over 10 years old entering into this CIP period.

Terminal 1 Pier 3 Life Extension Works

Pier 3 was constructed in the early 1970's, and while it has been maintained over this period, it now requires significant investment. This project relates to Mechanical and Electrical (M&E), building service requirements to ensure the pier meets the current safety regulations and operational requirements, while extending the life. The M&E plant and equipment are in service since the early 1970's and contained within a central services core. The core is now categorised as a confined space under health & safety legislation and access / egress to the area is restrictive and not compliant with current building regulations. To make the core compliant a large services decentralisation and replacement project is required on mechanical and electrical equipment.

Passenger Boarding Bridges (PBB) & FEGP

Passenger Boarding Bridges (PBBs) provide a covered walkway between airport buildings and aircraft, for transferring embarking and dis- embarking passengers. The requested investment for PBBs is to carry out the minimal capital maintenance upgrades to 6 older PBBs on Pier 3 by upgrading flooring, weathering and upgrading external finishes. This project also includes the installation of a new double airbridge on Pier 3 to accommodate the increasing wide-body aircraft requirement. The project also includes mid-life controls systems upgrade for the 19 Pier 4 PBBs and the 6 Pier 3 PBBs to maintain the required level of reliability. The provision of new flooring with improved slip resistance to all PBBs and replacement cable looms in the 19 Pier 4 PBBs is included.

Fixed Electrical Ground Power (FEGP) units are installed at airports to provide electrical power to aircraft while aircraft are on stand e.g. during turnarounds and while parked e.g. for overnight maintenance activities. This removes the need for mobile ground power units which in some cases are unable to provide adequate power to new generation widebody aircraft.

This project also includes for the installation of fixed electrical ground power (FEGP) in line with business requirements, sustainability and customer requirements for Dublin Airport. This project covers the installation of FEGP to 33 Stands on Pier 1 (not covered as part of PACE), Pier 2 and Apron 5G.

Second MV Connection Point

This project would provide resilience to the electrical supply in the event of a failure to the existing MV power supply. This is a 'low risk' project but 'high impact'. Typically, most airports operating over 20mppa would have 2 distinct power supply connections.

This project was included in the CIP Consultation Document in the 'Under Consideration' project grouping and is being reallocated to Asset Care (M&E) in the amount of €1m.

An allowance of €1m would ultimately deliver a more informed view on what is involved in delivering this project and would ultimately lead to a lower cost, should this project be approved and progressed at a later stage.

Large Energy Project (Photovoltaic Farm)

This project entails developing and integrating a Solar PV Farm to generate electricity at Dublin Airport. The installation will provide opex cost reduction, facilitate long term price certainty, secure revenue generation capacity and obtain compliance with regulatory energy and carbon emissions targets. One stakeholder suggested that the capital cost be reduced as an incentive to secure future grant applications.

It should be noted that Dublin Airport has the potential and ability to apply for several different Grant Schemes. The most applicable grant schemes would be:

- SEAI Better Energy in Communities Grant Scheme (Max project spend must be <€1m)
- DCCAE Climate Action Fund (Min project cost >€3m)
- SEAI EXEED fund (2 phases with limited max funding allowance)

In considering grant aid relative to any budgetary Capital Allowance, several significant points should be understood.

- All the funds are competitive in nature and it is not certain that an application could be successful in any one year.
- Multi annual payments are not permitted i.e. projects can typically only be started post March and must be completed by October within the same year.
- Declarations from CFO must be made as part of some of the submissions to confirm that the relevant funding is in place should the grant application not be successful.

Projects that can avail of other Government schemes are excluded from application for the Funds. This potentially could apply to the Large Energy application if the installation exported electricity and thus could avail of the Renewable Electricity Support Scheme (RESS). A similar scenario exists for thermal based projects that could be covered by the Support Scheme for Renewable Heat. The RESS does not provide funding but rather a Bid into auction to sell the renewably generated electricity. This is not something Dublin Airport is currently envisaging for the future.

The costs detailed within the Business case are based on proposals from ESB as part of the Dublin Airport-ESB Collaborative Agreement. They are very competitive compared to current market trends. It would be detrimental to the project to reduce the scale of CAPEX funding on the pretext of securing future grant approval. The recent Climate Action fund call for applications and results secured 97 applications with only 7 being successful (7.2% success rate).

The full amount of €10m is required in order to deliver this project.

4.4. Commercial

Commercial projects primarily focus on revenue generation while enhancing the customer experience. Investment in this grouping is being sought for projects that include, additional public car parking, provision of additional and enhanced passenger lounges, fast-track passenger services, food & beverage (F&B) provision, retail and advertising. Projects in the Commercial grouping have a direct benefit to airport charges by generating revenue for the Single Till. Key projects included in this grouping are listed below and full details are included on the project sheets in Appendix D. Note: The Commercial Revenue section of the Regulatory Proposition, Section 6, should be read in tandem with the Commercial CIP request. The Commercial Revenue Section explains the different Commercial businesses, historic performance and forecasted revenues to 2024 where the CIP impacts are highlighted in the analysis. Should certain projects not be allowed, this will directly impact on project revenues.

Following consultation, the proposed project request in this grouping increased following the inclusion of; one project from the other category (CIP.20.007.010 Office Consolidation), one new project (CIP.20.04.030 New Kitchen in T2) and one 'Additional Project for Consideration' (CIP.20.04.009 Staff Car Park – promoted following Stakeholder support).

One project was reduced (CIP.20.04.002 Car Hire Consolidation) as the scope was refined and minimum technical solution was sought. This brought the total from €106m to €126m; the details of this revised amount are included in the table below, Figure 41.

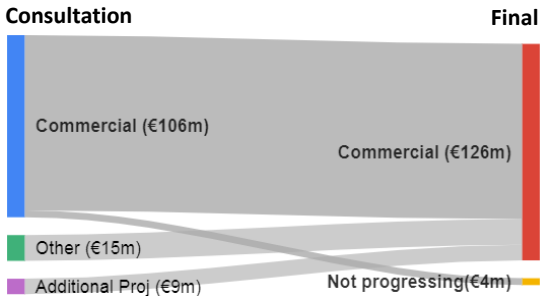


Figure 41: Change to Commercial proposal since Consultation

Appendix D - Commercial			
Consultation Figure			**€105.7m**
Project Reductions			
	Original	**Proposed**	**Delta**
Car Hire Centre	€18.1m	€14.0m	-€4.1m
Total			**-€4.1m**
Project Additions			
Staff Car Park	€0.0m	€6.0m	€6.0m
New Kitchen T2	€0.0m	€3.0m	€3.0m
Level 4/5 Refurb	€0.0m	€15.0m	€15.0m
Total			**€24.0m**
Final CIP Total			**€125.6m**

Figure 42: Proposed Commercial Projects

Proposed Commercial Projects		
Project Number	**Project**	**€m**
CIP 20.04.002	Consolidated Car Rental	€14.0
CIP 20.04.017	Lounge Refurbishments	€11.4
CIP 20.04.007	T2 Multi Story Car Park Extra Floors	€15.1
CIP 20.04.006	T1 Multi Story Car Park	€18.8
CIP 20.04.009	Staff Car Park	€6.0
CIP 20.07.010	Office Consolidation & Refurbishment (primarily Level 4 & Level 5 Terminal 1)	€15.0
Various	General Projects (Reference Appendix D for full list)	€45.3
Total		**€125.6**

Consolidated Car Rental

Current car rental facilities include customer service desks in each terminal, premium rental spaces in the MSCPs and compounds in the Eastlands consisting of customer service counters, ready & return spaces and service / maintenance areas. The existing car hire facilities are capacity constrained and were insufficient to accommodate 2017 demand at an acceptable level of service across most parts of the operation. The number one customer complaint in relation to car hire is wait time at all three locations (T1, T2 and Eastlands).

Current total provision of car rental spaces across Dublin Airport is c.3,500 and these spaces are used by for ready to rent, return spaces, stacking and staging and short-term vehicle storage. Capacity in 2017 was exceeded by c.1,000-1,500 spaces in peak, requiring operators to find additional facilities offsite. Future forecasts indicate a requirement for an additional 3,000 spaces by 40mppa bringing the total requirement for spaces to 6,500.

This project will provide the following;

- Additional Maintenance and Service Facilities including:
- Fuel Pumps
- Maintenance Bays
- Wash Bays
- Customer counters
- Employee and administrative offices

The new facilities have been designed to:

- Complement the existing car hire facilities at DAP,
- Protect commercial revenues – allowing for future growth
- Improve customer experience (more logical way finding) and reduced congestion
- Increase efficiencies to reduce costs for car rental operators

Lounge Refurbishments

This project will address the upgrade and extension to existing business lounges including the T1 Lounge, T2 Lounge, 51st & Green Lounge and a new Pier 1 Lounge. Dublin Airport's lounge product requires continuous improvement and investment in order to meet customer expectations (both B2B & B2C). Upgrades will include:

- Supply and installation of all kitchen equipment
- Internal fit-out and decoration
- Improved seating
- Charging points/plug sockets
- Spa like shower facilities
- Improved servery to display variety of food (chill well, additional fridges etc.)
- Increased capacity
- New look-and-feel, including painting, furnishings & lighting

Significant growth in passenger levels over the current CIP period has resulted in lounges becoming capacity constrained at peak hours with some available capacity in the shoulder periods. The lounges are mainly utilised by wholesale (airline) passengers and as new airlines or current airlines add capacity at Dublin, the airlines passenger base using our has lounges increased. With the addition of new long-haul Asian routes (Cathay Pacific, Hianan etc.), these passengers tend to have a longer dwell time in the lounge resulting in insufficient capacity at certain times throughout the day. With passengers paying a premium to access lounge facilities it is important that passenger comfort expectations are met. Investment is therefore required to refurbishment and to add lounge capacity, to meet the expectations of airlines and passengers.

T1 and T2 MSCP Extra Floors

Short Term (ST) car parking is a key passenger requirement and Dublin Airport's strategy is to provide a good quality, available and reliable product, at yield managed prices that customers value. This strategy has proved successful at generating repeat custom and growing revenue. Short term Car parks are the most convenient way for Irish originating passengers to travel to / from Dublin Airport.

ST car parks compete with competitor long term car parks and Taxi's. Our 2017 ST occupancy was 88% and 2018 occupancy was 90%).

Given the strong occupancy rates, demand is not being fully satisfied due to a lack of available capacity. Pricing higher than elasticity is beginning to erode our value-for-money proposition with customers seeking alternative methods of transport, putting at risk existing and future business.

This project will deliver;

- Four additional floors on the T1 MSCP building (600 spaces) Block B
- two additional floors on the T2 MSCP building (680 spaces) on the four additional floors built as part of the CIP 2015 – 2019 which proved extremely successful

Staff Car Park - €6m

This project will provide for the relocation of staff car parking to a new location in the Eastlands with the provision of 2,000 spaces. The current plan is to relocate staff into the 'Green' Public car park – however the impact on potential commercial revenue is significant and there is therefore a strong commercial business case to build new car park for staff.

Office Consolidation & Refurbishment (Level 4 & Level 5, Terminal 1)

This project provides for a refurbishment of Level 4 and Level 5 Offices in Terminal 1 in order to;

- increase staff office space,
- increase commercial space to let, and
- reduce annual running costs associated with various staff locations.

Levels 4 & 5 of Terminal 1 were originally designed as public car parking spaces but during the early 1970's they were removed from public car parking use. Over time the space was converted to office use with this now in need of an upgrade. This project is considered by Dublin Airport to offer a number of important benefits both internally and externally. It will provide for the co-location of Dublin airport staff offering economies of scale and reduce the running cost for staff locations. Locations that are freed by staff re-locating will be offered as commercial rental opportunities. The business case for this project returns a positive IRR and NPV with the project in line with other developments to upgrade Terminal 1 keeping it fit for purpose and extending its useful life.

4.5. Information Technology (IT)

IT supports and delivers critical business systems required for the safe, secure and efficient running of the airport for airline customers, passengers, partners and employees. This investment grouping will address issues associated with end of life equipment, efficiency, compliance and the passenger experience/processing. These projects will ensure our IT systems remain efficient and up to date enabling the uninterrupted operation of critical equipment supporting the passenger process and aircraft movements.

IT plays a vital role in suppling timely and accurate information to passengers, airlines and other stakeholders operating at the airport, improving efficiency through information flow and allowing operators to meet aircraft turnaround times on schedule. Any disruption to our IT systems even for the shortest of time frames can have significant disruptive effects long beyond the initial IT outage. Therefore, it is important that airport IT systems have redundancy, are resilient and supported by the latest technology. Key areas of investment are listed below, and full details are included on the project sheets in Appendix E;

Following consultation, the proposed project request in this grouping has increased from €72.6m to €78.6m and the details of this revised amount are included in the table below, Figure 43. The main increase is driven by increased use of biometrics and passenger processing through technology.

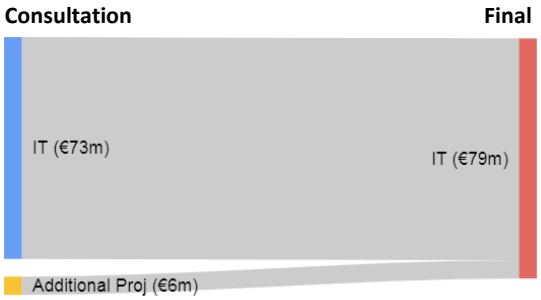


Figure 43: Change to IT proposal since Consultation

Appendix E - IT			
Consultation Figure			**€72.6m**
Project Increase			
	Original	**Proposed**	**Delta**
Security Tech Innovation	€3.0m	€5.0m	€2.0m
Total			**€2.0m**
Project Additions			
Innovation Fund	€0.0m	€4.0m	€4.0m
Total			**€4.0m**
Final CIP Total			**€78.6m**

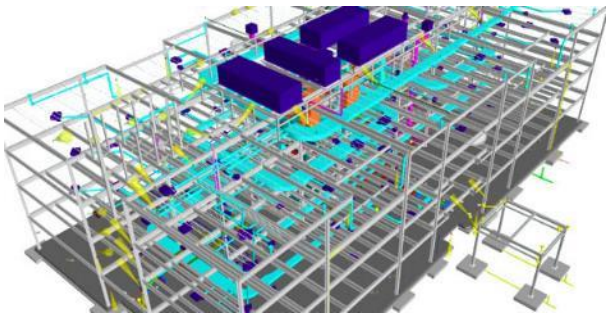
Figure 44: Proposed IT Projects

Proposed Information Technology Projects		
Project Number	**Project**	**€m**
CIP 20.05.005	IT Business Efficiency	€6.2
CIP 20.05.003	Integrations & Data	€5.1
CIP 20.05.007	IT Safety Security & Compliance	€7.0
CIP 20.05.001	Airfield Optimisation	€5.9
CIP 20.05.010	IT Passenger Processing	€11.0
CIP 20.05.020	IT Innovation Fund	€4.0
Various	General Projects (Reference Appendix E for full list)	€39.4
Total		**€78.6**

IT Business Efficiency

This funding will ensure Dublin Airport continues to drive value from our Business Systems through enhancements and additions to the IT estate. It will allow us to move to the next generation of applications as our business and our customers' business demands evolve. This project will deliver a number of smaller IT projects identified below;

- **Small Business Requests** – projects designed to add value to the operation.
- **Application Enhancements** – enhancements to existing business solutions.
- **ERP Investment** – assess the need for an upgrade or migration of the Oracle ERP system.
- **IT Asset Management Tool** – This will support the rollout of best in class Information Technology Infrastructural Library (ITIL) processes for Asset Management. The tool will track IT components in use across the campus e.g. Hardware, Software and Licences.
- **Airport Community App** - This funding will support investigation, design and delivery of an airport community app, similar to Gatwick Airport. The Gatwick Airport Community App is driving greater collaboration, transparency and efficiency amongst airport stakeholders.
- **Situational Awareness Tool –** This will provide Dublin Airport Operations with an end to end view of all key passenger, baggage and airfield processes. The tool will use integrated data feeds from key Airport systems to populate dashboards that will support real-time decision making across the operation.
- **Building Information Modelling System -** (BIM) is a digital representation of physical and functional characteristics of a facility. A BIM is a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition.



Integrations & Data

The digital transformation of the airport operating environment will continue to accelerate with more physical assets and business processes becoming digitized and producing more data that will be required to measure and optimise performance.

This will require more sophisticated data capabilities to manage the increase in volume, the computing power to process this data and, more sophisticated tools to derive actionable insights utilising artificial intelligence and machine learning. The growth in data, driven by digital technology over the last 2-3 years has been exponential and this trend is set to continue. This funding request covers the technology costs to support the increasing volumes of demand for data and business insights across daa and its stakeholders. This request captures the following requirements:

- Databases, Oracle, SQL Server upgrades
- Modern Data Platform implementation
- Delivery of Business Intelligence solutions to all stakeholders
- Creation of Data Science Predictive Models (Machine Learning & AI) driving optimized processes and deeper business insights

IT Safety Security & Compliance

Dublin Airport has a responsibility to ensure it provides safe, secure & reliable infrastructure and services to all stakeholders of the airport from passengers, staff, airlines, other 3rd parties and the general public. To provide consistent safe, secure & reliable experience, there are many IT services in place including CCTV, Access Control Systems, Queue Management systems, AutoPass, Boarding Scanning services, Aircraft Docking Guidance systems etc that require IT infrastructure to support their operation. We will continue to invest in the reliability and compliance of these systems ensuring we get the required level of vendor support on our hardware and software elements by keeping these assets current. Funding will focus on areas such as;

- CCTV Campus wide
- Access Control Campus wide
- Automatic Tray Return System (ATRS) T1 Upgrade
- Queue Management Systems
- AutoPass T1 Upgrade
- X-Ray Servers & Storage
- Airport Training Platform
- Cyber Security
- Speed Controls

Airfield Optimisation

Dublin Airport has several key IT systems in place that support this objective for the airfield operation. These include Airport Operations System (AOS), Airfield Visual Display (AVD), Advanced Docking Guidance System (A-VDGS) and Integration Platforms. These systems are widely used by key airport stakeholders. Dublin Airport will be A-CDM certified by the end of the current CIP period, supporting full data exchange between IAA, Eurocontrol, Airlines and Ground Handlers.

During the lifetime of CIP 2020 Dublin Airport will be participating in further SESAR initiatives to drive additional efficiencies and release more capacity. SESAR will grant up to 50% of the full cost of any approved project. It is proposed to implement the projects listed below which will deliver the necessary technology changes to meet the objectives of airfield capacity maximisation;

- AODB upgraded to deliver the expected level of service
- iAOP, AOP delivered as part of European wide SESAR initiative
- System enhancements to support A-CDM KPIs
- System and data integrations across all key stakeholders (SWIM)

In October 2018 Dublin Airport received confirmation of 50% funding from the European Commission in relation to an application for iAOP implementation. This funding is valued at c.€3.8m and in order to secure this funding it will be necessary to meet key milestones set out by the EU (SESAR) and deliver the project by December 2020. In this regard it will be necessary to spend capex in the order of €0.5m in 2019 which daa will seek to be recovered in CIP 2020.

IT Passenger Processing

Following consultation and following stakeholder feedback where two specific stakeholders supported digital solutions in enhancing passenger experience and providing biometric solutions to facilitate self-boarding gates etc., we have reviewed our investment strategy and we are increasing the investment in this regard. Additional details are included on the project sheets in Appendix E.

IT Innovation Fund

In addition, following consultation and following stakeholder feedback we have included am Innovation Fund in IT as detailed in Project Sheet CIP 20.05.020 in Appendix E in the amount of €4m where there are still many projects, which could have a very positive impact on costs, efficiency and passenger experience. Some examples of these initiatives are:

- CCTV Analytics to support passenger movement analysis
- Chat BOTs & AI to ensure consistent, high quality, passenger experience with reduction in support headcount
- Robotics and Virtual reality, reducing headcount
- Advanced security screening, allowing Dublin Airport to react to any disruptors and opportunities around new technology in this area
- IATA FAST Travel and "trusted passenger" initiatives e.g. use of Biometric data to differentiate between passenger handling at the airport depending on risk profile.

4.6. Security

Dublin Airport has a mandatory role to "protect Civil Aviation from acts of unlawful interference" and the Security submission for CIP 2020 is designed to meet this requirement. The capital investment in this grouping is being sought to replace end of life equipment, to provide improved security processing and passenger experience by installing modern cabin-baggage screening equipment and to provide for increased security protection throughout the airfield. Key projects included in this submission are listed below and full details are included on the project sheets in Appendix F;

Following consultation, the proposed project request in this grouping has increased from €43m to €56.4m and the details of this revised amount are included in the table below, Figure 45. The main increase is driven by the inclusion of the Screening and Logistics Centre.

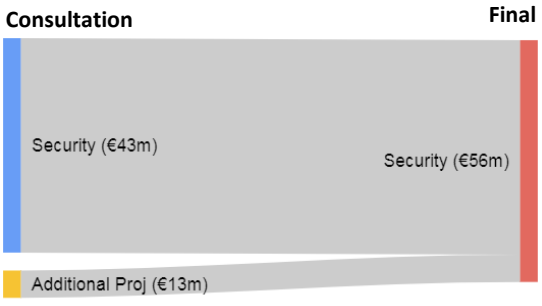


Figure 45: Change to Security proposal since Consultation

Appendix F - Security			
Consultation Figure			**€43.0m**
Project Additions			
Screening & Logistics Ctr.	€0m	€13.4m	€13.4m
Total			**€13.4m**
Final CIP Total			**€56.4m**

Figure 46: Proposed Security Projects

Proposed Security Projects		
Project Number	**Project**	**€m**
CIP 20.06.001	Cabin-baggage X-Ray Replacement & EDS Upgrade	€14.6
CIP 20.06.041	Security Screening Equipment Replacement	€4.5
CIP 20.06.015	Intrusion Detection Systems for Dublin Airport Boundaries	€4.0
CIP 20.06.007	Full Body Scanners	€1.9
CIP 20.06.014	Screening & Logistics Centre	€13.4
Various	General Projects (Reference Appendix F for full list)	€18.0
Total		**€56.4**

Cabin Baggage X-Ray Replacement & EDS Upgrade

This project proposes the replacement of existing cabin-baggage single view X-Ray equipment across Terminal 1, Terminal 2 and other areas, with EDS technology. Many of these devices will become end-of-life within the CIP 2020 period and will require replacement. In addition, growing passenger numbers also require that we increase passenger throughput. This project will have the following benefits;

- **Detection:** The EDS equipment improves overall detection by ensuring security screeners can better recognise items which are obscured with today's standard (single view) imaging systems
- **Adapting to Regulatory changes:** This technology puts Dublin Airport in a position to easily adopt to increased explosive detection without the need for additional head count (currently more staff and Explosive Trace Detection (ETD) equipment would have to be deployed to meet such an increase which would take a significant period of time and cost to implement.
- **Passenger Experience:** The overall passenger experience is enhanced with EDS-Cabin baggage as passengers do not need to divest liquids nor mobile devices.

Security Screening Equipment Replacement

Dublin Airport is mandated both by national and European regulation (i.e. European Commission Directive EU Reg 300.2008) to ensure that all passengers (including persons other than passengers) and accompanying items e.g. cabin baggage etc.) entering the CPSRA through its terminals and vehicle-posts must be screened to an appropriate standard. This is primarily accomplished in Dublin Airport through:

- X-ray screening for cabin baggage and items carried (addressed in separate proposals – CIP.20.006.001)).
- Walk-through metal detectors (WTMD) for the screening of the passengers.
- Handheld metal detector (HHDM) for screening of passengers where they cannot be screened via WTMD due to disability (e.g. wheelchair bound), possible interference with medical devices (e.g. pace-makers) or where WTMD alarms have been triggered and a targeted examination is required to locate the threat item.

In addition to these primary screening methods, the Regulator also mandates the requirement for supplementary random screening of passengers and items carried for the presence of explosives (10% of passengers). These mandatory supplementary screening requirements are implemented in Dublin Airport through:

- Liquid explosive detections systems (LEDS) – used for the detection of the presence of explosives in liquids carried by passengers
- Explosive threat Detection systems (ETD) systems: used for the detection of the presence of explosives in items carried other than liquids carried by passengers

This project proposes the following deliverables:

- A one-to-one replacement of each system is implemented
- 15 LEDs out of 15 deployed
- 57 ETDs and equipment management and monitoring system (out of 62)
- 23 WTMDs out of 37 deployed
- 65 HHMD out of 65 deployed
- 97 Mobile radios out of ~120 deployed

Intrusion Detection Systems for Dublin Airport Boundaries

This project proposes the installation of intrusion detection systems on the boundary of Dublin Airport which will;

- Improve the effectiveness of boundary monitoring by introducing automatic intrusion detection systems, which will constantly monitor the boundary of the CPSRA on a 24 x 7 basis, with emphasis on vulnerable locations on the airfield. When breaches do occur, the system will detect them as they happen and direct both CCTV recording and Airport Police responses to the specific area where they are required

Full Body Scanners

This project proposes a phased implementation of Full Body Scanners at Dublin Airport. This rollout phase will apply to Terminal 1 following evaluation of existing FBSS technology. The benefits of the project are as follows:

- **Detection:** The deployment of FBSS in the search areas will greatly enhance detection capability.

Security screeners can better recognise items which require further investigation.

- **Passenger Experience:** FBSS reduce the need for manual full body searches.
- **Adapting to regulatory change:** The provision of FBSS-SS will greatly prepare DAP for any increase in security screening requirements.

Screening & Logistics Centre - €13.4m (CIP.20.06.014)

This project provides for the development of a dedicated screening and logistics centre for supplies / deliveries airside in line with the daa Security strategy. This project is essential for the delivery of CIP 2020 and will result in efficiencies regarding airside deliveries both for construction projects and other items whose final destination is airside.

It is proposed that this project will be delivered in two phases. Phase 1 will deliver on two construction compounds to enable the efficient delivery of material for CIP 2020+ airside projects. The proposed locations for these are a site on the North side of the airfield campus opposite Hangar 6 with the second site on the North side of the existing Runway 10-28 close to the Runway 10 end of the runway.

Phase 2 of the project will deliver the screening and logistics centre located on the East side of the R132. Project benefits of Phase 2 include;

- Consistent optimised approach to the screening of airport supplies.
- Reduce the number of suppliers entering the CPSRA area.
- Potentially reduce the number of vehicle control point required on a given day/night.
- Reduction om the requirement for ASU personnel in construction activities.
- The ability to implement scheduling of vendor deliveries.

Both phase 1 and 2 will operate a pre-booking process for deliveries.

4.7. Other

The projects included in this grouping in the amount of €79.5m include a number of miscellaneous projects that do not fit directly into one of the previous categories. They comprise the following list of key projects and full details are included on the project sheets in Appendix G;

Following a reallocation of projects to more appropriate groupings and following consultation, the proposed capital investment in this project grouping has reduced from €79.5m to €22m and the details of this revised amount are included in the table below, Figure 47.

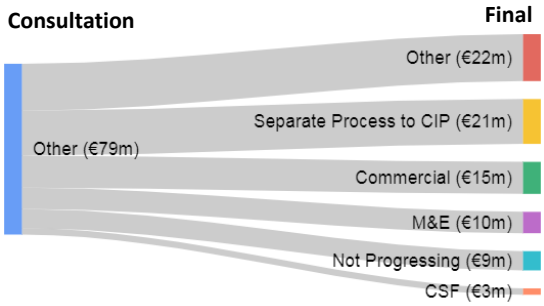


Figure 47: Change to 'Other' proposal since Consultation

Appendix G - Other			
Consultation Figure			**€79.5m**
Project Reductions			
	Original	**Proposed**	**Delta**
Programme Mgt.	€6.5m	€4.0m	-€2.5m
Minor Projects	€14.5m	€12.5m	-€2.0m
Terminal Operations	€5.9m	€4.9m	-€1.0m
Total			**-€5.5m**
Project Allocated to Other Groupings			
Level 4/5 Refurb	€18.0m	€0.0m	-€18.0m
Large Energy Projects	€10.0m	€0.0m	-€10.0m
T2 HBS Std 3	€21.0m	€0.0m	-€21.0m
ULD Storage	€3.0m	€0.0m	-€3.0m
Total			**-€52.0m**
Final CIP Total			**€22.0m**

The main changes are as follows;

- **Office Consolidation and Refurbishment** – the project cost has reduced to €15m and this has been reallocated to '**Commercial**' Grouping.
- **Large Energy Project – Photovoltaic Farm** – this project has been reallocated to **Asset Care (M&E)** in the amount of €10m.
- **Terminal 2 HBS Standard 3** – this project has been removed from CIP 2020 and will be consulted on through a separate Supplementary Capex process.
- **Unit Load Device (ULD) Storage** – the project cost has increased to €5m and this project has been reallocated to **Asset Care CSF** Grouping.

Figure 48: Proposed Other Projects

Proposed Other Projects		
Project Number	**Project**	**€m**
CIP 20.07.001	Programme Management	€4.0
CIP 20.07.002	Minor Projects	€12.5
CIP 20.07.014	Terminal Operations Improvement Projects	€4.9
CIP 20.07.004	METRO Coordination	€0.5
Total		**€22.0**

Programme Management

This provision covers the cost associated with managing a portfolio and programme of projects. A full description of what this cost covers in detailed in Chapter 6 – Programme Management.

Minor Projects

This provision covers the cost associated with carrying out minor projects necessary for the ongoing management of the daily airport operations on a short planning horizon and addressing essential maintenance issues as they arise. It generally covers projects valued at under €100k. Examples would include, replacement of water pumps for heating of Terminal 1, provision of additional seating / charging desks for gate areas.

Terminal Operations Improvements Projects

This project identifies key Terminal Operations improvement works required at Dublin Airport in the following areas;

- Washrooms
- Seating
- Luggage Trolleys
- Barriers
- Signage
- Visual Environment
- T2 OCS Relocation

METRO Coordination

This project contains the fees associated with allocating resources to ensure coordination with the MetroLink proposal during the design and construction stage. MetroLink is due to commence on site in 2021 and will require coordination and management with the design team.

4.8. Summary

Following consultation with airport stakeholders and further internal review, the CORE projects have reduced from €593m to €567m, a reduction of €26m.

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5 CAPEX PROPOSAL - CAPACITY PROJECTS

5. CAPEX PROPOSAL – CAPACITY PROJECTS

Chapter 2 of the CIP Consultation Document (issued to stakeholders on 25th October 2018) highlights the operational processors that will be at or nearing maximum capacity and require capacity enhancement to serve 40mppa. This chapter builds upon those findings by outlining a full suite of capacity development projects which address customer requirements and capacity deficits while also facilitating the continuing growth of Dublin Airport to 40mppa.

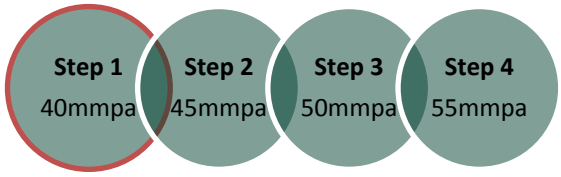
The development to 40mppa represents a 'common first step' in terms of the ultimate masterplan development to 55mppa for Dublin Airport. It is imperative that Dublin Airport is adequately positioned to accommodate 40mppa by the end of the next determination period, or shortly thereafter, if we are to avoid a situation whereby inadequate infrastructure is in place to cater for demand at Dublin Airport.

5.1. Introduction

Dublin Airport is striving to be an airport industry leader that can grow its business by delivering great service and value for airlines, passengers and business partners. A critical component of this vision is to ensure the development of efficient infrastructure which aligns with a longer-term masterplan.

The CIP Consultation document (issued 25th October 2018) set out daa's approach towards long term development interlinking the airports vision and masterplan towards 55mppa. The Dublin Airport Masterplan has been structured to facilitate alternative development routes representing increments of 5mppa in the steps of 40mppa/45mppa/50mppa/55mppa. These stepped development phases allow for flexibility of scalable development to ensure that the business evolves to its operational and business needs.

Figure 49: 55mmpa Masterplan – Incremental Steps



This chapter (Chapter 5) outlines the suite of projects, derived from the first common step of the 55mppa Masterplan, going from 30mppa to 40mppa, that will enable Dublin Airport to develop in a sustainable manner and accommodate 40 million passengers per annum (mppa).

Figure 50 illustrates the emerging 55mppa masterplan while Figure 51 illustrates the 40mppa development plan.

Development Scenarios:

Three development scenarios, each scenario a grouping of several individual projects which collectively support Dublin Airport capacity requirements, were presented in the CIP consultation document. Scenario 3, with a focus on maximising development on the east of the airport, was identified as the preferred development option. Following feedback from airport stakeholders and incorporating developments to best meet the efficient operation of the airport an update to Scenario 3 has been developed, referenced hereinafter as Scenario 4, refer Figure 52.

Figure 50: Emerging Dublin Airport Masterplan – Safeguarding for growth to 55mppa

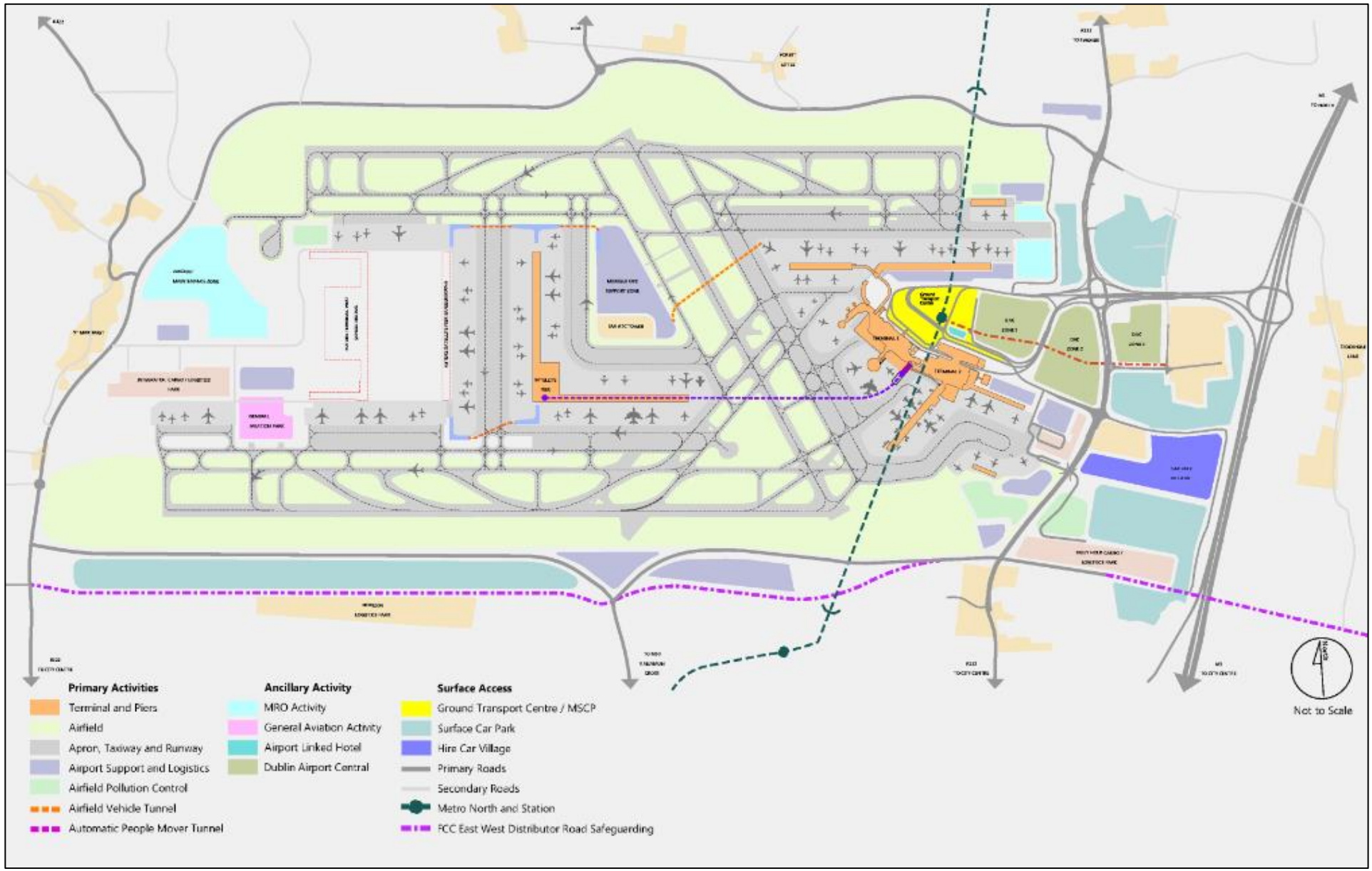
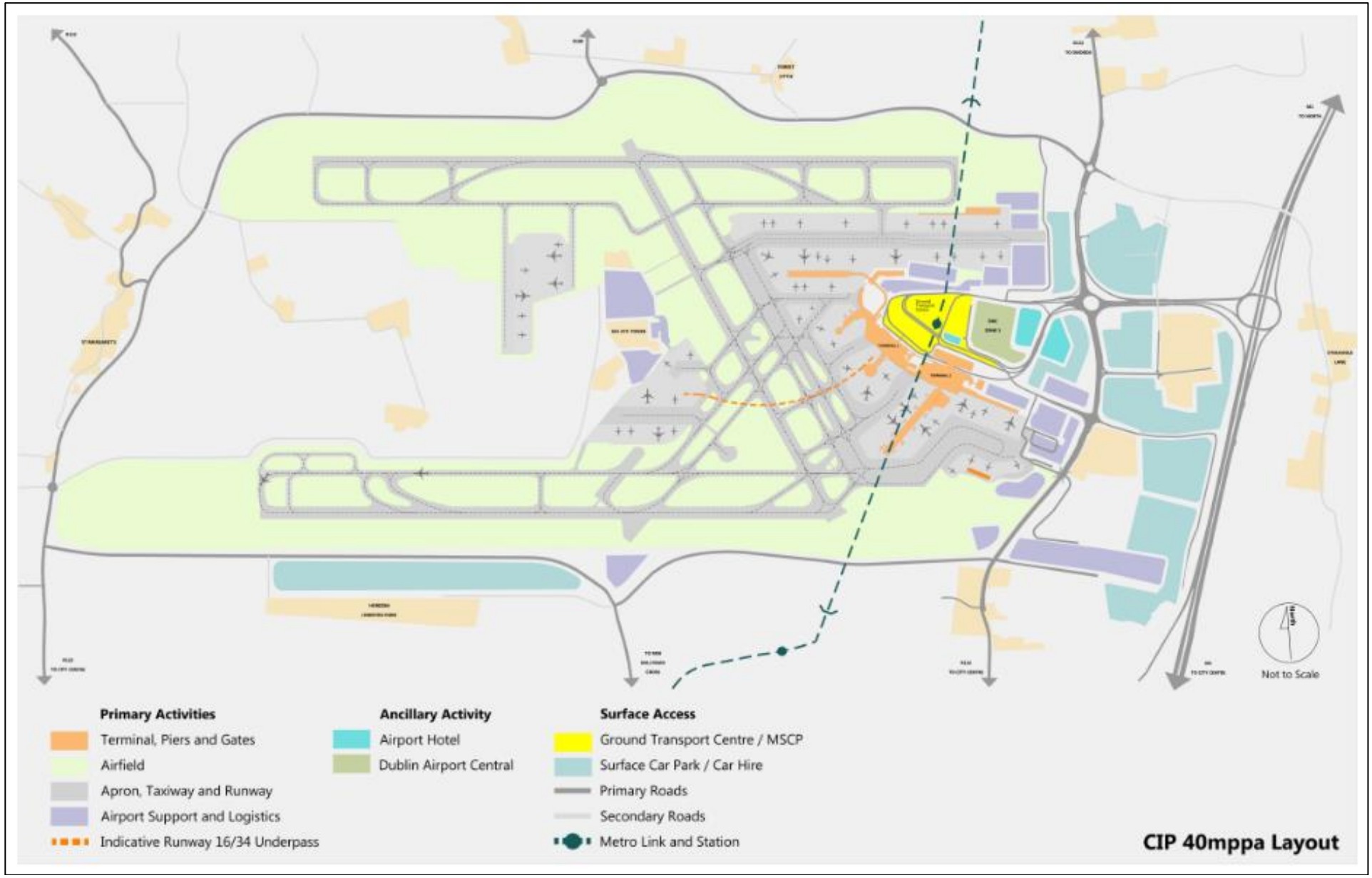


Figure 51: Emerging Dublin Airport Masterplan – Safeguarding for growth to 40mppa



Scenario 4:

This scenario seeks to meet the operational needs of the business by concentrating the growing transfers market in the south, expanding the point to point low-cost carrier business to the north and east of Pier 1, with safeguarded expansion zones for long haul across the east campus.

It is proposed to have new contact piers both in the North (phase 1 only with a PBZ on 5H) and South, capacity improvement measures of differing scale to both terminal processors, expansion of the US Preclearance facility and phased expansion of eastern campus apron. Reconfiguration of the existing Pier 1 or Pier 2 is also required to accommodate non-US widebody operations.

A second new western remote apron, Apron 5M, is needed to accommodate contingency, standby and overflow aircraft. East to west campus vehicle connectivity is enabled by an apron road underpass below Runway 16-34 from Pier 3.

The development of this apron facilitates eastern stand capacity being maximised for commercial passenger operations.

Figure 52: Scenario 4

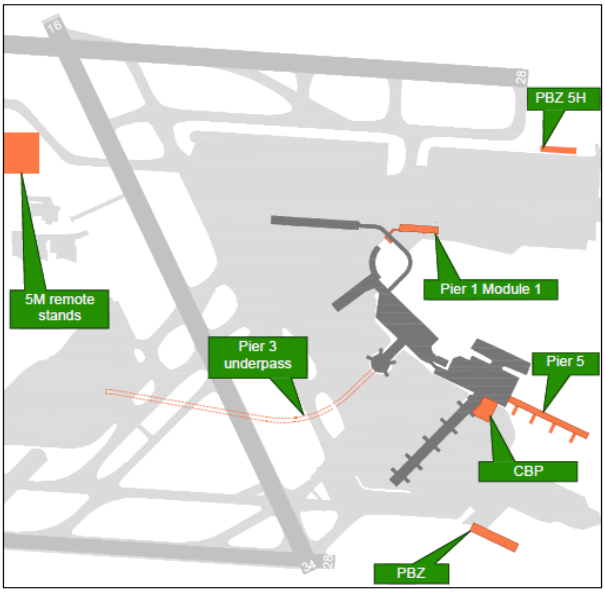


Figure 53: Comparison of the Four Development Scenarios.

Work Programme	Scenario 1	Scenario 2	Scenario 3	Scenario 4 (Proposal)
North Apron Mod 1	Yes	Yes	Yes	Yes***
North Apron Mod 2	Yes	No	No	No**
North Apron PBZ	Yes	Yes	Yes	Yes
North Apron Pier 1 Airbridges	Option	No	Yes	Yes
Pier 2 WB Enablement	Option	Option		
South Apron Pier 5	Yes	Yes	Yes	Yes
South Apron CBP	Yes	Yes	Yes	Yes
South Apron PBZ	Yes	Yes	Yes	Yes
South Apron Dual Code E Taxiway	Yes	Yes	Yes	Yes
West Apron Underpass	Yes	Yes	Yes	Yes
West Apron Remote Stands	Option	No	Yes	Yes
West Satellite	No	Yes	No	No
Terminal 1 – Kerb	Yes	Yes	Yes	Yes
Terminal 1 – Check-in	Yes	Yes	Yes	Yes
Terminal 1 – CSA	Yes	Yes	Yes	Yes
Terminal 1 – Baggage	Yes	Yes	Yes	Yes
Terminal 1 – IDL	Yes	Yes	Yes	Yes
Terminal 2 – Check-in	Yes	Yes	Yes	Yes
Terminal 2 – CSA	Yes	Yes	Yes	Yes

is only for comparative purposes, it does not capture the full suite of proposed projects. These are identified in Figure 55 .

** It is daa's intention to submit modules 1,&2 including the mod 1 reception node and the mod 1 extension for planning permission as a means towards safeguarding the development and facilitating its expedient delivery when required within a 10 year framework.

*** Mod1 will be delivered within this CIP in its entirety with the reception node being delivered as part of a 10-year plan

5.2. Capacity Proposals (Scenario 4)

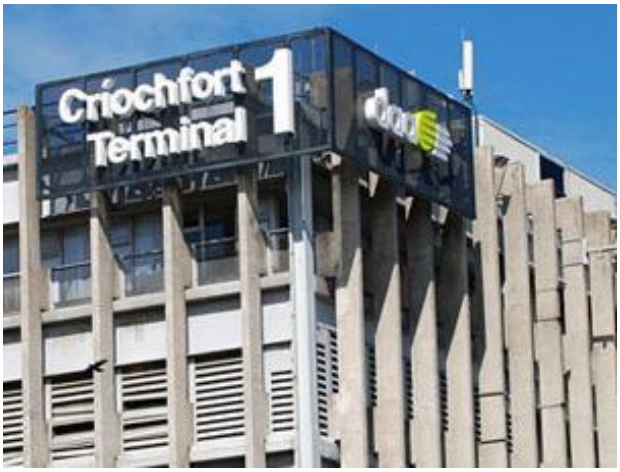
This section describes the Masterplan compliant CIP2020 development route made up of individual capacity releasing projects which when brought together will facilitate the processing of 40mppa at Dublin Airport. Greater detail can be found on each project in Appendix C. In deriving the capital investment required, consideration was given towards the investment to facilitate growth from both Terminal 1 & Terminal 2, as can be seen in Figure 54.

Figure 54: Capacity Project Groupings

Figure 55: Summary of Proposed Capacity Projects (Scenario 4)

Appendix C - Capacity		Terminal 1	Terminal 2	Airfield
CIP Number	**Project Title**	**Cost €m**		
CIP.20.03.004	Gate Post 9 Expansion (West Lands)			€9.2
CIP.20.03.006	Terminal 1 Kerbs	€13.6		
CIP.20.03.011A	Terminal 1 Check-In	€30.2		
CIP.20.03.012	Terminal 1 Central Search - Relocation to Mezz Level	€42.6		
CIP.20.03.013	Terminal 1 Departure Lounge (IDL) Reorientation and Rehabilitation	€42.4		
CIP.20.03.015	Terminal 1 Baggage Reclaim Upgrade & Alterations	€22.2		
CIP.20.03.016	Terminal 1 - Rapid Exit Arrivals	€2.2		
CIP.20.03.017	Terminal 1 Shuttle, bus lounges and injection points	€2.8		
CIP.20.03.018	Terminal 1 - Immigration Hall	€1.5		
CIP.20.03.020	Terminal 2 Check-in Area Optimisation		€14.8	
CIP.20.03.021	Terminal 2 Central Search Area Expansion		€5.6	
CIP.20.03.028	Terminal 2 Early bag store and transfer lines		€27.9	
CIP.20.03.029	New Pier 5 (T2 and CBP Enabled)		€323.6	
CIP.20.03.030	Expansion of US Pre-Clearance Facilities		€50.3	
CIP.20.03.031	South Apron Expansion (Remote Stands, Taxiway and Apron)		€89.8	
CIP.20.03.033A	Enablement of Pier 3 for Precleared US bound passengers		€8.5	
CIP.20.03.034	Pier 3 Immigration (Upgrade & Expansion)	€1.4	€4.3	
CIP.20.03.036	North Apron Development – Pier 1 Extension (Module 1) & Apron 5H PBZ	€175.3		
CIP.20.03.043A	Terminal 1 Piers - New Airbridges (6NBE / 3WB)	€33.9		
CIP.20.03.049	De-icing pad at Runway 10R			€5.0
CIP.20.03.051B	West Apron Vehicle Underpass - Pier 3 Option			€171.0
CIP.20.03.052	Surface Water Environmental Compliance	€25.5	€25.5	
CIP.20.03.054	New Remote Apron 5M - 17 NBEs	€54.1	€18.0	
CIP.20.03.057	Airside GSE Charging Facilities (Ground Handlers)			€5.0
CIP.20.03.071	Hydrant Enablement - Pier 2 & 3			€23.7
TOTAL		**€447.8**	**€568.4**	**€213.9**

5.3. Terminal 1



Capacity

Terminal 1	Terminal 2	Airfield
€448m	€568m	€214m

Background

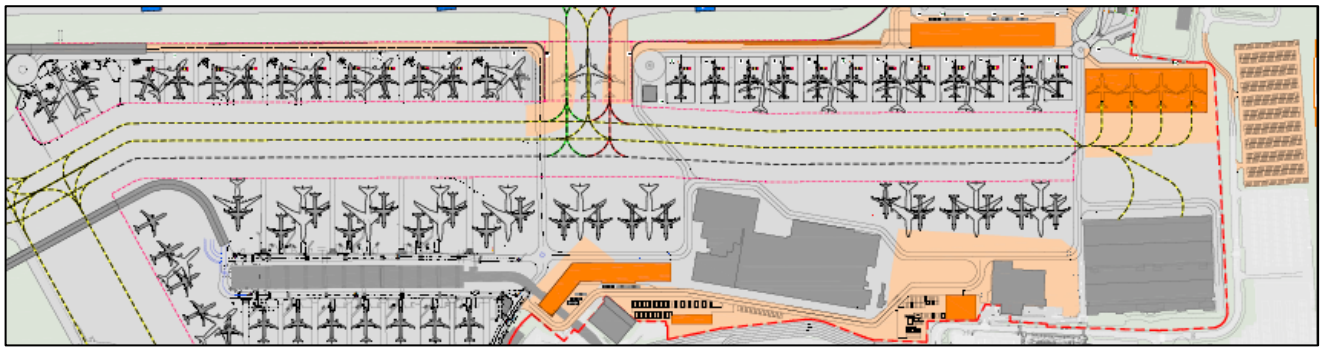
The following developments are proposed to facilitate for a potential growth in traffic of between 3 and 4 mppa in the 40mppa horizon. The forecasted increase in passenger demand rises from 3600pph to circa 4700pph on the outbound journey and rising to 4100pph on the in-bound journey. All projects have been sized appropriately to accommodate sustained high volumes of traffic.

5.3.1. North Apron Development (CIP.20.03.036)

The CIP 2020 development plan highlighting the North Apron is shown in Figure 56. The pier extensions serving both arriving and departing passengers have been developed to serve the base function of high frequency turnaround and high volumes. The North Apron, occupied today with MRO hangar facilities, will see a progressive deployment of MRO to the west of Runway 16-34 to facilitate commercial aircraft demand. In recognising the scale of Hangar 4 and Hangar 5 the pier expansion scheme is developed to "wrap-around" the hangars whilst safeguarding connectivity between the two pier modules (Module 1 and Module 2) in line with the evolving masterplan.

CIP 2020 proposes the development of the pier element of Module 1 with the reception node safeguarded for future development. The intent of this node was to facilitate transfer passengers, which are not envisaged as a demand requirement for the immediate future. Safeguarding will also be secured for Module 1a (eastern extension of Module 1 to include for 2 additional gate hold rooms) and Module 2. As part of CIP 2020 this will be included in a statutory planning application in order to facilitate more expedient delivery within a 7-10 year timeframe. CIP 2020 will deliver the Pre-Boarding Zone (PBZ) to the north of Apron 5H. Due to their independence and scalability the development timelines can be adjusted to meet stakeholder requirements. As part of the phasing of the development a shuttle bus arrangement is proposed from the current hold gates in the old central terminal building (OCTB).

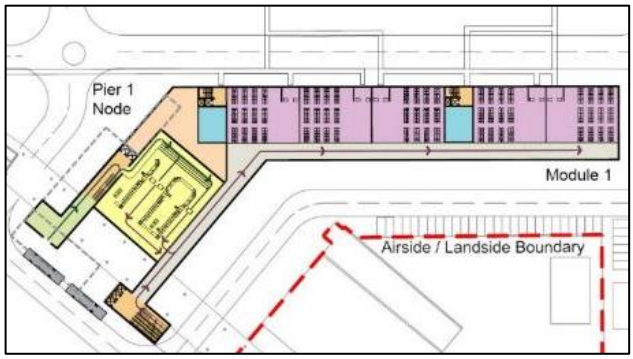
Figure 56: North Apron Development



Pier 1 Eastern Extension Module 1

With the growth in demand for point to point flights the next development step, is to expand Pier 1 to the east, ref Figure 56 showing Module 1a & Apron 5H PBZ. It is proposed to do this in a modular fashion. The first step would include a connection from the Skybridge, for both arriving and departing passengers. The connection facility is sized to safeguard for a potential future transfer facility which would cater for flights arriving at Pier 1.

Figure 57: Pier 1 Extension – Module 1



Module 1 is a two storey, five gate layout, specifically designed for walk in and, walk out operations, ref Figure 57.

5H Pre-Boarding Zone (PBZ)

As part of PACE, Apron 5H will provide 12 new remote stands. It is forecast that the growth in point to point flights, will require a significant number of bus to plane operations. CIP2020 proposes a Pre-Boarding Zone (PBZ) with 7 hold-gates and covered walkway to stands remote from the building on Apron 5H. This single storey structure would operate in a similar fashion to the PBZ in the South Apron. The facility would further be safeguarded for satellite expansion to the west pending finalisation of the evolving masterplan. The Apron 5H PBZ facility includes the development of toilets and food and beverage opportunities within the building and includes an allowance for the refurbishment of the OCTB hold gates to facilitate shuttle bus operations to this new PBZ. Ref Figure 72 .

Figure 58: Module 1 – Computer Generated Image

Figure 59: 5H PBZ – Computer Generated Image

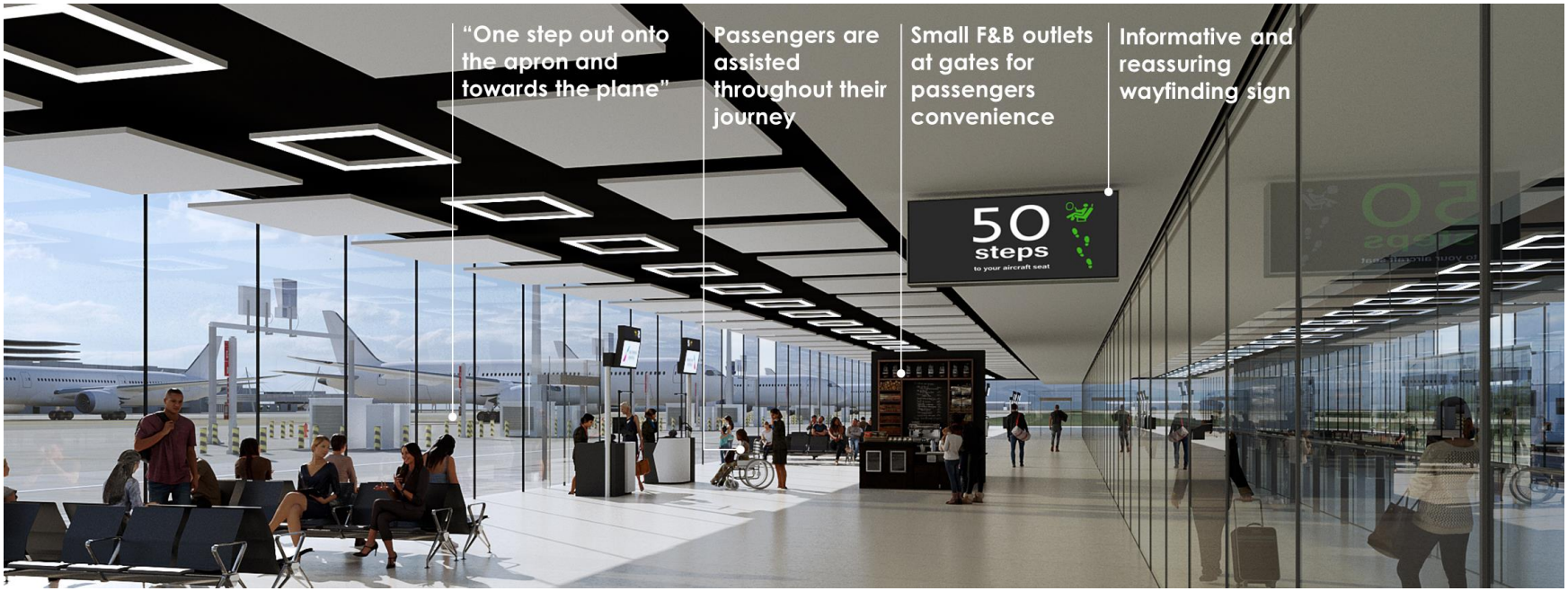
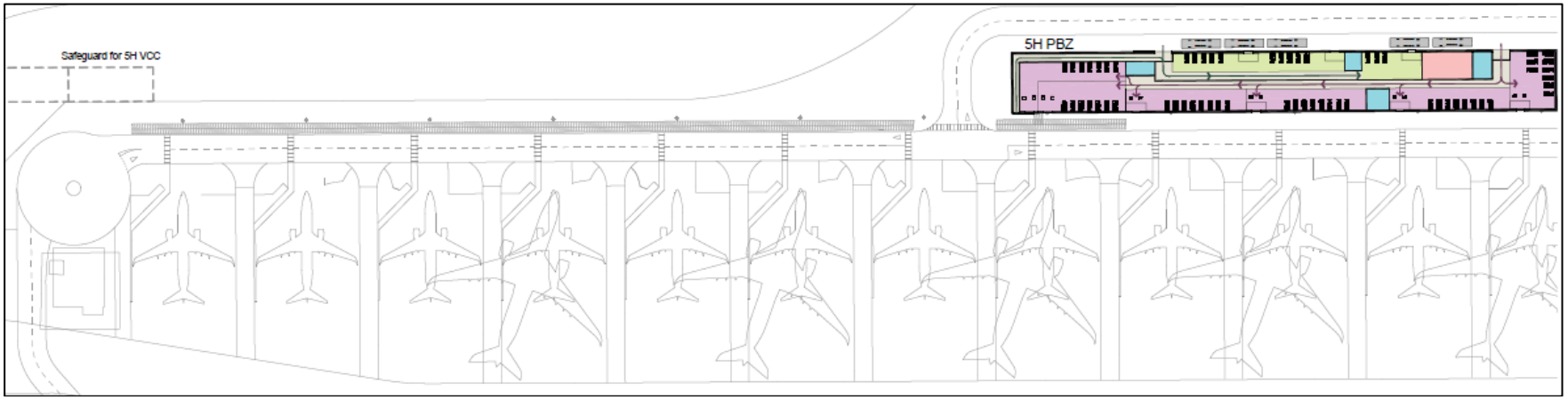


Figure 60: Apron 5H Pre-Boarding Zone



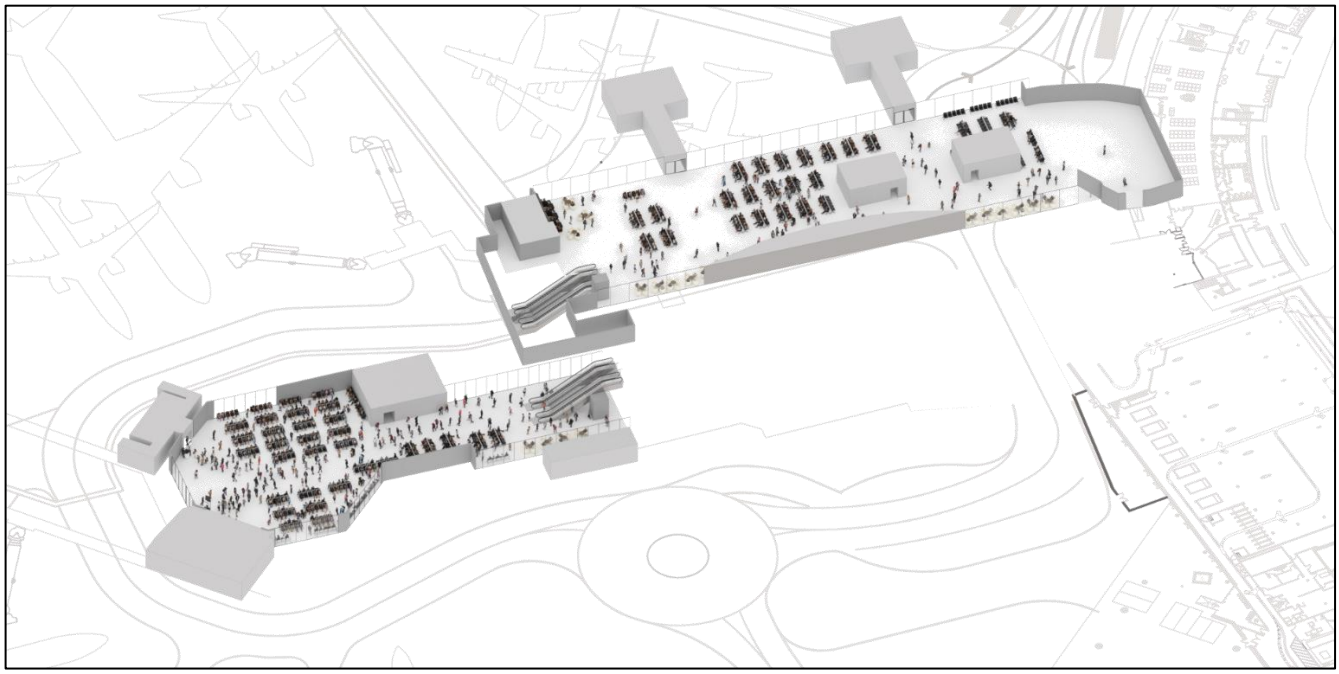
5.3.2. Terminal 1 Piers – New Airbridges 3 WB/6NBE (CIP.20.03.043A)

Terminal 1 requires new WB flexibility and additional NB airbridge capability, within the current configuration of stands at Terminal 1. In order to accommodate the overall infrastructure delivery plan and maintain maximum access to stands it is envisaged that the WB facilitation will be delivered in a phased approach. The North node on Pier 2 would be initially delivered with a flexible delivery arrangement between Pier 1 & Pier 2 coming on stream as other new stands around the airport are delivered. Implemented through to its final condition the proposal at Pier 2 can accommodate 3 airbridge served wide body aircraft or 10 narrow body aircraft. This is achieved through the retrofitting of fixed links and airbridges for single docking capability for widebody aircraft, to the MARS configured stands

Today wide body aircraft are also facilitated on Pier 1 and would continue to be facilitated with increasing service provision as part of this project. CIP2020 will seek to deliver the most efficient and effective delivery of stands including the required 3 WB stands as necessitated over the 5-year period.

Figure 61: Likely Pier 2 Widebody Enablement & Airbridge Install

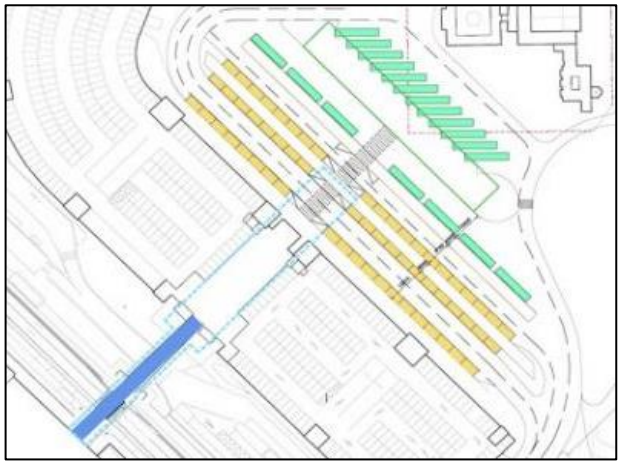
Figure 62: Likely Pier 2 Widebody Enablement – 3D Indicative Layout



5.3.3. Terminal 1 Kerbs (CIP.20.03.006)

It is proposed to develop increased kerb capacity at the back of the T1 Multi Storey Car Park (MSCP) within the central section of the Ground Transport Centre. This proposal also safeguards for the Aviation Security in Airport Development (ASIAD) requirement of 30m stand-off distance from the check-in building.

Figure 63: Ground Transportation Centre Overview



This is driven by the requirement for increased capacity and the need to safeguard the investment such that any future escalation in security risk does not render investment in the current kerbs abortive by moving the public kerbs away from the terminal. This development will see the drop off kerbs moved to the centre of the MSCP so that they form part of an integrated transport hub with reconfigured bus pull in bays adjacent to the proposed Metrolink station. See Figure 63.

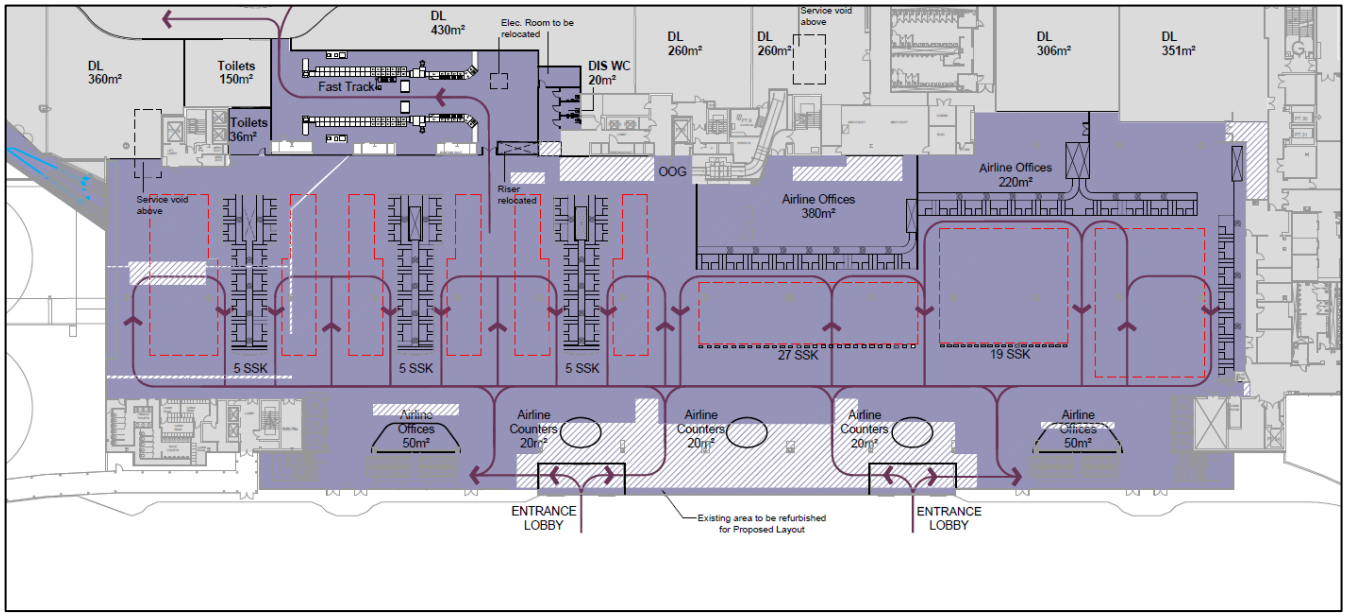
Figure 64: T1 Kerb – Computer Generated Image

5.3.4. Terminal 1 Check In (Partial Shoreline) (CIP.20.03.011A)

It is proposed to replace the existing island check-in arrangement with a partial shoreline layout. Note: Prioritising the reinstatement of Check-in Island 1-2 before partial shoreline will introduce redundancy in the system eliminating the construction / implementation impact to operations. It is also proposed as part of the check-in redevelopment to provide for fast track on the departure levels to the rear of check in. Further information is provided in Appendix C. The proposed layout is shown in Figure 66.

Figure 65: Check-in – Computer Generated Image

Figure 66: Check-in (Partial Shoreline)



5.3.5. Terminal 1 Central Search (CIP.20.03.012)

To meet the 40mppa demand requirements (c.23.5mppa in T1), it is proposed to move Central Security to the mezzanine level while maintaining fast track on the check-in hall level (See Figure 68). The move to the mezzanine requires the extension of the existing mezzanine floor over the current security queuing area and the introduction of a new vertical circulation core to the rear of security to allow passengers who have cleared through security to return to the IDL via an orientation zone. The proposal includes 11 x 25m automatic tray return system lanes with C3 baggage scanning. The introduction of C3 improves processing rates by upwards of 30% over current screening protocols whereby laptops and liquids are removed from cabin baggage for inspection.

Figure 67: Terminal 1 Central Search – Computer Generated Image

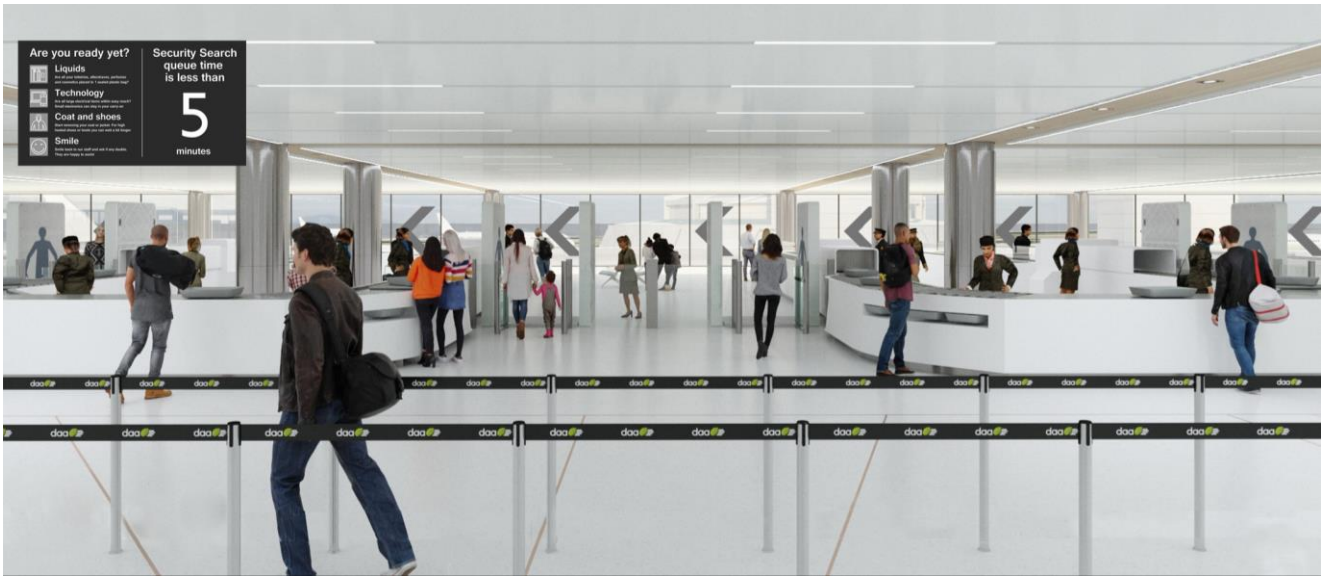
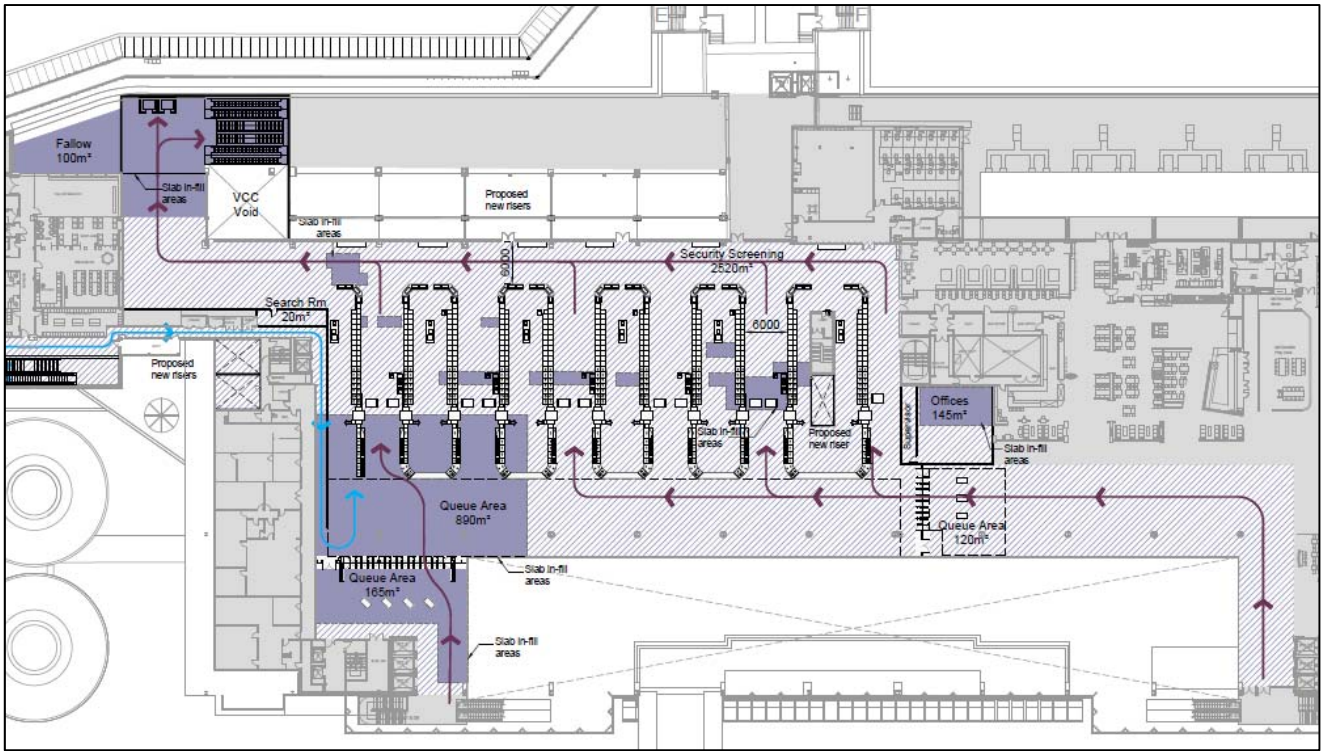


Figure 68: Terminal 1 Central Search Area



5.3.6. Terminal 1 International Departures Lounge (IDL) (CIP.20.03.013)

The Terminal 1 IDL currently operates at optimum capacity. To increase its capacity a number of measures are proposed including;

- introduction of a reorientation space following exit of the Central Security Area,
- the elongation and widening of the main circulation space,
- the opening up of commercial space (business lounges or similar) in the previous occupied CSA,
- the upgrading of both Food and Beverage and retail offerings

as illustrated in Figure 70.

Figure 69: Terminal 1 IDL – Computer Generated Image

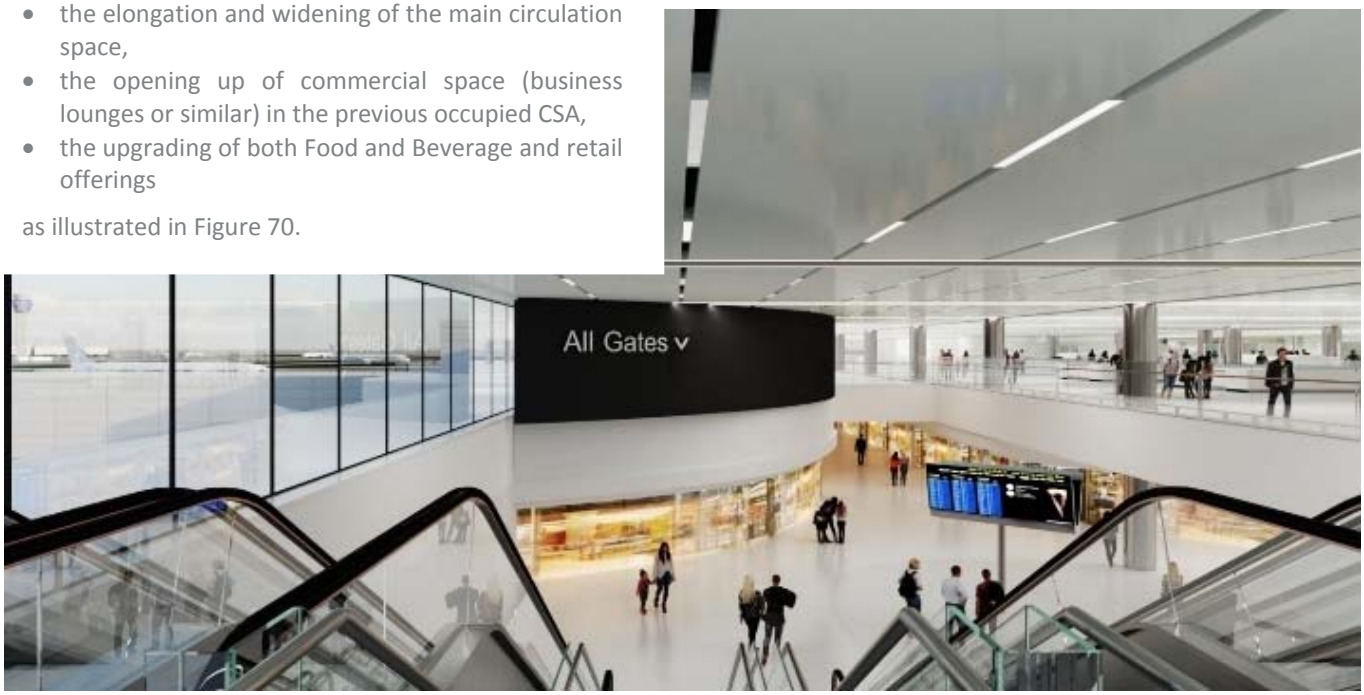
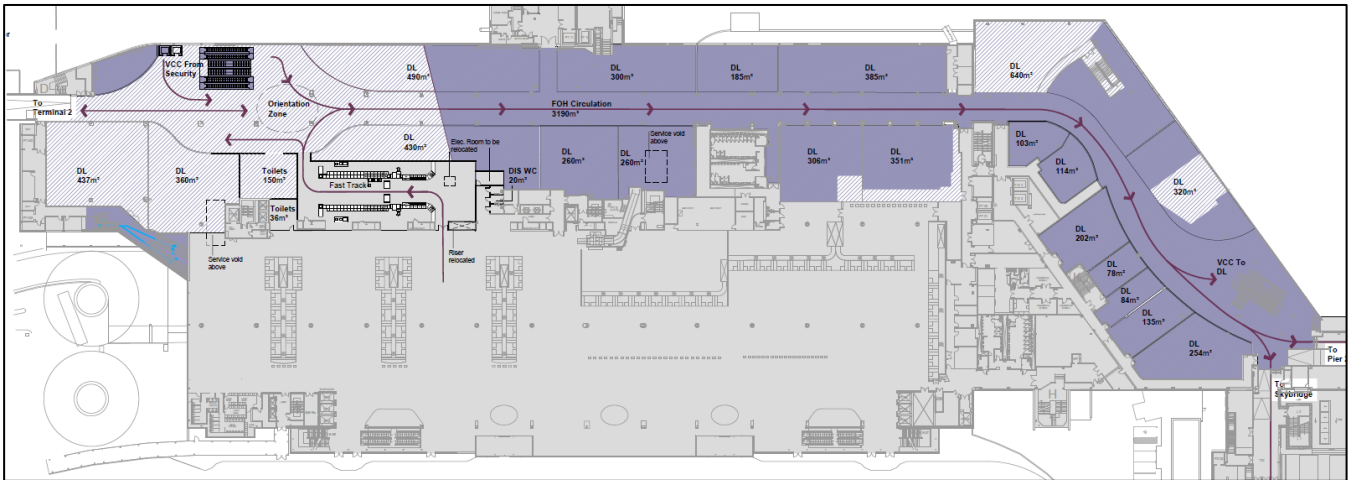


Figure 70: Proposal for Terminal 1 IDL



5.3.7. Terminal 1 Baggage Reclaim (CIP.20.03.015)

It is proposed to provide the belt length required for wide body aircraft by linking existing belts 6 and 7 and converting these belts to an inclined belt arrangement. This project is driven by:

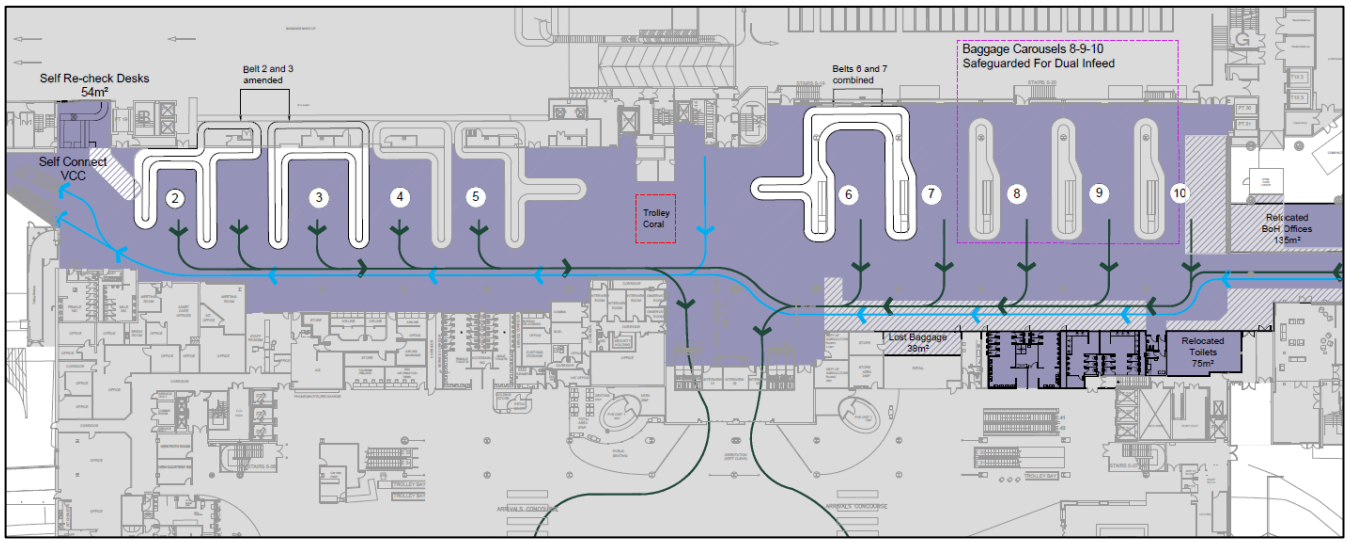
- The need to relieve existing congestion in this area and improve circulation flows
- The need for additional baggage reclaim capacity
- Improve passenger experience by enhancing the appearance of the hall
- Provide self-connect product for passengers at T1

In addressing congestion in the reclaim area it is proposed to:

a.) widen the circulation corridor from the baggage hall entry point from Pier 1 & Pier 2 (Figure 71) and

b.) to provide for a speedy exit for passengers without hold baggage to bypass the reclaim hall via a new exit point (CIP.20.03.016). Ref Figure 74.

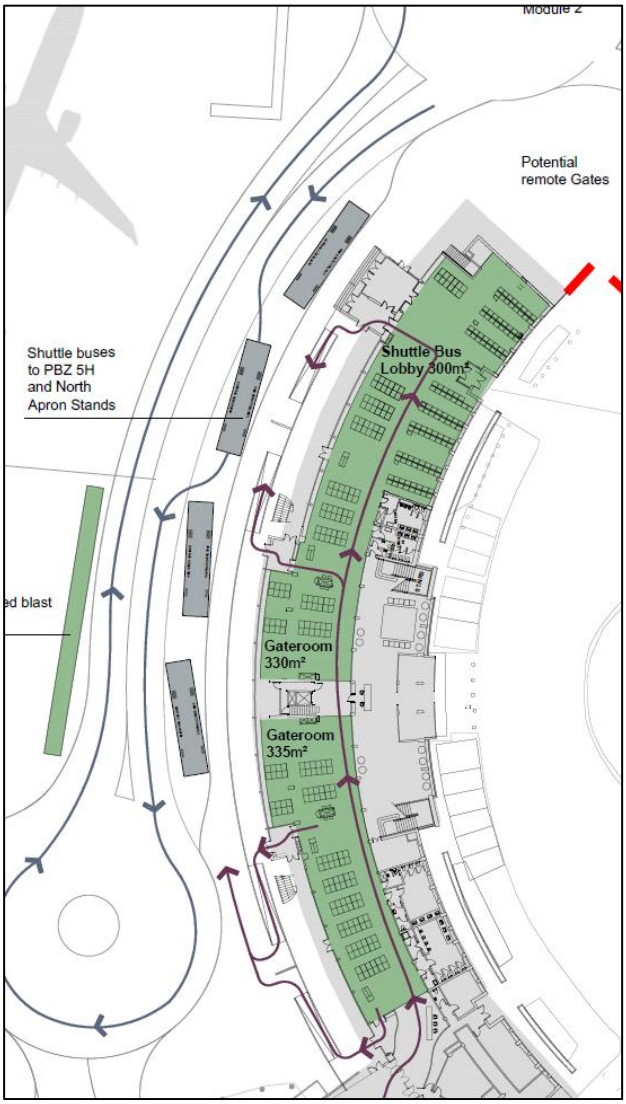
Figure 71: Terminal 1 Baggage



5.3.8. T1 Shuttle, Bus Lounges & Injection Points (CIP.20.03.017)

With the provision of a Pre-Boarding Zone (PBZ) on the North Apron and more operations in the Western Apron, there will be increased bussing demand. T1 provides bus gate capability at Pier 1, Pier 2 and at the ground level of the Old Central Terminal Building (OCTB). This project will refurbish the Old Central Terminal Building ground floor to accommodate the anticipated passenger growth. The project includes the internal refurbishment of this hold room and associated facilities and the adjustment of the bus kerb to cater for the increasing bussing demand as the use of shuttle lounge.

Figure 72: T1 Shuttle, Bus Lounges & Injection Points



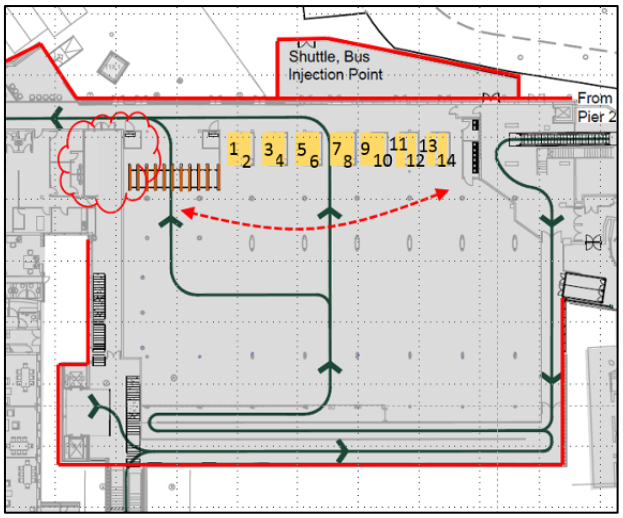
5.3.9. Pier 3 Immigration (CIP.20.03.034)

This project proposes a reconfiguration of the Pier 3 immigration hall. The objective is twofold, on the one hand it will provide an increase in capacity of passenger processing and on the other it will improve circulation and queueing areas. The project will provide 6 no. relocated booths, a net increase of 2 booths compared to the existing situation, to cope with peak demands of arriving passengers at Pier 3. The booths will be relocated in to the hall as their current location on the neck of the pier constrains growth.

5.3.10. Terminal 1 Immigration Hall (CIP.20.03.018)

This project proposes to reconfigure the booths and e-gates in order to increase their numbers s to 11 e-gates and 14 booths across the same queuing depth as provided by the second phase PACE project. Ref Figure 73.

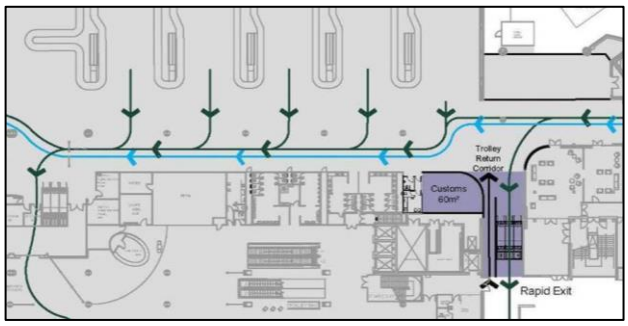
Figure 73: T1 Immigration Hall



5.3.11. T1 Rapid Exit Arrivals (CIP.20.03.016)

At present arriving passengers exit into the arrivals area via the existing baggage reclaim hall. As passenger numbers grow, the existing baggage hall will meet the demand for circulation space requirements. A rapid exit point is proposed to relieve the growing circulation pressure. Figure 74 shows the location of the T1 Rapid Exit Arrivals.

Figure 74: T1 Rapid Exit Arrivals



5.4. Terminal 2

Capacity		
Terminal 1 €448m	Terminal 2 €568m	Airfield €214m

Background

In a 40mppa scenario, the passenger numbers using Terminal 2 will rise from 12mppa to 16.5mppa. From a passenger processing perspective Terminal 2 has sufficient capacity / flexibility to accommodate the increased throughput at Kerbside and IDL. Minor capacity upgrades will be required in the check-in hall to accommodate 16.5mppa while the introduction of ATRS and new C3 screening technology is also proposed.

Figure 75: South Apron – Existing Arrangement

Figure 76: South Apron – Proposed Arrangement

From a stand and gating perspective, the increase in passenger numbers from 12mppa to 16.5mppa will require more significant new infrastructure. A key role of CIP2020 is to provide facilities to accommodate growth of circa 3-4mppa from transfer passengers. The proposed infrastructure to support the hub development includes as represented in Figure 75 and Figure 76. All proposed Terminal 2 projects are detailed in the following section.

5.4.1. New Pier 5 (CIP.20.03.029)

CIP2020 proposes to develop a flexible US-precleared/other three-storey pier extending east from Terminal 2, facilitating 4 MARS full service stands, in addition to a remote US Preclearance enabled (flexible) PBZ. CIP 2020 sets out a pier proposal designed to maximise flexibility and utilization. To support hub operations, connecting passengers will remain on the secure airside of the terminal complex transferring between aircraft. This will facilitate a rapid turnaround times for aircraft and, therefore, higher gate utilization. See Figure 78 for proposed pier layout:

The proposed pier also incorporates the following:

- Gate lounges on the 1st floor (Departures) which are physically segregated and accessible from both the 1st floor by US Preclearance passengers and the 2nd floor by all other passengers.
- Fixed airbridge links.

- 6 hold gate facility on the ground floor for non-US Preclearance Pax

Apron Level:

At apron level Pier 5 includes 6 bus gates. A bus injection point has been located to the Pier's western end to accommodate arriving passengers, providing direct access to Terminal 2 immigration and transfer facilities.

First Floor:

The first floor is the primary departures floor with 8 gates accessed either by a CBP corridor or by a non-CBP vertical circulation core descending directly from the floors above. This flexibility allows each gate to be individually used for CBP or non CBP operations, as required. Fixed links are to be equipped with airbridges and vertical cores to apron level to allow for further flexible use of the stands. A food and beverage offering will be placed at the start of the pier for US preclearance passengers and located next to an executive lounge.

Second Floor:

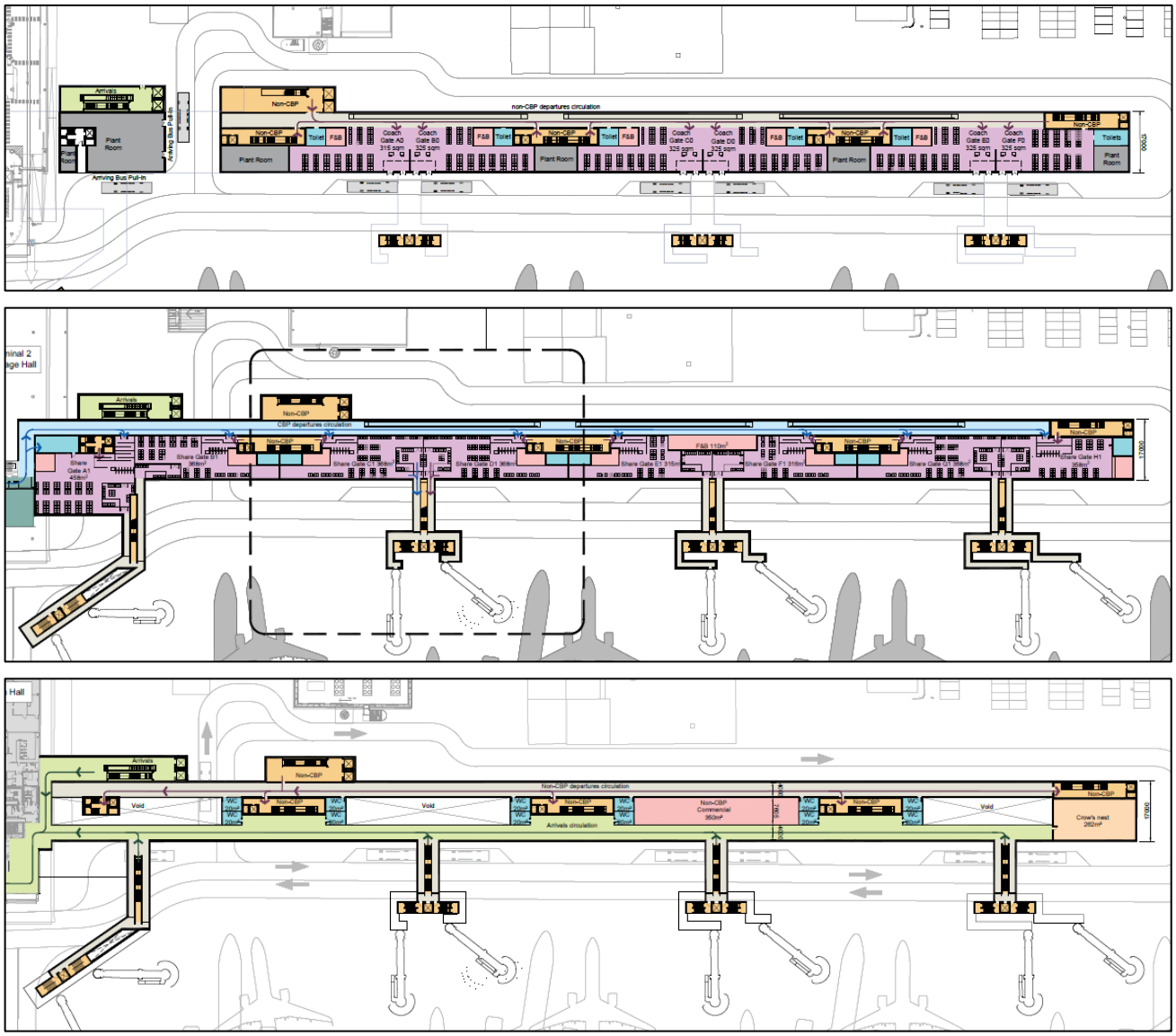
The second floor accommodates the arrivals corridor as well as the non-CBP departures corridor, (accessed via the third floor, not shown, which connects directly to the T2 departure lounge). This floor has the flexibility between corridors to accommodate future development of support facilities, including office space, commercial offerings and back of house support space.

Demolition / Relocations:

This project requires the demolition and relocation or otherwise of existing premises falling within the development footprint, see Figure 75. The project safeguards options for impacted business operations and includes for the facilitation of a serviced airport logistics park east of the R132 for commercial enterprise development ref Figure 78. The construction of a secure road from the South Apron over the R132 with services brought to the Eastland's logistics park is proposed as part of this development, its termination point will be at the beginning of the overall site.

Figure 77: Pier 5 Level 15 – Computer Generated Image

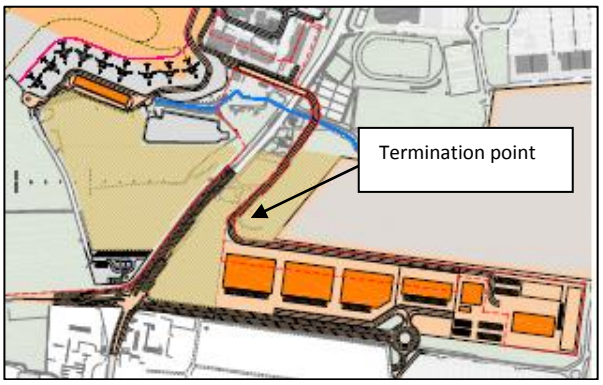
Figure 78: Apron Level, First Floor and Second Floor



Commercial Enterprise Development Zone

In delivering both the south apron Pier 5 and establishing a zone for scalable expansion that meets the requirements of belly-hold into the future, it is proposed to enable a landbank to the east of the R132. This area is planned to be linked airside via a secure bonded road and over-bridge that would be provided as part of this CIP. The zone for development with indicative facility layout is shown in Figure 79 below:

Figure 79: Commercial Enterprise Development



5.4.2. South Apron Expansion (Remote Stands, Taxiway & Apron (CIP.20.03.031)

CIP2020 assumes the construction of Dual Code E taxiways (PACE project), currently under review by IAA SRD. This will permit inbound and outbound wide body aircraft to utilise the South Apron in an operationally uninterrupted manner thereby decoupling operational constraints from the effective requirements necessary to make a hubbing operation viable. This will further improve safety of ground operations at the head of Pier 4.

It is also proposed to redevelop the southern airfield to include up to 17 stands as well as the extension of the above-mentioned Dual Code E taxiways. This redevelopment is inclusive of a newly developed Pre-Boarding Zone (PBZ) building (South Gates) to accommodate the construction of Pier 5. The PBZ building will include the development of the associated road access for shuttle bus operations. Additional weather protected walkways will be either side of the PBZ and will maximise the number of serviceable walk-out contact stands. See Figure 80 for South Apron Expansion.

Figure 80: South Apron – Dual Code E Taxiways and PBZ Relocation

5.4.3. Expansion of US Pre-Clearance Facilities (CIP.20.03.30)

Today's US Preclearance in Dublin operates based on a secondary screening facility located in Pier 4 with a standalone Hold Baggage Screening (HBS) system. Effective as this may be, there is a considerable degree of flux in the space of security alignment between the EU and US. The CIP2020 plan is to expand the current facility based on all known implementable measures for both the TSA and US Preclearance processes to enable US Preclearance on Piers 3, 4 and 5 with Piers 4 and 5 being facilitated via direct connectivity. The use of Pier 3 as a US pre-cleared facility will be facilitated by the sterilisation of gate spaces and any necessary adjustments to the apron injection points facilitating sealed bussed operations

Figure 81: US Pre-clearance – Computer Generated Image

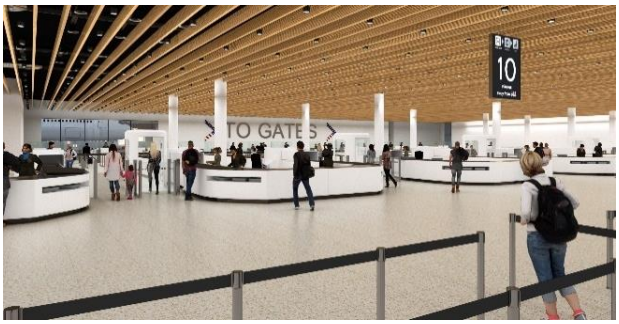


Figure 82: Proposed US Preclearance Expansion

It is proposed to expand and reorient the operational use of the space with the inclusion of 11 TSA screening lanes, 30 US Preclearance officer podium positions and an expanded secondary screening area. The facility will provide a direct sterile link to the proposed Pier 5 and the existing Pier 4 and a sealed bussing operation to a sterile area in Pier 3 whilst safeguarding for a potential fixed link to Pier 3. CIP2020 should provide sufficient flexibility to implement optimal solution(s) facilitated by the adoption of new technology as it becomes viable and available. This new technology could mean:

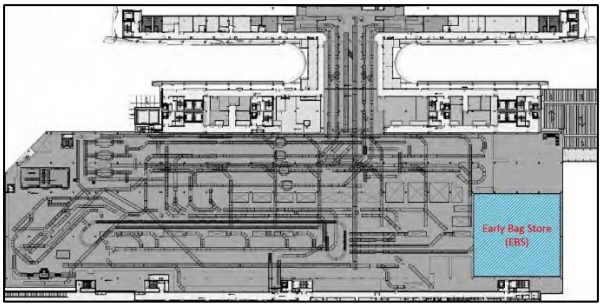
- The potential development of a Satellite US Preclearance/ TSA facility in Pier 3 within an acceptable footprint facilitated by the application of new technology (such development today is driven by the parallel two-speed TSA screening process which leads to a requirement for a relatively significant screening facility footprint) thereafter linked to sterile gate lounges with the objective of enhancing customer experience and reducing the passenger demand in Pier 4; and;
- In addition to the above a reduced footprint requirement for the extension of the existing Pier 4 US Preclearance / TSA facility;
- In addition to the above through the adoption of various technology enabled solutions including for example, facial recognition and technology that facilitates "co-mingling", alternate US preclearance processes could be developed.

This project also includes for the redevelopment configuration of the CBP baggage make up carousels to provide additional capacity.

5.4.4. Terminal 2 Early Bag Store & Transfer Line (CIP.20.03.028)

It is proposed to construct an early bag store on the HBS mezzanine of Terminal 2. The lane- based system will have the capacity of 950 bags. The EBS will provide sufficient capacity for the early bag demand over the next CIP period.

Figure 83: Early Bag Store Proposed Location

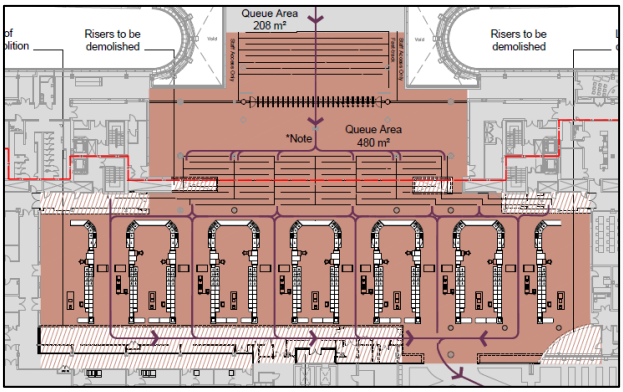


The use of an early bag store will assist in reducing the demand on CBP allocated make-up positions, which are forecast to increase beyond the current provision. A 4th Transfer line will also be installed to increase the capacity and resilience of the transfer system.

5.4.5. Terminal 2 Central Search Area (CIP.20.03.021)

It is proposed to develop this in line with evolving technological enhancements in security scanning equipment, using Automatic Tray Return Systems and C3 scanning technology which has upwards of 30% improved efficiency over exiting security screening equipment. Thereby demand can be met with the provision of 16 19m ATRS C3 screening lanes; as illustrated in Figure 84 .

Figure 84: Terminal 2 – Central Search Area Overview



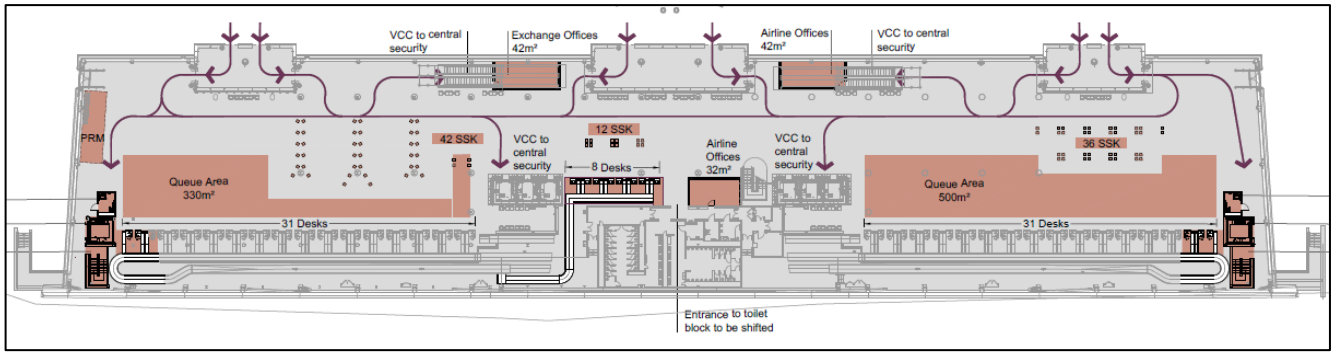
As part of this project it is proposed to reconfigure the queue space by expanding the facility landside. This will allow a more efficient queue management and as a result improved passenger experience.

5.4.6. Pier 3 – Precleared US bound passengers (CIP.20.03.033A)

This project proposed that Pier 3 be reconfigured at departures level to enable simultaneous precleared and non-precleared operations by providing new flexible gates. The designs would include new individual toilet blocks to accommodate the swing operation. This proposal of swingable gates allows size and operational flexibility on the pier. This phase would continue to be served by buses from Piers 4 or 5. Greater information is available in Appendix C.

5.4.7. Terminal 2 Check-In (CIP.20.03.020)

Figure 85: Terminal 2 Check-in



The proposed solution within the space provides for development bag drops in the central area of T2 check in, SSKs and an increased number of traditional check-in desks to meet the demand. To achieve this, ticket desks and offices at either end of the check in building must be removed. This solution assumes an uptake in new technology by airlines for check in.

5.5. Airfield

Capacity		
Terminal 1 €448m	Terminal 2 €568m	Airfield €214m

Background

The Airfield group of projects is dominated by two development options focused on maximizing capacity in operationally underutilised locations in the airport. The two-major projects included in the Airfield group are:

1.) West Apron Vehicle Underpass

2.) New Apron 5M.

Note: This section also captures five smaller operationally critical projects (De-icing, Pier 2 & Pier 3 Hydrant Enablement, Gate Post 9, Environmental Compliance and GSE charging). Full details on these projects is provided in Appendix C.

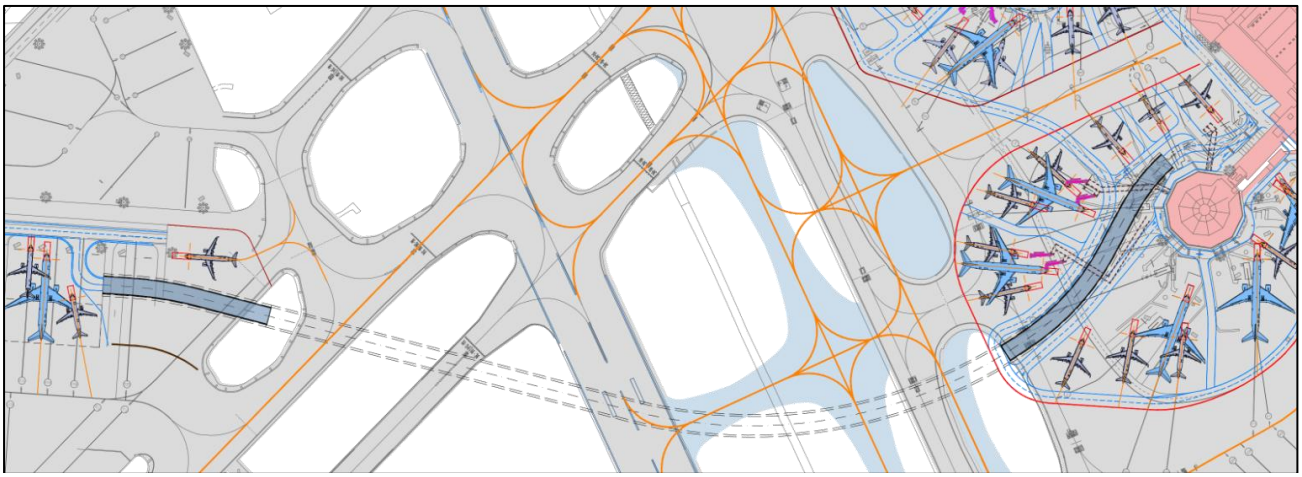
5.5.1. West Apron Vehicle Underpass (Pier 3 Option) (CIP.20.03.051B)

As the emerging masterplan retains Runway 16-34 in the medium term the provision of a direct connectivity to the West Apron will both ease congestion on the east and facilitate the movement of non-commercial Pax operations to the West Apron (incl. integrator cargo and MRO).

This project proposes the construction of an underpass below Runway 16-34 to provide direct vehicular access between the West and East campus. A two-way, two-lane single-cell underpass will be constructed using cut-and-cover or secant pile techniques. More information is available in Appendix C under CIP.20.03.051B.

Note: Several options were considered in developing an appropriate location for an underpass including, a southern (from the head of Pier 4), central (from the head of Pier 3) and northern alignment. The northern alignment presented most advantages, length, minimised disruption to live operations, tie in with construction works of the north runway and operational traffic link at extremity of airfield operations. CIP2020 presented two options for consultation, an alignment off the west extremity of Pier 1 and an alternative from the head of stand road on Apron 5G (captured under 'Additional Projects for Consideration'. Subsequently the option from the head of Pier 3 was presented at consultation and additional information presented in Dec 2018.

Figure 86: Underpass Location – Pier 3



5.5.2. Remote Apron 5M (CIP.20.03.054)

CIP 2020 proposes new stand capacity to the north west of the airfield, referred to as Apron 5M, see Figure 87. With the development of the North Runway, the lands to the south of its western taxiways are unlocked for airfield operations. It is proposed to develop these stands as an initial phase, in a masterplan compliant configuration to provide 17 NBE stands including 2 wide body stands. Additionally, this development further safeguards for cost effective, scalable Master Plan compliant development of remote stands in-line with future demand.

Figure 87: Apron Stands – 5M

5.5.3. De-Icing Pad: South (CIP.20.03.049)

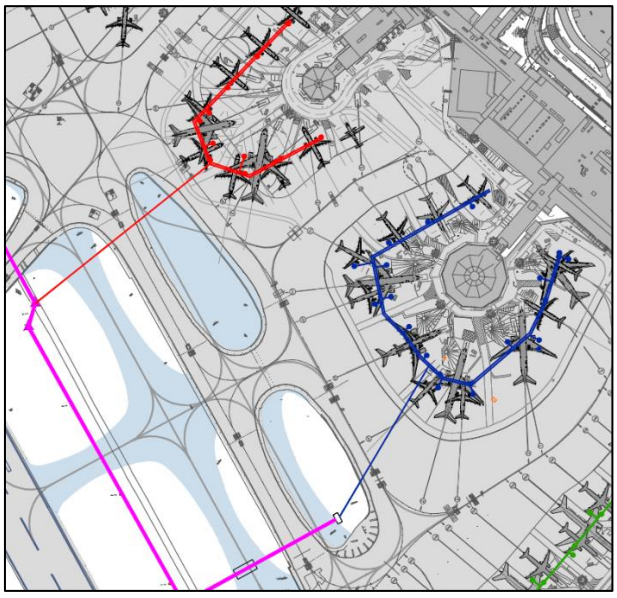
CIP.20.03.040: De-icing pad at Runway 10R

It is proposed to build a purpose-built de-icing facility with the previously approved PACE Runway 10 Line Up Points project. This project will deliver an additional Runway line-up point, bypass taxiway and associated infrastructure.

5.5.4. Hydrant Enablement – Pier 2 & Pier 3 (CIP.20.03.071)

The provision of fuel hydrants in place of the existing tanker arrangement at the existing Pier 2 & Pier 3 is considered as an optimal fuelling method since it provides an environmentally friendly, fast and reliable refuelling method with overall positive impact on safety and efficiency of everyday airport operations. This proposed Pier 2 & Pier 3 Fuel Hydrant System consists of a network of underground piping that transports fuel from tanks in the fuel farm to aircraft while managing fuel intake. Figure 88 shows the proposed fuel extension around Pier 2 & Pier 3.

Figure 88: Hydrant Enablement - Pier 2 & Pier 3



5.5.5. Support Projects

As Dublin Airport continues to grow there are a number of projects required to support this growth. Each of these projects are listed below with further detail provided in the CIP project sheets.

Figure 89: Support Projects

CIP No.	Project	Driver	Value (€m)
CIP.20.03.052	Surface Water Environmental Compliance	Compliance	€51m
CIP.20.03.004	Gate Post 9 Expansion	Compliance	€9m
CIP.20.03.057	Airside GSE Charging Facilities	Airfield Efficiency	€5m

5.5.6. Other Airfield Considerations

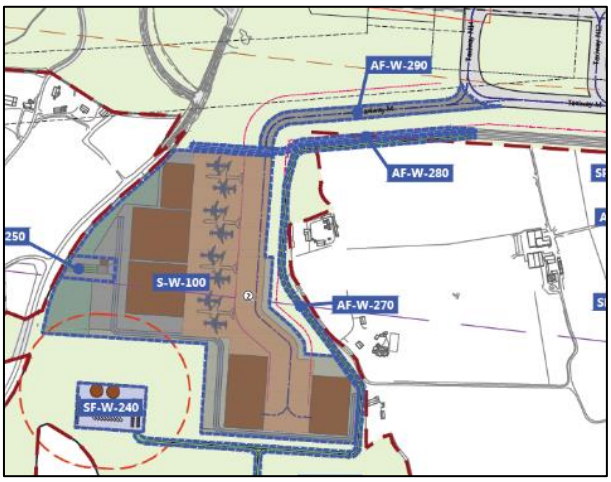
General Aviation

General Aviation (GA) currently operates on the north side of Pier 1 and its passengers are served from Platinum Services in Collinstown House and the Vehicle Control Points by exception. With the expansion of commercial passenger served stands, piers and satellite facilities there will be a need to relocate GA stand operations on a phased basis to the west of Runway 16-34 while still routing the GA passengers through Platinum Services. Aircraft stands will occupy either the north segment of the West Apron or Apron 5M.

MRO

Maintenance Repair & Overhaul (MRO) is of significant importance at Dublin Airport, with facilities including an APU overhaul centre, a landing gear service centre, aircraft overhaul and aircraft painting facilities. Over the course of the following regulatory quinquennium it is anticipated that as Pier 1 builds out to serve passenger growth an MRO enabled zone to the west of Runway 16-34 will be enabled for long-term development as part of the National Aviation Policy. A zone south of Runway 10L with landside/airside VCP is safeguarded as part of the 55mppa masterplan, see Figure 90 .

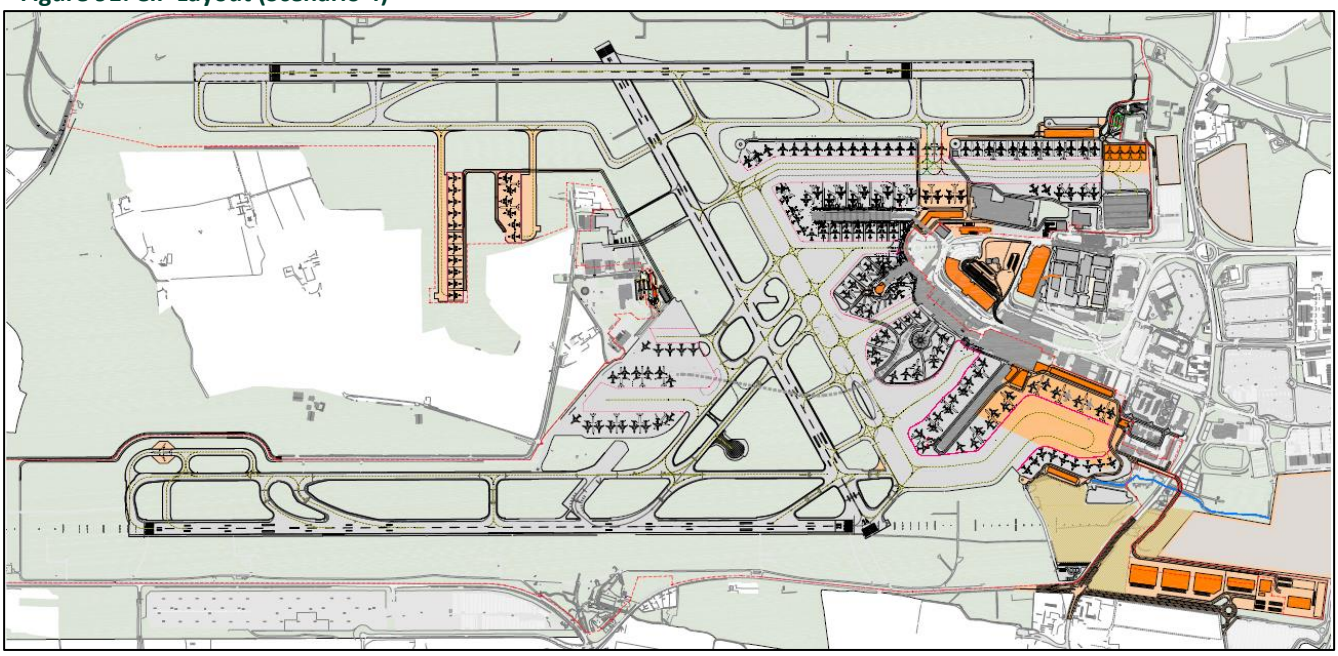
Figure 90: Indicative MRO Facilities at 55mppa



5.5.7. Summary

Dublin Airport is at an important juncture as it the aviation industry. There is a significant opportunity for Dublin Airport and its stakeholders to capitalise in a sustainable manner on the growth forecast in the industry and on the changes occurring. The following image, Figure 91, shows the projects included as part of CIP2020.

Figure 91: CIP Layout (Scenario 4)



6 PROGRAMME MANAGEMENT

6. PROGRAMME MANAGEMENT

The development programme proposed in CIP 2020, while necessary to meet the forecast demand and address imminent capacity constraints, is very ambitious and will come with significant challenges. It is a large-scale development programme with many work fronts, North, South, West, terminal and landside and requires significant coordination to ensure the impact on operations is minimised. The Capital Investment Programme is in fact a series of Programmes, a Portfolio of Programmes, each supported by a series of associated projects, 200 plus projects in total.

In this regard an intensive Portfolio, Programme and Project Management approach to this development plan is required in order to achieve the required efficient investment in infrastructure. daa will use internationally recognised best practice for Portfolio, Programme and Project Management to support the established daa methodology for project delivery and project controls. This will set the governance, lines of authority and assurance model to deliver this major investment as efficiently as possible.

6.1. Introduction

The CIP will have key challenges that will be require ongoing management throughout the development programme as follows;

- Statutory Planning Permission will be required for the majority of the proposed development, with the exception of asset rehabilitation projects which generally do not require statutory planning. Planning by its nature will have significant challenges including environmental issues, third party objections, requests for Additional Information and the risk of subsequent delays. Currently EU regulation 598 regarding 'Establishment of rules and procedures with regard to the introduction of noise-related operating restrictions at Union airports' is in the process of being transposed to Irish Law. With this, the role of the competent authority for the evaluation of the impact of Noise has been designated as Fingal County Council. A consequence of this is that Dublin Airport will no longer be considered a 'seventh schedule facility' whereby it can avail of 'fast track' planning applications, otherwise known as 'Strategic infrastructure Development', where planning applications are made directly to An Bord Pleanála in respect of proposed developments which have been deemed as 'Strategic Infrastructure' under the Planning Acts.

  The potential impact of this period of planning uncertainty remains unclear while this new law is transposed, and the associated new regulatory processes established. In particular it is not known what transitional arrangements might be in place for those applications already the subject of preapplication consultation with An Bord Pleanála.

This uncertainty may impact on the capacity of the airport to deliver the program of works in a timely manner. With the transposition in place, future Airport planning applications which otherwise would have been made direct to An Bord Pleanála, may now be subject to appeals from third parties which will result in subsequent delays and impact the airports capacity to deliver projects.

- The current buoyant economic conditions in the construction industry will result in procurement and tendering challenges ensuring competition, and the ability of the local market and supply chains to meet the necessary demand. In this regard it will be necessary in many instances to tender complete programmes of work as opposed to individual projects to make bidding attractive for large construction companies.
- This development plan will present its own logistical challenges, e.g. site access, airside escorts, identification badge processing, airside contractor training, road traffic management etc. It is expected at the peak there will be over 2,000 construction workers employed in this programme.
- This development plan will also require a significant safety construction plan to ensure the safety of construction workers, airport employees, other stakeholders and passengers. Temporary works and phasing will be a key part of the programme delivery to ensure safe access / egress is maintained and to minimize the disruption to ongoing airport operations.
- The capex spend associated with this development plan will average, over the 5-year period, c.€350m per annum and this level of expenditure requires significant governance and administration, only possible with good programme management principles and systems.
- In order to achieve the required development to meet the forecast traffic growth, it will be necessary to commence a number of key projects in advance of the final CIP Determination in September 2019, in order to maintain programme. Projects requiring advance expenditure are detailed in section 6.10 below. It may also be necessary for some projects to straddle Capital Investment Programmes, i.e. CIP 2020 and the following CIP period, (assumed to be CIP 2025) and in such cases the allowance should be confirmed in advance of the project progressing to site to ensure full recovery.
- During this intense construction programme it will be necessary to continue operations with minimal disruption – this may not always be possible and options in this regard will be presented to airlines following feasibility and the detail design process.
- Programme Management principles will be adopted as 'best practice' to manage large scale capital developments.

6.2. Portfolio, Programme and Project Management

The Portfolio is the totality of daa's investment in the CIP and the associated changes needed to achieve the airports strategic objectives. The portfolio links the programmes in their common airport strategic goal. The series of Programmes identified, will be delivered following international best practice for Programme Management.

The programme management principles for delivery of CIP 2020 are as follows;

- Expedite projects to alleviate the most significant capacity constraints
- Coordinate projects so that impact on operations is minimized.
- Group projects together that deliver the greatest economies of scale and efficiency in construction to minimise downtime of infrastructure (i.e. taxiway / stand closures).
- Deliver individual projects in phases so that capacity can be released in stages aligned to the forecast demand
- Expedite planning and regulatory/environmental processes to manage risks early in the project timeline
- Assess the availability of construction resources (contractors) and the quantum of activity that can be managed in a live operational environment.
- Review procurement strategies to ensure the optimum value for money approach is adopted, where programme allows
- Risk Assess Programme and implement pro-active mitigation measures

6.3. Portfolio and Programme Assurance

The governance of the programmes supporting the CIP will follow best practice to ensure that lines of authority, ownership of budget, and levels of delegation are clearly defined to deliver within identified and auditable controls and oversight. Portfolio Assurance will be a key element of governance of the CIP, including input and oversight for airport operation and airline stakeholders. The inclusion of an Operations Assurance Office, and an Airline Portfolio Assurance Office will allow for meaningful consultation on development matters, impacting both daa operations and airline operations. The Assurance Offices will be independent of the delivery team and give strategic level representation.

6.4. Stakeholder Engagement

In the delivery of any potential project or programme of works, it will be essential that every avenue is explored to maintain operations with minimum disruption. It should however be recognised that it is impossible to construct large-scale projects in a live operational environment, without some impact on operations or some level of temporary relocation of services or disruption to services. Further information on Stakeholder Engagement is provided in Chapter 9 of the CIP Consultation Document issued on 25th October 2018.

6.5. Disruption / Operational Impact

During the construction of the infrastructure required under CIP 2020 there will be necessary impacts to operations and some disruption of facilities. However, the overriding principle is to minimise operational impact, coordinate projects to align operational disruption, provide mitigation and consult with airlines, operators, ground handlers and other stakeholders to ensure all views are captured in the development of phasing and associated operational impact. It should be recognised that this is a significant large-scale development plan and will require disruption to operations during delivery.

The 4 key development zones, and associated disruption / operation impacts are discussed in detail in Chapter 9 of the CIP Consultation Document issued on 25th October 2018.

6.6. Cost Estimates

Cost estimates have been prepared individually for each project using the following principles;

- A standardised estimating template structure has been applied based on the Royal Institute of Chartered Surveyors BCIS system.
- Two template forms followed a simplified structure for Airfield related projects and another more granular one for Piers/ Terminals etc.
- All estimates were imported to the industry standard "CUBIT" software for consistency and data recording. Drawings when available are recorded with estimates for ease of access.
- Estimates used the latest benchmark information available, either within Dublin Airport or if not available external benchmark information was used.
- A process of continuous review and benchmarking was utilised to refine estimates as additional data/information became available.
- Contingency and design variability is included in each estimate – Ref Section 6.8 below for details.
- Escalation is included in each estimate – Ref Section 6.9 below for details.

The general assumptions for estimates are as follows

Cost assumptions:

- This Cost Estimate is at class 4 concept feasibility level and has a base price date of Q3 2018
- Main contractor preliminaries included at between 15% and 20% depending on project
- An allowance of 5% has been included for design development
- Low visibility procedures allowance included at 7% on certain projects with airside construction work based on Dublin Airport Construction norms.
- Design & Management costs cover Professional Fees, Design Costs, Planning Contributions, office

accommodation and daa staff costs/supervision.

- Contingency is calculated at 15% of the Total Direct Cost (TDC) plus Design & Management costs.
- Escalation is included to mid-point of construction and is based on a rate of 6% per annum; in line with industry expectations and SCSI data.
- Assumes competitive tendering and procurement arrangements.

Cost Exclusions:

- VAT
- Land Acquisition Costs
- Any Development Costs outside of the scope as expressly described in the project sheets.
- Abnormal market factors and price escalation beyond those expressly stated above.
- Specialist or customised Audio Visual & IT equipment within new buildings.
- Security and Passport Control Equipment (such as C3 body scanners etc).
- Internal loose fittings such as bins and planting etc. within new buildings.
- Disposal of any contaminated materials except where expressly stated otherwise.
- Abnormal ground conditions.
- Allowance for acceleration, premium working time, bonuses and the like
- Regulatory planning levies associated with the Metro.
- All costs by Asset Care, IT, Security, and Commercial incl. concession fit-outs are excluded from these estimates (in the case of capacity projects)

Schedule assumptions:

- Schedule developed on the basis of feasibility level design only
- Project Programs developed on individual basis only, interdependencies to be determined.
- Individual project planning approvals subject to successful application for increase in airport capacity
- Regulatory application periods, inclusive of environmental appraisals, are indicative of previous applications within the campus, without appeal
- That market resources to design procure and deliver each project are available.
- External 3rd Party requirements will not delay works.
- Vacant possession of impacted facilities will be made available by 3rd parties in a timely manner
- Access to airside sites and possession of land side sites will not delay the works
- No particular restrictions on development arising from planning, inclusive of environmental approval arise

6.7. Design Fees

Design fees for projects included in the CIP are allocated individually to each project. In general design fees include where appropriate;

- Project Management
- Architectural Design
- Engineering Design, Civil, Structural, M&E, Environmental etc,
- Statutory Planning
- Quantity Surveying (Cost Management)
- Construction Administration and Management
- Site Supervision and Site project managers

Further information on Design Fees is provided in Chapter 9 of the CIP Consultation Document issued on 25th October 2018.

6.8. Contingency and Design Variability

Contingency and design variability has been derived and allocated on the basis of the level of maturity and complexity of the project.

Contingency and design variability is an allowance to cover the risk of increased costs as a result of issues that are unknown or not defined at the time of preparing the estimate and to allow for design changes as a result of the project development. The contingency and design variability amounts that have been used in the preparation of the cost estimates are generally based on the following level of maturity of the project;

- Feasibility stage - 20% of construction and design costs;
- Design stage - 10-15%, depending on the complexity of the project.
- Construction stage - 10%.

6.9. Inflation & Escalation

Cost Estimates have been prepared with a base price date of Q3 2018. In our cost estimates we have included an allowance for escalation which covers projected inflation in labour, materials, and tender price increases arising from projected market conditions up to works execution based on current trends.

The proposed Capital Investment Programme includes a total amount of c.12% for escalation.

6.10. Risk Management

The scale of the proposed CIP2020 brings an increased scale of challenges that require management and mitigation by the delivery agent, the end users and national bodies. As part of the preparation of the CIP suite of projects the seven principles of risk mitigation at concept & design phase, as recommended by the McKinsey Productivity Sciences Centre (Ref. Chapter 9 of the CIP Consultation Document, 25th October 2018), were and continue to be adopted, namely:

- Build only what is needed. Seek to develop the Minimum Technical Solution (MTS) with stakeholder engagement
- Maintain a life cycle perspective on the projects being delivered ensuring their alignment with the masterplan
- Strengthen scenario planning - Developing options under various opportunities and challenges
- Optimize site constraints and minimise as far as possible airside works
- Early engagement with construction and procurement teams, beginning in the design phase
- Optimise engineering processes and choices. Establish early on robust feasibility studies of proposed solutions, develop designs based on scan to BIM where possible, carry out early site topographical, geotechnical and environmental investigations
- Develop modular design and standardization

Deliverability

daa recognise the challenge of delivering this ambitious CIP. A detailed risk assessment exercise was undertaken which identified key risks which could impact on deliverability. Where possible mitigation has been developed for each of these risks including: the risk of scale being mitigated through the rationalisation of the initial CIP submission, reducing it to a level daa believes is achievable (€1.79bn), mitigation of the risk associated with construction logistics through the development of the proposed construction and logistics consolidation facility, risk of limited market capacity through active market engagement (daa have released an E-tender 'Prior Information Notice' and have undertaken supplier road shows in Dublin, London, Madrid and Paris), the risk of long lead times through early advancement of projects (in advancement of determination) and the proposition of projects which enable 'swing' capacity in the airport such as Apron 5M.

Early Progression Projects

Due to the importance of the programmes under consideration advance, design continued in parallel with the CAR consultation process to further identify potential risks and to commence the implementation of risk mitigation measures. For Example, seeking to mitigate programme critical activities such as strategic planning pre-consultation, constructability reviews to mitigate against the scale of airside works and continued in depth stakeholder engagement to mitigate against unforeseen programme delivery challenges etc.

In order that the above timelines are achieved the following projects have been progressed (early design) in advance of the CIP Final Determination;

Figure 92: Early Progression Projects

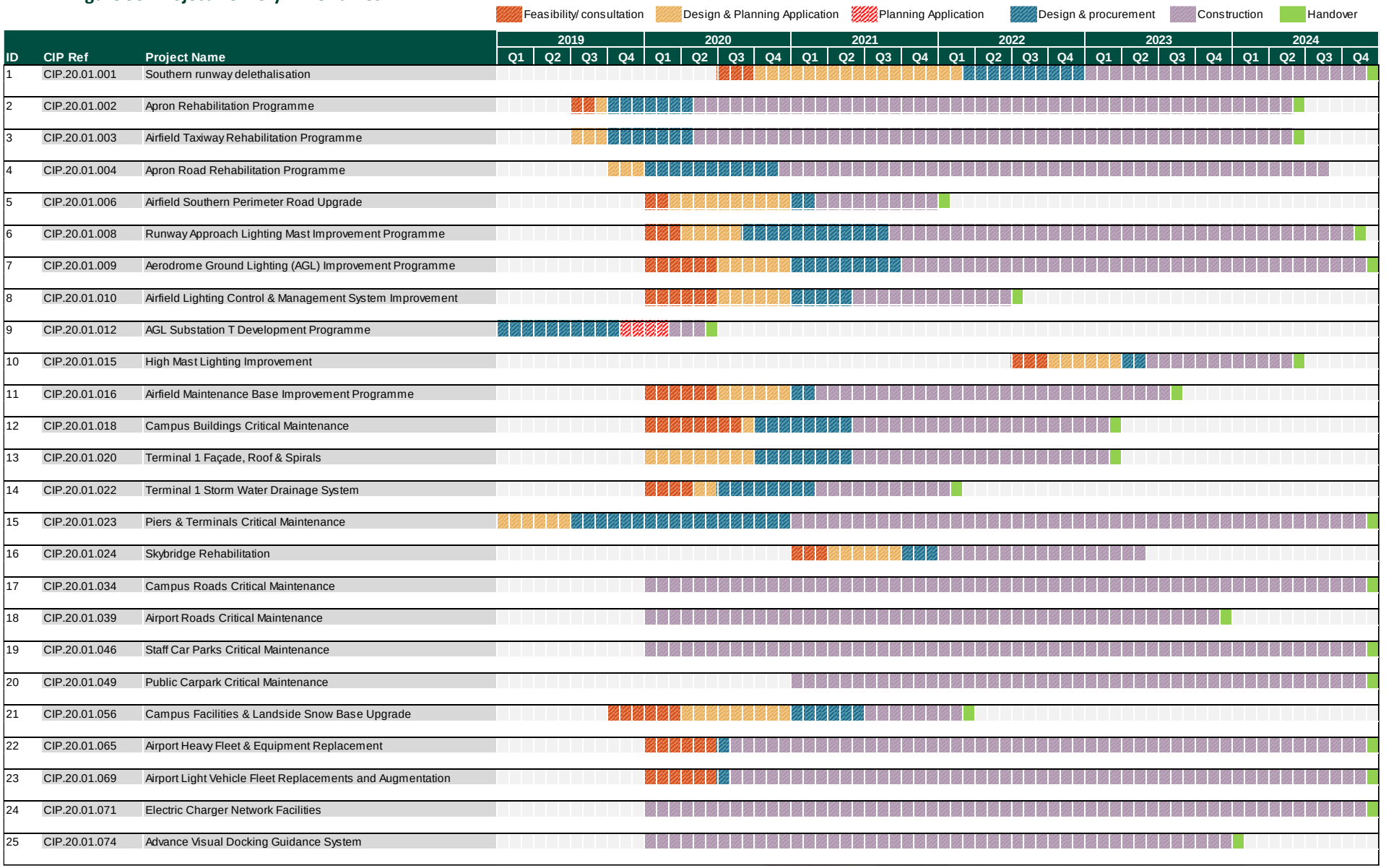
Project
South Apron Development (incl Pier 5 and CBP)
North Apron Development (Module 1 & Apron 5H PBZ)
Runway 16-34 Underpass
Gate 9 Westlands
Apron Reconstruction
Terminal 1 Central Search (Relocation to Mezz Level)
Sub T
T1 MSCP
T2 MSCP
Long Term Parking – Red Zone
Car Hire Consolidation
Airfield Optimisation - IT

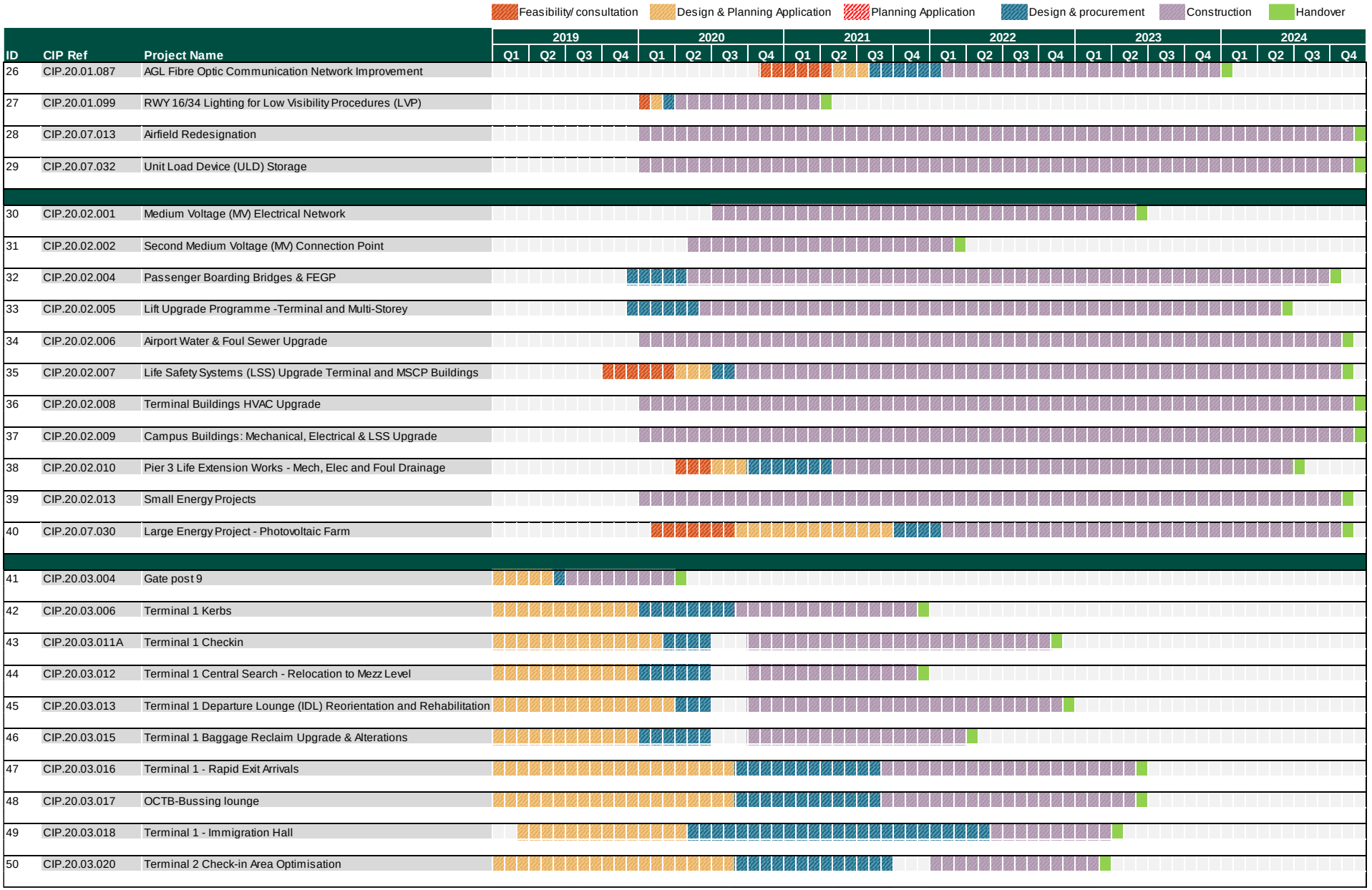
6.11. Project Delivery

Outlined below, Figure 93 are the high-level project timelines for the delivery of key projects in CIP 2020. This schedule has been derived based on current high-level information available. The information that has informed this draft high-level programme is as follows:

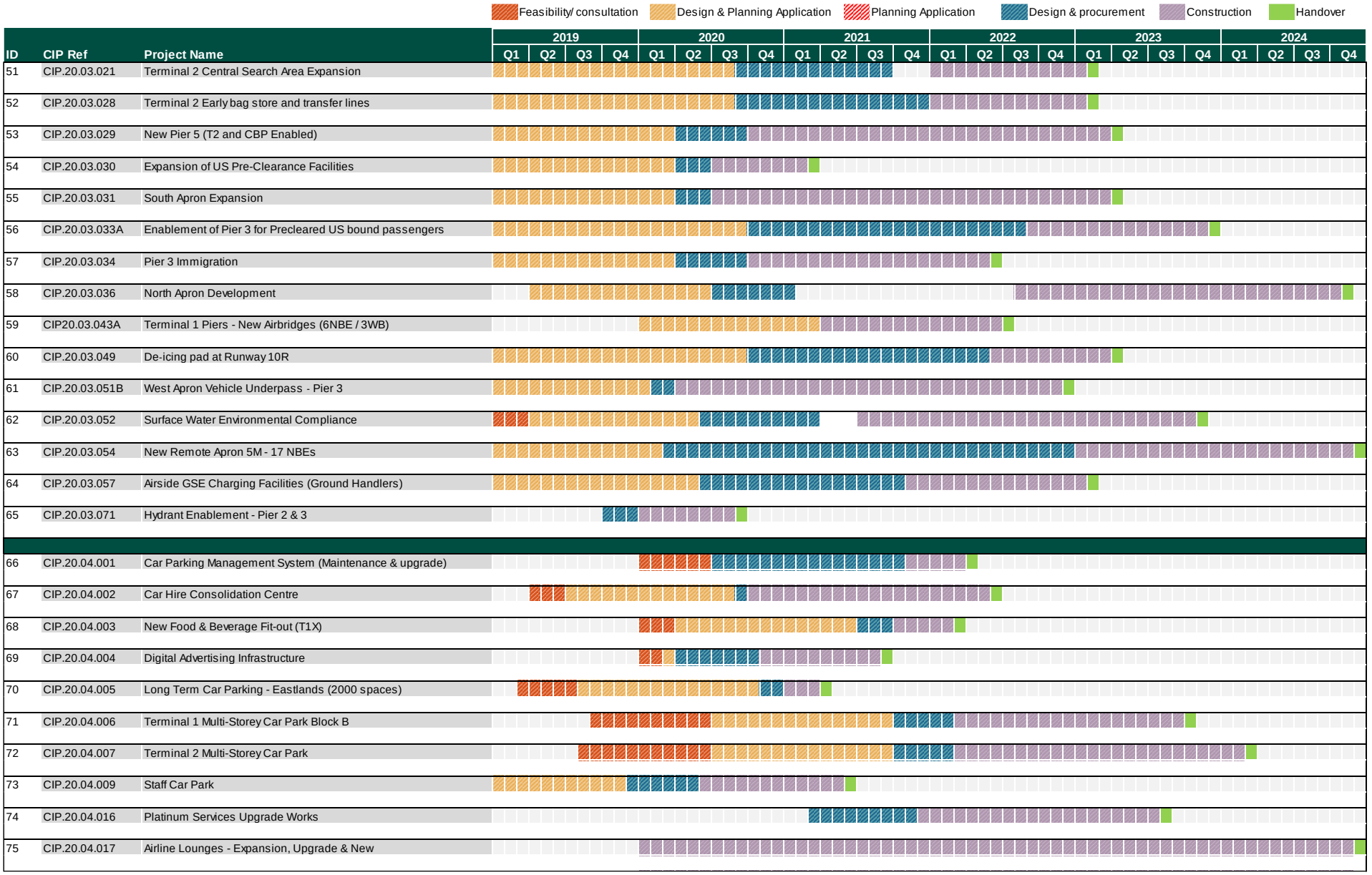
- An individual schedule was produced for each project – over 200 in total. Schedule maturity at this stage reflects the known design development, currently indicated in scope documents.
- All schedules were combined into a wholistic programme and conflicts are identified at a high level. Conflicts can result for a number of reasons, operational impact, construction logistics, design risk, construction and planning risk etc.
- The schedule was revised to remove or mitigate the identified conflicts and then reviewed again. This process was repeated until an optimum wholistic schedule was produced resulting in the baseline schedule for programme delivery. This will be reviewed in detail over the next few months as the project rational and scope detail matures.

Figure 93: Project Delivery Timeframes

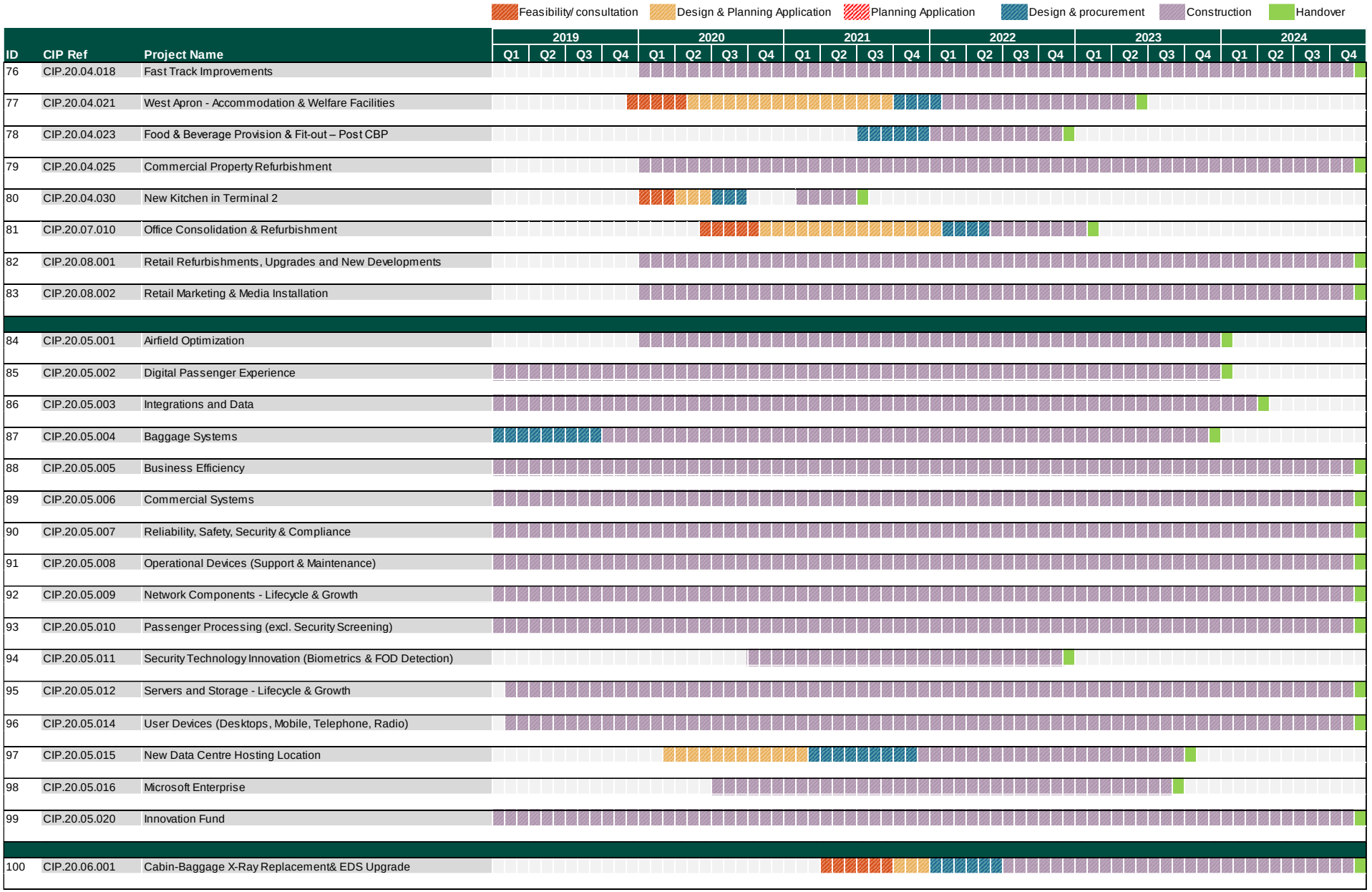


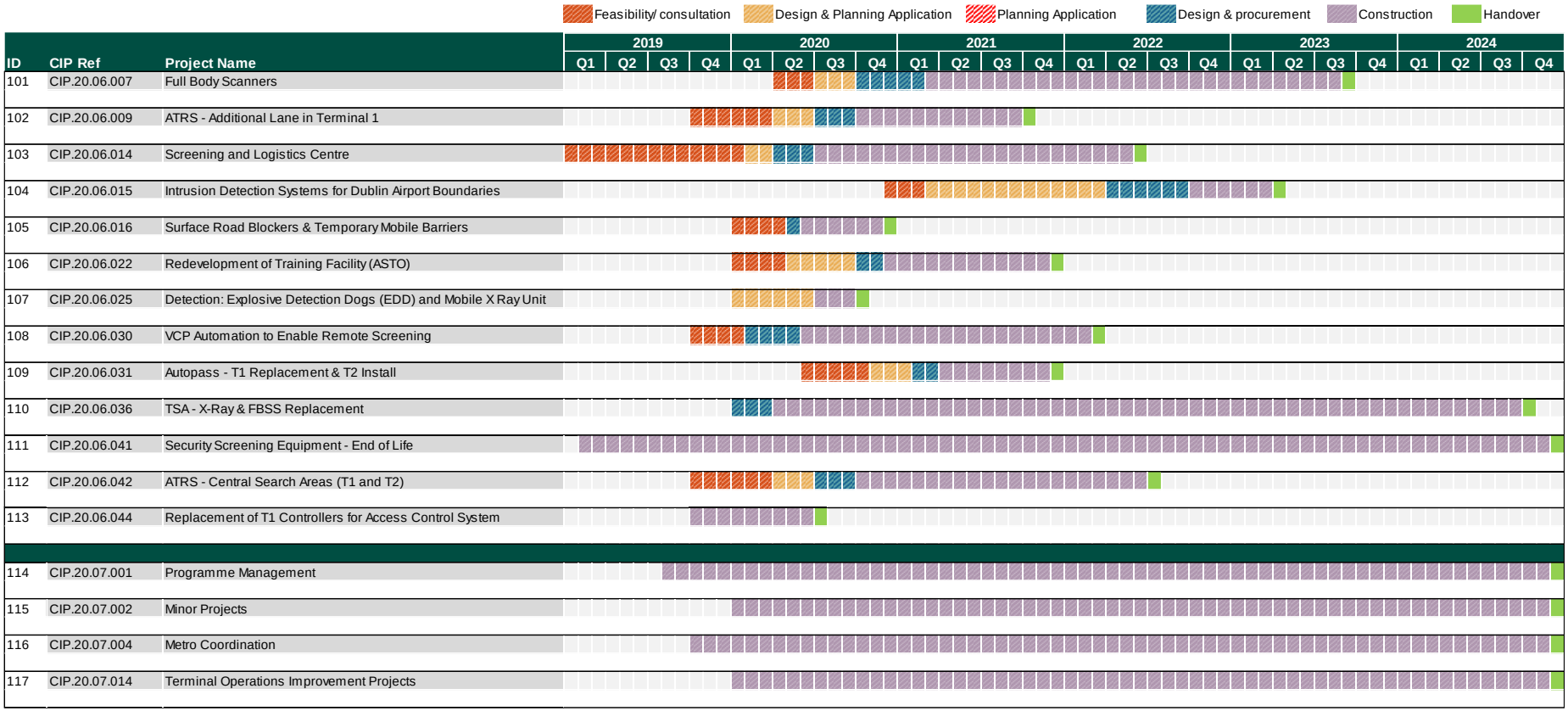


ID	CIP Ref	Project Name
26	CIP.20.01.087	AGL Fibre Optic Communication Network Improvement
27	CIP.20.01.099	RWY 16/34 Lighting for Low Visibility Procedures (LVP)
28	CIP.20.07.013	Airfield Redesignation
29	CIP.20.07.032	Unit Load Device (ULD) Storage
30	CIP.20.02.001	Medium Voltage (MV) Electrical Network
31	CIP.20.02.002	Second Medium Voltage (MV) Connection Point
32	CIP.20.02.004	Passenger Boarding Bridges & FEGP
33	CIP.20.02.005	Lift Upgrade Programme -Terminal and Multi-Storey
34	CIP.20.02.006	Airport Water & Foul Sewer Upgrade
35	CIP.20.02.007	Life Safety Systems (LSS) Upgrade Terminal and MSCP Buildings
36	CIP.20.02.008	Terminal Buildings HVAC Upgrade
37	CIP.20.02.009	Campus Buildings: Mechanical, Electrical & LSS Upgrade
38	CIP.20.02.010	Pier 3 Life Extension Works - Mech, Elec and Foul Drainage
39	CIP.20.02.013	Small Energy Projects
40	CIP.20.07.030	Large Energy Project - Photovoltaic Farm
41	CIP.20.03.004	Gate post 9
42	CIP.20.03.006	Terminal 1 Kerbs
43	CIP.20.03.011A	Terminal 1 Checkin
44	CIP.20.03.012	Terminal 1 Central Search - Relocation to Mezz Level
45	CIP.20.03.013	Terminal 1 Departure Lounge (IDL) Reorientation and Rehabilitation
46	CIP.20.03.015	Terminal 1 Baggage Reclaim Upgrade & Alterations
47	CIP.20.03.016	Terminal 1 - Rapid Exit Arrivals
48	CIP.20.03.017	OCTB-Bussing lounge
49	CIP.20.03.018	Terminal 1 - Immigration Hall
50	CIP.20.03.020	Terminal 2 Check-in Area Optimisation



ID	CIP Ref	Project Name
51	CIP.20.03.021	Terminal 2 Central Search Area Expansion
52	CIP.20.03.028	Terminal 2 Early bag store and transfer lines
53	CIP.20.03.029	New Pier 5 (T2 and CBP Enabled)
54	CIP.20.03.030	Expansion of US Pre-Clearance Facilities
55	CIP.20.03.031	South Apron Expansion
56	CIP.20.03.033A	Enablement of Pier 3 for Precleared US bound passengers
57	CIP.20.03.034	Pier 3 Immigration
58	CIP.20.03.036	North Apron Development
59	CIP20.03.043A	Terminal 1 Piers - New Airbridges (6NBE / 3WB)
60	CIP.20.03.049	De-icing pad at Runway 10R
61	CIP.20.03.051B	West Apron Vehicle Underpass - Pier 3
62	CIP.20.03.052	Surface Water Environmental Compliance
63	CIP.20.03.054	New Remote Apron 5M - 17 NBEs
64	CIP.20.03.057	Airside GSE Charging Facilities (Ground Handlers)
65	CIP.20.03.071	Hydrant Enablement - Pier 2 & 3
66	CIP.20.04.001	Car Parking Management System (Maintenance & upgrade)
67	CIP.20.04.002	Car Hire Consolidation Centre
68	CIP.20.04.003	New Food & Beverage Fit-out (T1X)
69	CIP.20.04.004	Digital Advertising Infrastructure
70	CIP.20.04.005	Long Term Car Parking - Eastlands (2000 spaces)
71	CIP.20.04.006	Terminal 1 Multi-Storey Car Park Block B
72	CIP.20.04.007	Terminal 2 Multi-Storey Car Park
73	CIP.20.04.009	Staff Car Park
74	CIP.20.04.016	Platinum Services Upgrade Works
75	CIP.20.04.017	Airline Lounges - Expansion, Upgrade & New


Feasibility/ consultation
Design & Planning Application
Planning Application
Design & procurement
Construction
Handover
ID
CIP Ref
Project Name
2019
2020
2021
2022
2023
2024
Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4
76 CIP.20.04.018 Fast Track Improvements
77 CIP.20.04.021 West Apron - Accommodation & Welfare Facilities
78 CIP.20.04.023 Food & Beverage Provision & Fit-out – Post CBP
79 CIP.20.04.025 Commercial Property Refurbishment
80 CIP.20.04.030 New Kitchen in Terminal 2
81 CIP.20.07.010 Office Consolidation & Refurbishment
82 CIP.20.08.001 Retail Refurbishments, Upgrades and New Developments
83 CIP.20.08.002 Retail Marketing & Media Installation
84 CIP.20.05.001 Airfield Optimization
85 CIP.20.05.002 Digital Passenger Experience
86 CIP.20.05.003 Integrations and Data
87 CIP.20.05.004 Baggage Systems
88 CIP.20.05.005 Business Efficiency
89 CIP.20.05.006 Commercial Systems
90 CIP.20.05.007 Reliability, Safety, Security & Compliance
91 CIP.20.05.008 Operational Devices (Support & Maintenance)
92 CIP.20.05.009 Network Components - Lifecycle & Growth
93 CIP.20.05.010 Passenger Processing (excl. Security Screening)
94 CIP.20.05.011 Security Technology Innovation (Biometrics & FOD Detection)
95 CIP.20.05.012 Servers and Storage - Lifecycle & Growth
96 CIP.20.05.014 User Devices (Desktops, Mobile, Telephone, Radio)
97 CIP.20.05.015 New Data Centre Hosting Location
98 CIP.20.05.016 Microsoft Enterprise
99 CIP.20.05.020 Innovation Fund
100 CIP.20.06.001 Cabin-Baggage X-Ray Replacement& EDS Upgrade


Feasibility/ consultation
Design & Planning Application
Planning Application
Design & procurement
Construction
Handover
2019
2020
2021
2022
2023
2024
Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4
ID CIP Ref Project Name
101 CIP.20.06.007 Full Body Scanners
102 CIP.20.06.009 ATRS - Additional Lane in Terminal 1
103 CIP.20.06.014 Screening and Logistics Centre
104 CIP.20.06.015 Intrusion Detection Systems for Dublin Airport Boundaries
105 CIP.20.06.016 Surface Road Blockers & Temporary Mobile Barriers
106 CIP.20.06.022 Redevelopment of Training Facility (ASTO)
107 CIP.20.06.025 Detection: Explosive Detection Dogs (EDD) and Mobile X Ray Unit
108 CIP.20.06.030 VCP Automation to Enable Remote Screening
109 CIP.20.06.031 Autopass - T1 Replacement & T2 Install
110 CIP.20.06.036 TSA - X-Ray & FBSS Replacement
111 CIP.20.06.041 Security Screening Equipment - End of Life
112 CIP.20.06.042 ATRS - Central Search Areas (T1 and T2)
113 CIP.20.06.044 Replacement of T1 Controllers for Access Control System
114 CIP.20.07.001 Programme Management
115 CIP.20.07.002 Minor Projects
116 CIP.20.07.004 Metro Coordination
117 CIP.20.07.014 Terminal Operations Improvement Projects

DublinAirport

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Capital Investment Programme 2020+

A ASSET CARE - CIVIL, STRUCTURAL, FLEET

Appendix A
Asset Care – Civil, Structural & Fleet (CSF)

Appendix A - Asset Care (CSF)			
CIP Number	**Project Title**	**Cost €m**	**Pg. No.**
CIP.20.01.001	Southern Runway (R10R/28L) Delethalisation Programme	€2.2	A2
CIP.20.01.002	Apron Rehabilitation Programme	€37.0	A5
CIP.20.01.003	Airfield Taxiway Rehabilitation Programme	€19.0	A9
CIP.20.01.004	Apron Road Rehabilitation Programme	€4.6	A13
CIP.20.01.006	Airfield Southern Perimeter Road Upgrade Programme	€4.6	A17
CIP.20.01.008	Runway Approach Lighting Mast Improvement Programme	€11.1	A21
CIP.20.01.009	Aerodrome Ground Lighting (AGL) Improvement Programme	€4.7	A24
CIP.20.01.010	Airfield Lighting Control & Management System Improvement Programme	€4.9	A28
CIP.20.01.012	AGL Substation T Development Programme	€3.7	A31
CIP.20.01.015	High Mast Lighting Improvement	€0.7	A34
CIP.20.01.016	Airfield Maintenance Base Improvement Programme	€4.5	A37
CIP.20.01.018	Campus Buildings Critical Maintenance	€1.5	A40
CIP.20.01.020	Terminal 1 Façade, Roof & Spirals	€25.8	A45
CIP.20.01.022	Terminal 1 Storm Water Drainage System	€1.1	A49
CIP.20.01.023	Piers & Terminals Critical Maintenance	€1.9	A52
CIP.20.01.024	Skybridge Rehabilitation	€1.2	A55
CIP.20.01.034	Campus Roads Critical Maintenance	€6.8	A58
CIP.20.01.039	Airport Roads Critical Maintenance	€5.1	A61
CIP.20.01.046	Staff Car Parks Critical Maintenance	€1.7	A64
CIP.20.01.049	Public Carpark Critical Maintenance	€2.4	A67
CIP.20.01.056	Campus Facilities & Landside Snow Base Upgrade	€2.9	A70
CIP.20.01.065	Airport Heavy Fleet & Equipment Replacement	€11.0	A73
CIP.20.01.069	Airport Light Vehicle Fleet Replacements and Augmentation	€2.4	A76
CIP.20.01.071	Electric Charger Network Facilities	€1.6	A79
CIP.20.01.074	Advance Visual Docking Guidance System (5G, Pier 1 & Pier 2)	€5.3	A82
CIP.20.01.087	AGL Fibre Optic Communication Network Improvement Programme	€2.0	A85
CIP.20.01.099	RWY 16/34 Lighting for Low Visibility Procedures (LVP)	€5.5	A89
CIP.20.07.013	Airfield Redesignation	€1.5	A91
CIP.20.07.032	Unit Load Device (ULD) Storage	€5.0	A95
TOTAL		**€181.9**	

CIP.20.01.001
Southern Runway (R10R/28L) Delethalisation Programme

Project Summary

- **This project proposes to plan and execute the residual works of the Runway 10/28 Delethalisation Programme.**

The Delethalisation of buried vertical surfaces within the runway strip is a requirement under EASA Regulations to minimise hazards to aircraft running off the runway (GM1 ADR-DSN.B.165 Objects on Runway Strips). Within the graded area of the runway strip, buried structures such as plinths, runway ends, paved taxiway edges, etc. should be delethalised, that is, so constructed as to avoid presenting a buried vertical face to aircraft wheels in soft ground conditions in any direction from which an aircraft is likely to approach.

Initial Delethalisation Works:
The delethalisation of the R10R/28L strip (Southern Runway) was partially undertaken during the recent overlay works. It was not possible to complete all delethalisation works as part of the overlay project due to the time constraints of the project (required to hand back the runway each morning). Approximately 10,000m2 of delethalisation was left undone.

This project proposes to:

- **Plan and execute the residual works of the Runway 10/28 delethalisation programme once the new North Runway is in operation and the Southern Runway can be removed from service more easily and for longer periods of time.**
- **Introduce sub-surface ramps around buried vertical hazards (manholes, sign bases, etc.) to allow aircraft to safely roll up and over these hazards if required.**

Note: The Delethalisation works associated with Runway 16/34 (and associated cost) form part of a separate upcoming Runway 16/34 rehabilitation project.

CIP.20.01.001
Southern Runway (R10R/28L) Delethalisation Programme

Project Details Summary		
Category: Capital Maintenance		
Primary Driver Regulation	**Secondary Driver** Safety	**Total Capex requirement** €2.2m
Underpinning Assumptions and Cost Benchmarks	• Details of Delethalisation solution as per previous works • Works to be coordinated with other maintenance requirements • Works will require the withdrawal of runway • Costs based on recent Delethalisation works under Overlay project. • No new electrical fittings required • Night-time working will be required • Works to be carried out in discrete portions to minimise operational disruption	
Opex Impact	• No material impact on opex cost.	
Project Output	• Compliance with EASA Requirements • Delethalisation of all residual vertical surfaces within the runway strip of the Southern Runway • Reinstatement of topsoil and grasslands	
Asset Life	• 20 years	

Project Delivery Key Milestones	
Detail Design complete:	**Q1 2022**
Procurement complete:	**Q4 2022**
Construction Commence:	**Q1 2023**
Project Handover:	**Q4 2024**

CIP.20.01.001
Southern Runway (R10R/28L) Delethalisation Programme

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	8%	€177,725
Construction Costs	67%	€1,481,040
Escalation, Contingency & Design Variability	25%	€544,490
Total		**€2,203,254**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
Design & Management Costs				
Total - to summary				
Construction Costs				
Delethalisation treatment				
General Prelims & Management and Staff				
Other Development Costs				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

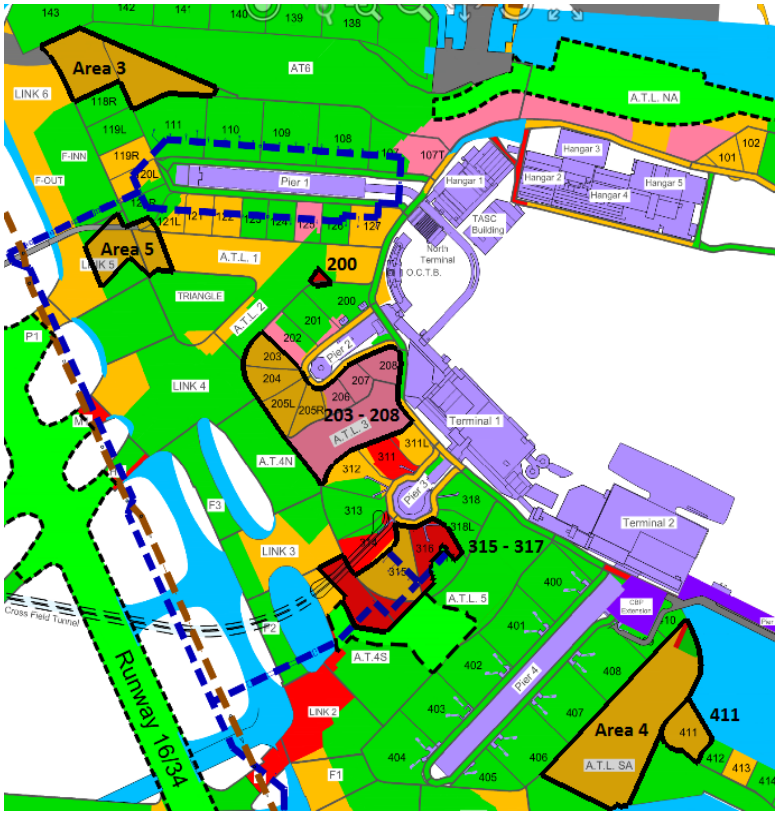
Redacted Cost Information

CIP.20.01.002
Apron Rehabilitation Programme

- **This project proposes to rehabilitate critical areas of the existing Apron pavement.**

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 1960's and in a number of cases, have reached the end of their useful life. Independent condition reports have noted that areas of the aircraft pavement are in poor condition and need rehabilitation.

Rehabilitation of Failed Apron:
The critical areas identified in this proposal have a remaining life between 1 and 5 years within which time the aprons will degrade significantly and will ultimately become unserviceable. Several of these areas are on major routes through the apron and if they become unserviceable will cause significant aircraft delays due to re-routing and congestion. Poor or damaged apron pavement is also a source of Foreign Object Damage (FOD) which is a health and safety risk to the aircraft. Many of the drainage systems within the apron areas have reached the end of their economic life, are in poor condition and in danger of generating FOD.



Timely interventions to rehabilitate failed aircraft aprons are critical to the safeguarding of the airline & airport business. It is proposed to carry out circa 66,000m2 of pavement rehabilitation between 2020 & 2024 in a planned and timely manner and on a priority basis to replace damaged pavement before they become a business interruption or health & safety risk and thereby safeguard the airport business. The rehabilitation of these pavements will be undertaken on a business criticality basis subject to in-depth condition reporting and risk analysis. This is part of the ongoing annual pavement rehabilitation programme.

CIP.20.01.002
Apron Rehabilitation Programme

Reducing Deterioration of Existing Apron:
In addition to the replacement of failed pavements, the prevention of pavement deterioration is a significant concern. The principle method of preventing such deterioration is to ensure the joints in the pavements are maintained to a high standard and failed joints are replaced on a continuous basis. Keeping pavement joints in good condition prevents water ingress under the slabs leading to early pavement failure. Individual pavement joints need to be replaced every 7-10 years. A joint replacement program is carried out every 1-2 years on a rotating & priority basis. This will continue in the 2020+ CIP period.

As indicated in the above image the programme of apron rehabilitation will focus on areas located adjacent to Piers 2 & 3. Apron rehabilitation around Pier 3 will primarily address the need to replace apron to the East and South of the Pier but will also include Stand 311 with this element of the project acting as an enabler for project "Enablement of Pier 3 for Pre-Cleared US Bound Passengers" (20.03.033) at a cost of €8m.

CIP.20.01.002
Apron Rehabilitation Programme

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Safety	**Total Capex requirement** €37.0m
Underpinning Assumptions and Cost Benchmarks	• Full reconstruction of failed pavement in PQ concrete or bituminous material where appropriate • Local rationalisation of drainage may be necessary • No additional attenuation required • No new electrical fittings required • Existing electrical fittings to be removed and reinstated. • Night-time working in most areas as required • Works to be carried out in discrete portions to minimise operational disruption • Costs based on recent apron reconstruction projects.	
Opex Impact	• No material impact on opex cost.	
Project Output	Pavement improvement works to; • South Apron • Airfield Stands, Piers 2 and 3 • Apron Taxiway 1, 3 and 6 • Pavement Joint Replacement Programme	
Asset Life	• 20 years	

Project Delivery Key Milestones	
Feasibility / Outline Design complete:	**Q3 2019**
Planning complete:	**Q3 2019**
Detail Design complete:	**Q4 2019**
Procurement complete:	**Q2 2020**
Construction Commence:	**Q2 2020**
Project Handover:	**Q2 2024**

CIP.20.01.002
Apron Rehabilitation Programme

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	8%	€2,780,192
Construction Costs	75%	€27,801,921
Escalation, Contingency & Design Variability	17%	€6,417,887
Total		**€37,000,000**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
Design & Management Costs	Redacted Cost Information			
Total - to summary				
Construction Costs				
Fittings / Furnishings & Equipment				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

CIP.20.01.003
Airfield Taxiway Rehabilitation Programme

Project Summary

- **This project proposes to rehabilitate critical airfield taxiways.**

Airfield taxiways are the main routes through the manoeuvring areas of the airfield over which aircraft pass when manoeuvring between the runways, aprons or aircraft stands. As such, airfield taxiways are a critical part of the airfield infrastructure as without them aircraft could not safely and efficiently access the runways, aprons, parking stands and maintenance facilities.

Many of the airfield taxiways were constructed between 1940 and the late 1980's as part of the current (Southern) Runway 10-28 development and are approaching the end of their expected life. Several taxiways have since been overlaid to extend their lives or extended to meet the increasing demands on the airport but there are a number of taxiways that are in need of rehabilitation. 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.

CIP.20.01.003
Airfield Taxiway Rehabilitation Programme

The timely and planned 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.

Project Proposal:
A minimum of four primary airfield taxiway areas are expected to require rehabilitation over the next five years amounting to circa 37,000m2 of pavement. 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 to ensure that the infrastructure investment will reach its full expected life.

CIP.20.01.003
Airfield Taxiway Rehabilitation Programme

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Safety	**Total Capex requirement** €19.0m
Underpinning Assumptions and Cost Benchmarks	• PACE Taxiway development to proceed • North Runway re-development of Taxiway G to proceed • Apron 5H redevelopment of North Apron to proceed • Structural bituminous overlay used where possible to avoid need for full reconstruction, but full reconstruction is used for estimate. • No surface water attenuation. • Night time working. • Multi construction phasing to minimise route interruptions for taxiing aircraft. • Based on recent pavement overlay and reconstruction projects.	
Opex Impact	• No material impact on opex	
Project Output	Pavement improvements to; • Taxiway M2 • Taxiway F1 & Link 2 (partial) • Taxiway F-Outer & Link 6 (partial) • Taxiway B1 and E1 (partial)	
Asset Life	• 20 years	

Project Delivery Key Milestones	
Feasibility / Outline Design complete:	**Q3 2019**
Planning complete:	**Q3 2019**
Detail Design complete:	**Q4 2019**
Procurement complete:	**Q2 2020**
Construction Commence:	**Q2 2020**
Project Handover:	**Q2 2024**

CIP.20.01.003
Airfield Taxiway Rehabilitation Programme

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	8%	€1,459,667
Construction Costs	77%	€14,596,671
Escalation, Contingency & Design Variability	15%	€2,943,662
Total		**€19,000,001**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
Design & management	Redacted Cost Information			
Total - to summary				
Construction Costs				
Fittings / Furnishings & Equipment				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

CIP.20.01.004
Apron Roads Rehabilitation Programme

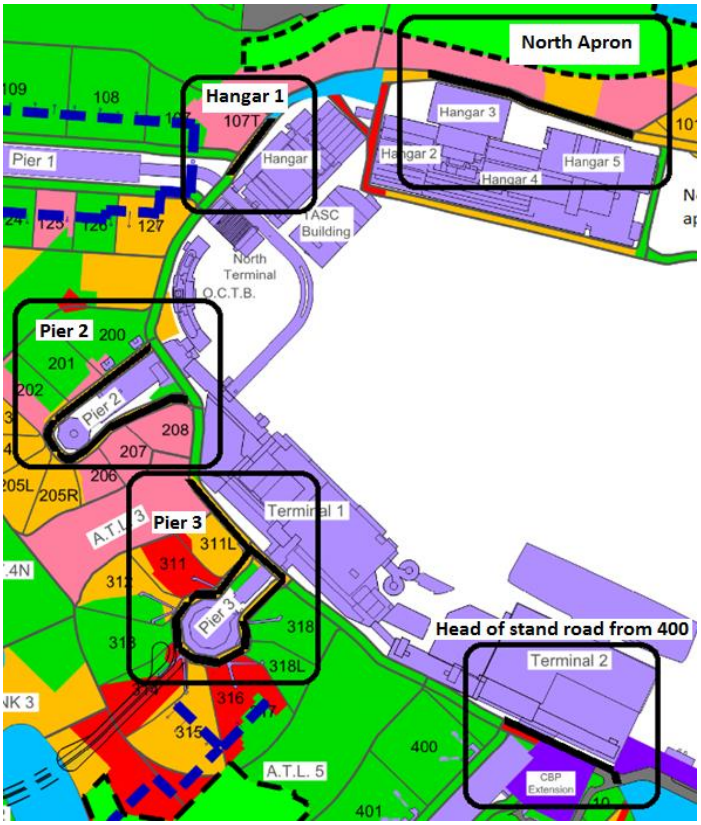
Project Summary

- **This project proposes to undertake a rehabilitation programme of the existing Apron Roads.**

The airside 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, as part of the overall airfield roadway network. 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.

Much of the apron roadway was constructed before 1960 when the adjoining apron was constructed. A 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 & Safety risk to aircraft from Foreign Object Debris or Foreign Object Damage (FOD) is also increased.

CIP.20.01.004
Apron Roads Rehabilitation Programme



Project proposal:
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, 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 circa 10,000m2 of Apron Road will need to be replaced between 2020 & 2024 based on current condition reports.

CIP.20.01.004
Apron Roads Rehabilitation Programme

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Safety	**Total Capex requirement** €4.6m
Underpinning Assumptions and Cost Benchmarks	• Full reconstruction of failed apron road pavement in PQ 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 will be provided. • Costs based on recent apron road reconstruction projects. • No new electrical fittings required • Night-time working in several areas may be required • Works to be carried out in discrete portions to minimise operational disruption.	
Opex Impact	• No material impact on opex cost.	
Project Output	• Full pavement evaluation to confirm remaining structural life and schedule for rehabilitation. • Rehabilitation of apron road for a minimum of 15-30 years depending on solution • Reinstatement of surface markings as required	
Asset Life	• 20 years	

Project Delivery Key Milestones	
Detail Design complete:	**Q4 2019**
Procurement complete:	**Q4 2020**
Construction Commence:	**Q4 2020**
Project Handover:	**Q1 2024**

CIP.20.01.004
Apron Roads Rehabilitation Programme

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	11%	€495,868
Construction Costs	72%	€3,305,785
Escalation, Contingency & Design Variability	17%	€798,347
Total		**€4,600,000**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
Design & management	Redacted Cost Information			
Total - to summary				
Construction Costs				
Fittings / Furnishings & Equipment				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

CIP.20.01.006
Airfield Southern Perimeter Maintenance Road Upgrade Programme

Project Summary

- **This project proposes to rehabilitate and upgrade the Southern Perimeter Maintenance Road. (Minor Airfield Security Fence Improvements are also captured as part of this project).**

The Southern airfield perimeter road and Airfield Maintenance Facility access roads were constructed in the 1980's with the introduction of Runway 10-28 (Southern runway). The roadways are now more than 30 years old and approaching the end of their useful economic life. Sections of the perimeter and access roads are currently in very poor condition and have already failed while other areas are cracked and spalled leading to failures on a regular basis. The risk of FOD debris on the roadways is high as the roads are near the operational pavement. Therefore, action is required to improve the roads for the users and to ensure that FOD does not get carried onto operational pavements.

The roadway was originally built as an access for light maintenance and security vehicles and as such has a design weight of 5 tonnes. There is no positive drainage system associated with the roadway, its alignment follows the undulating ground levels and is sub-optimal. This leads to standing water in low- lying areas, regular road failures and increased maintenance with an increased risk of FOD from loose material.

Since the roadway came into service in 1987 a few significant changes have taken place:

- **The vehicles needed for runway maintenance have increased in size and weight, particularly the Snow & Ice equipment**
- **The airfield has been included in the CPSRA**
- **Gatepost 9 has been constructed adjacent to the West Apron and has become the main point of access for airfield maintenance vehicles and deliveries to the Asset Care Airfield Base, South of the Southern runway**

CIP.20.01.006
Airfield Southern Perimeter Maintenance Road Upgrade Programme

These changes have resulted in a significant uplift in the usage of the roadways for maintenance access, deliveries, wildlife patrols and security checks. The additional weight from HGVs and heavy maintenance vehicles has also taken a toll on the roadway. If these issues 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 business interruption.

This project proposes to:

- **Upgrade and partial widening of the perimeter & access roadways associated with the Southern runway to make them suitable for their current use and the increased traffic on them. The project will strengthen the current roadways to withstand the heavier vehicles and usage. It will also be widened at regular intervals to allow wide vehicles to pass safely. The future minimum width of the roadway will be 6.0m and the roadway will be widened by an additional 2.0m for 100m at 500m intervals.**
  Note: The oldest, Northern most parts of the perimeter road will be removed and realigned with the construction of the North Runway and is not included in this investment case.

- **Replace up to c.400m of airfield security fence and associated gates over the next 5 years on a phased and coordinated basis to improve the security of the airfield and be compliant with all aviation security standards and regulations.**

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Operational Efficiency	**Total Capex requirement** €4.6m
Underpinning Assumptions and Cost Benchmarks	• Full reconstruction of failed perimeter &access road pavement in blacktop • Structural bituminous overlay along full length to avoid need for full reconstruction. • Local rationalisation of drainage may be necessary but no additional surface water attenuation. • Minimum two-way carriageway width to be 6.0m. Road to be widened to 8.0m every 500m for 100m length • Weight capacity of the roadway to be strengthened to 20 tonnes to meet usage requirements • No new electrical fittings required • Night-time working in a number of areas maybe required • Works to be carried out in discrete portions to minimise operational disruption • Pavement markings to be replaced • Temporary bypass options during construction to be made available	
Opex Impact	• No material impact on opex cost.	
Project Output	• Full pavement evaluation to confirm remaining structural life and schedule for rehabilitation. • c. 5km of perimeter road rehabilitation • Increased weight capacity of the roadway to 20 tonnes • Minimum width of carriageway to be 6.0m with local widening to 8.0m every 500m for 100m to allow safe passing of wide vehicles • Rehabilitation of apron road for a minimum of 30 years and perimeter road for 15 years. • Reinstatement of surface markings as required • Partial replaced and upgraded security fence along the airfield boundary immediately North of Southern Runway (incl. replacement of one airfield Gate)	
Asset Life	• 15 years	

Project Delivery Key Milestones	
Feasibility / Outline Design complete:	**Q1 2020**
Planning Complete:	**Q3 2020**
Detail Design Complete:	**Q4 2020**
Procurement Complete:	**Q1 2021**
Construction Commence:	**Q1 2021**
Project Handover:	**Q4 2021**

CIP.20.01.006
Airfield Southern Perimeter Maintenance Road Upgrade Programme

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	10%	€453,060
Construction Costs	67%	€3,080,901
Escalation, Contingency & Design Variability	23%	€1,076,962
Total		**€4,610,923**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
General Design & Management	Redacted Cost Information			
Total - to summary				
Construction Costs				
Area 1 (4,000 m2 new surface)				
Area 2 (2,000 m2 new surface)				
Area 3 (1,350 m2 new surface)				
Area 4 (750 m2 new surface)				
Area 5 (800 m2 new surface)				
Lay-by x 3 no				
Patch relay				
Airport Security Fence				
Main Contractors Preliminaries				
Other Development Costs				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

CIP.20.01.008
Runway Approach Lighting Mast Improvement Programme

Project Summary

- **This project proposes to upgrade the existing Runway approach lighting masts.**

Runway Approach lighting is a critical element of the Runway Aeronautical Ground Lighting (AGL) systems. By nature of approach lights, they tend to be elevated with a high percentage mounted on Masts. At Dublin Airport, the Approach Masts on Runway 10/28 were installed in 1988 but were not replaced as part of the Runway Rehabilitation Program 2017/18 (schedule did allow time for mast replacement). Runway 16 and 34 approach masts were installed in 1994 and 2004 respectively.

The type of mast used at Dublin Airport are ADB Safety Approach Masts type SMA/3. They are tilt-able structures made of aluminium legs and struts, assembled by means of bracing clips. The masts are collapsible but not frangible as defined in EASA CS ADR-DSN.T.910 equipment frangibility requirements. These masts cannot be certified to EASA standards. There is also a concern that the masts may not support the weight of the new LED lighting fittings and are effectively at end of their useful life.

The SMA/3 Masts and the FAE light fittings on all runways are now obsolete and no longer supported by the manufacturer. The masts have served their purpose well over the past 30 years but are now no longer compliant.

This project proposes to:
Replace the SMA/s masts with modern frangible masts to cover all runways within the 2020-2024 Capital Investment Programme period.

CIP.20.01.008
Runway Approach Lighting Mast Improvement Programme

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Regulation	**Total Capex requirement** €11.1m
Underpinning Assumptions and Cost Benchmarks	• Full replacement of SMA/3 Masts with modern frangible masts • Inspection of plinths and replacement where required • No new electrical fittings required (R16 by separate project) • Some electrical circuits will need to be adjusted/ replaced • Night-time working in most areas as required • Works to be carried out in discrete portions to minimise operational disruption • Costs based on recent runway reconstruction projects.	
Opex Impact	• No material impact on opex cost.	
Project Output	• Runway 10 Approach masts • Runway 28 Approach masts and circuits • Runway 16 Approach masts and circuits • Runway 34 Approach masts and circuits	
Asset Life	• 20 years	

Project Delivery Key Milestones	
Feasibility / Outline Design complete:	**Q1 2020**
Planning Complete:	**Q3 2021**
Detail Design Complete:	**Q4 2021**
Procurement Complete:	**Q2 2022**
Construction Commence:	**Q2 2022**
Project Handover:	**Q1 2024**

CIP.20.01.008
Runway Approach Lighting Mast Improvement Programme

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	9%	€956,650
Construction Costs	69%	€7,653,203
Escalation, Contingency & Design Variability	23%	€2,515,283
Total		**€11,125,136**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
General Design & Management	Redacted Cost Information			
Total - to summary				
Construction Costs				
Approach Lighting				
Builders Work In connection with Services				
Other Development Costs				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

CIP.20.01.009
Aerodrome Ground Lighting (AGL) Improvement Programme

Project Summary

- **This project proposes to upgrade existing airfield lighting, signage and sub-stations.**

Airfield lighting and signage system forms parts of the critical safety infrastructure of the Aerodrome. These systems include Aerodrome ground lighting, airfield signage, sub-station equipment and control systems. Many of these systems have been in place for the last 10-15 years and need to be upgraded and/or replaced at end of life.

There are several improvement programmes planned throughout the 2020-2024 CIP period, including;

Rehabilitation of Taxiway AGL systems;
Timely interventions to rehabilitate Taxiway AGL is critical to safeguarding of the airline & airport business. It is proposed to carry out several Taxiway AGL replacement projects between 2020 & 2024 in a planned and timely manner and on a priority basis in order to replace end of life fittings before they become a business interruption or health & safety risk and thereby safeguard the airport business.

Airfield signage;
Airfield signage is a critical form of information for pilots and Aerodrome users. End of life signage will be replaced on a priority basis in coordination with taxiway re-designation and other airfield projects.

Runway 16 approach lighting;
The Runway 16 approach lighting fitting have reached the end of their useful economic life and are no longer supported by the manufacturer. The system is no longer compliant with EASA codes and need to be replaced. A full replacement programme is required in co-ordination with the replacement of the approach masts (separate project – CIP 20.01.008).

Substation Upgrades;
The existing substation on the East and West substations where built in 1988 and Subs A and B built in 2006. Regular structural maintenance is required for each substation in relation to roofs and walls. In addition, a replacement programme for the fuel tanks needs to be completed due to the poor condition of this element of infrastructure.

CIP.20.01.009
Aerodrome Ground Lighting (AGL) Improvement Programme

- **Substation Equipment Replacement;**

All AGL systems on the Airfield are powered by Constant Current Regulators (CCR's). Currently our oldest CCR's are 14 years old but still operational. The technology in this equipment is now out of date, is no longer supported by the manufacturer and they are not available for replacement or new installations. Timely replacements of equipment to guarantee safe operations of AGL equipment is critical to the safeguarding of the airline and airport business.

MCR3 type Constant Current Regulator

Taxiway Edge Lights LED

Safe LED signs which are being installed west of Runway 16

Taxiway Centreline Fitting Current D Range LED fitting

CIP.20.01.009
Aerodrome Ground Lighting (AGL) Improvement Programme

Project Details Summary		
Category: Capital Maintenance		
Primary Driver Regulation	**Secondary Driver** End of Life	**Total Capex requirement** €4.7m
Underpinning Assumptions and Cost Benchmarks	• Taxiway AGL Upgrades • Airfield Signage Upgrades • Substation Upgrades • Substation Equipment Replacement • New electrical fittings and equipment required • Night-time working in most areas as required • Works to be carried out in discrete portions to minimise operational disruption • Costs based on recent apron and taxiway lighting projects. • Approach mast for Runway 16 is replaced under a separate project (CIP20.01.008)	
Opex Impact	• No material impact on opex cost.	
Project Output	• Taxiway AGL rehabilitation • Apron signage as required • Replacement of AGL power equipment • Substation improvements	
Asset Life	• 15 years	

Project Delivery Key Milestones	
Feasibility / Outline Design complete:	**Q1 2020**
Planning Complete:	**Q3 2020**
Detail Design Complete:	**Q4 2020**
Procurement Complete:	**Q3 2021**
Construction Commence:	**Q3 2021**
Project Handover:	**Q4 2024**

CIP.20.01.009
Aerodrome Ground Lighting (AGL) Improvement Programme

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	6%	€260,368
Construction Costs	70%	€3,254,595
Escalation, Contingency & Design Variability	25%	€1,153,787
Total		**€4,668,749**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
General Design & Management	Redacted Cost Information			
Total - to summary				
Construction Costs				
Electrical Installation: 15 CCR with Serial Communication link				
Electrical Installation: RWY 16 approach lighting Fittings & Cables				
Airport Specialist Installations: AGL				
Minor Building Works and Ancillary Buildings				
Main Contractors Preliminaries				
Other Development Costs				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

CIP.20.01.010
Airfield Lighting Control & Management System Improvement Programme

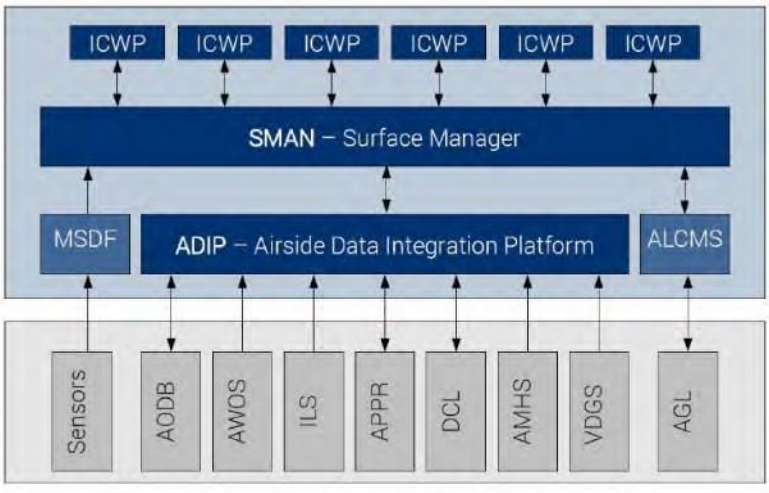
Project Summary

- **This project proposes to improve the existing Airfield Lighting Control & Management System (ALCMS).**

Increased ALCMS demands:
Further expansion of the current system to allow it to accommodate the North Runway AGL controls is being enabled but again, this will put the existing system under further pressure. While these controls will be integrated in due course, they will only be capable of adopting traditional control panels and cannot be adopted for more up-to-date switching systems such as Individual Lamp Control and Monitoring Systems (ILCMS). The development of multiple intersecting taxiways in the central area of the airfield between the North Runway and the Main Apron (NR, R16/34, Link 6/3/A & existing Taxiways R/P/M/H/B) require a more sophisticated control system due to the level of flexibility and inter- operability involved. The current system cannot handle this level of sophistication at this stage and must be upgraded.

A recent study and report on the ALCMS by external airfield specialist has concluded that, while initial improvements to the overall system could be achieved in the short term, further improvements must be made to support the changing traffic demands and flows within the airfield. A new control system will have to be procured to allow the integration of the three runways and the associated taxiways into an overall ALCMS on one platform. The report outlined a roadmap for the provision of a new ALCMS to meet the business needs over the short and medium term (next 15 years). A new ALCMS needs to be capable of supporting such future technology as Individual Lamp Control & Monitor System (ILCMS), integration with IAA A-SMGCS (Ground Control) and potentially follow-the- green (FTG) in the future if required.

This project proposes to:
Improve the current ALCMS in line with the business needs and the recommendation of the TM3 report to bring the system in line with modern control standards and technology.



Functional Architecture of Follow the Greens and A-SMGCS Level 4

CIP.20.01.010
Airfield Lighting Control & Management System Improvement Programme

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Operational Efficiency	**Total Capex requirement** €4.9m
Underpinning Assumptions and Cost Benchmarks	• A greater level of AGL control in central manoeuvring areas will be required when the North Runway comes into service. • System will need to be more flexible to allow for a greater integration of new technologies in the future	
Opex Impact	• No material impact on opex cost.	
Project Output	• Modern Airfield Lighting Control & Monitoring System • ILCMS capability in place and working satisfactorily • System capable of a higher level of integration with other ATC systems • Increased capacity for network changes going forward • System capable of supporting future integration of FTG	
Asset Life	• 10 years	

Project Delivery Key Milestones	
Detail Design Complete:	**Q3 2020**
Procurement Complete:	**Q2 2021**
Construction Commence:	**Q2 2021**
Project Handover:	**Q3 2022**

CIP.20.01.010
Airfield Lighting Control & Management System Improvement Programme

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	5%	€255,000
Construction Costs	70%	€3,400,000
Escalation, Contingency & Design Variability	25%	€1,199,754
Total		**€4,854,754**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
General Design & Management	Redacted Cost Information			
Total - to summary				
Construction Costs				
AGL Systems				
Main Contractors Preliminaries				
Other Development Costs				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

CIP.20.01.012
AGL Substation T Development Programme

Project Summary

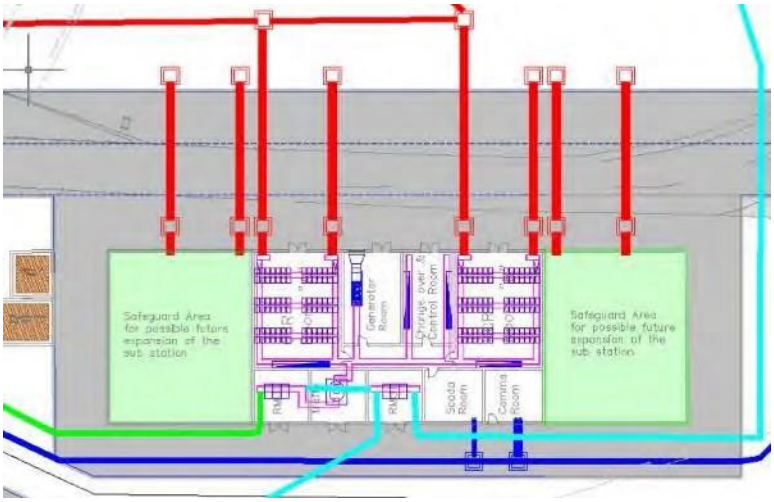
- **This project proposes to develop a new central airfield AGL substation.**

The current AGL Substation T is located in the ATC compound adjacent to the ATC Control Towers. The substation was developed in the 1980's and has since been extended to cater for the increased use of electrical systems in the airfield and ATC centre.

Demand Increases:
The AGL section of the substation is now at capacity and can no longer accommodate new infrastructure that will be needed for the North Runway, the proposed R16/34 LVP Taxiway, the improved Airfield Lighting Control System and any of the new elements of infrastructure currently being planned.

The shared nature (between IAA and daa) of the substation has led to difficulties with access and resilience in the past. While these issues have been temporarily resolved, the current solution is not sustainable in the long run and airfield operations is being impacted, particularly in LVP conditions. A recent report recommends the development of a new mid-field substation to replace the current Sub T. The new site is located centrally within the airfield and will be wholly under the control of Dublin Airport.

Substation T Development



The new substation will be sized and developed to accommodate and integrate the controls and power systems for all major taxiway and runway developments in the medium to long term. It will also increase the resilience of the substation network throughout the airfield offering greater expansion capability while providing flexibility and resilience to the supply network.

This project proposes to:
Develop a new central airfield AGL Substation, which will accommodate the relocated equipment and infrastructure from the current substation, the new equipment and circuits from the works currently being planned, the interconnectivity with the North Runway and key elements of the improved and upgraded Airfield Lighting Control & Management System (ALCMS)

CIP.20.01.012
AGL Substation T Development Programme

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Capacity / Constraints	**Total Capex requirement** €3.7m
Underpinning Assumptions and Cost Benchmarks	• Current AGL Substation has reached capacity and cannot be expanded • Site compatible and secured under Master Plan • Planning Permission will be required • Access concerns over current site needs to be resolved	
Opex Impact	• No material impact on opex cost.	
Project Output	• New Mid-Field AGL Substation • Connectivity with Airfield MV, Comms and AGL systems • All surrounding infrastructure include accommodation for fuel tanks, mobile generators and maintenance vehicles	
Asset Life	• 30 years	

Project Delivery Key Milestones	
Detail Design Complete:	**Q4 2019**
Procurement Complete:	**Q4 2019**
Construction Commence:	**Q1 2020**
Project Handover:	**Q2 2020**

CIP.20.01.012
AGL Substation T Development Programme

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	7%	€250,000
Construction Costs	80%	€2,956,432
Escalation, Contingency & Design Variability	13%	€496,997
Total		**€3,703,429**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
General Design & Management	Redacted Cost Information			
Total - to summary				
Construction Costs				
Elect Mains & Sub Mains Distribution				
Diversion of Existing Services to New Sub T				
AGL Control system				
Builders Work In connection with Services				
Fencing, Railings and Walls				
Minor Building Works and Ancillary Buildings				
Main Contractors Preliminaries				
Other Development Costs				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

CIP.20.01.015
High Mast Lighting Improvement Programme

Project Summary

- **This project proposes to upgrade the existing high mast lighting on a number of apron areas**

The airfield aprons are a critical element of the airfield network, providing facilities for aircraft to manoeuvre, park and be serviced. The apron floodlighting is to facilitate safe operations on the apron, on a de-icing/anti-icing facility, and on a designated isolated aircraft parking position intended to be used at night as required in EASA CS ADR-DSN.M.750 Apron floodlighting.

As a minimum EASA requires an average illuminance level of 20 lux on both the horizontal and vertical planes with a uniformity ratio of 4;1. In 2015 Dublin Airport increased this level to an average of 30 lux where possible on all new projects to improve safety for both passengers and operatives. To achieve this and to improve efficiencies and reduce maintenance costs, all new project and upgrades switched from Son-T fittings to LED fittings.

A large number of existing apron areas have already been converted to LED lighting. The areas which still require upgrading are as follows:

- **Pier 1**
- **Pier 4**
- **West Apron**

This project proposes to:
Improves the illumination on the stands to Dublin Airport's own standards, giving a uniform light output across the apron (currently a mixture of white and yellow lights), improving the energy efficiency of the floodlight and reducing the maintenance requirements. This project is for the replacement of the remaining Son-T Fittings to complete the HML improvement programme.

CIP.20.01.015
High Mast Lighting Improvement Programme

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Energy Saving	**Total Capex requirement** €0.74m
Underpinning Assumptions and Cost Benchmarks	• Removal of old SON-T fittings and replacing with LED fittings. • Increasing the stand lux levels averages from 20 to 30 lux • New electrical fittings required • Works to be carried out in discrete portions to minimise operational disruption • Costs based on recent high mast lighting improvement projects.	
Opex Impact	• Reduction in energy costs of approx. €80k/annum once the full LED replacement programme is rolled out.	
Project Output	Replacement of old SON-T flood light units at: • Pier 1 • Pier 4 • West Apron	
Asset Life	• 15 years	

Project Delivery Key Milestones	
Detail Design Complete:	**Q1 2023**
Procurement Complete:	**Q2 2023**
Construction Commence:	**Q3 2023**
Project Handover:	**Q2 2024**

CIP.20.01.015
High Mast Lighting Improvement Programme

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	6%	€47,081
Construction Costs	85%	€627,750
Escalation, Contingency & Design Variability	9%	€67,483
Total		**€742,314**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
General Design & Management				
Total - to summary				
Construction Costs				
Floodlighting to external surfaces and to building				
General Prelims				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

Redacted Cost Information

CIP.20.01.016
Airfield Maintenance Base Improvement Programme

Project Summary

- **This project proposes to improve the airfield maintenance base facilities.**

The airfield maintenance base is situated immediately South and central to the Southern runway (R10/28). The base is used as the central location for all airfield maintenance personnel and equipment and the accommodation of largescale snow & ice equipment. All civil, electrical and transportation maintenance is located at this base and are carried out from this facility on a 24x7 basis.

The recent increase in passenger numbers has resulted in a significant increase in maintenance activities that are undertaken from this base. The number of personnel stationed at the facility has also increased as the shift patterns have been stepped up to a 24x7 roster. Airfield maintenance activities are now undertaken throughout the day & night to ensure that the airfield facilities are always available for the increased aircraft traffic demand.

The base also accommodates the storage of all the large-scale snow & ice equipment which must be ready for use throughout the winter period. This requires the equipment to be properly maintained and stored in a manner that keeps it in good and available condition. The current level of storage is inadequate to store all the vital equipment under cover and the lack of an adequate facility is both shortening the life of the equipment and increasing the risk of equipment failure when needed.

CIP.20.01.016
Airfield Maintenance Base Improvement Programme

The potassium acetate tanks at the maintenance base are crucial for winter maintenance and the anti-icing activities. However, the current position of these tanks is sub-optimal due to the condition of the tank bunds and their proximity to adjacent water streams. The position of the tanks is a cause of congestion within the facility as larger equipment is now in use for both the delivery and distribution of the product.

In general, the circulation space around the maintenance base is not suitable for equipment stored at and operating from the base. The layout and orientation of the facilities must be improved to improve safety, efficiency and environmental sustainability.

This project proposes to:

- **Upgrade the overall facility to improve the efficiency of the base and allow for the proper maintenance of the aerodrome on a 24x7 basis.**
- **Move the potassium acetate tanks into a new purpose build bunded area that is not congested and allows for the larger delivery and distribution equipment**
- **Construct additional storage facilities for the winter equipment, particularly the snow & ice sweeper/blowers and PA sprayers**
- **Increase the circulation yard space in and around the facility to allow the very large winter equipment to manoeuvre safely and without impediment**
- **Provide a wash-down facility at the base to maintain the equipment in good condition, particularly after using the PA**

CIP.20.01.016
Airfield Maintenance Base Improvement Programme

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Operational Efficiency	**Total Capex requirement** €4.5m
Underpinning Assumptions and Cost Benchmarks	• Airfield maintenance base will not be moved fora minimum of 10 years • Local rationalisation of drainage may be necessary • Additional attenuation and environmental protections may be required • Adequate space is available on site for development • Night-time working is mostly avoidable but may be partially required • Works to be carried out in discrete portions to minimise operational disruption • Costs based on recent similar projects.	
Opex Impact	• No material impact on opex costs.	
Project Output	• Upgraded airfield maintenance base that is adequate for current demands • Increased equipment storage for S&I equipment • Relocated Potassium Acetate tanks with new bunding • Equipment wash-down facility for equipment • Increased paved circulation and storage space for equipment • Improved security of equipment and safety facilities	
Asset Life	• 20 years	

Project Delivery Key Milestones	
Detail Design Complete:	**Q4 2020**
Procurement Complete:	**Q2 2021**
Construction Commence:	**Q2 2021**
Project Handover:	**Q3 2023**

CIP.20.01.016
Airfield Maintenance Base Improvement Programme

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	5%	€232,711
Construction Costs	69%	€3,102,812
Escalation, Contingency & Design Variability	26%	€1,161,829
Total		**€4,497,352**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Snow base building - 60m long x 15m deep. 12m ridge height.	
Snow base hardstanding - 1500 m2 paved area (in front of maintenance shed)	
Main Contractor Preliminaries	
Other Development Costs	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.018
Campus Buildings Critical Maintenance

Project Summary

- **This project proposes to improve existing campus property portfolio.**

The Dublin area Campus Properties Portfolio consists of 125 Properties. The properties are occupied by Dublin Airport, Individual and Multi Tenants. The airport is divided into 11 ZONES that include Terminals, Multi Storey Car Parks and all campus buildings. The areas included under campus buildings are:

- **Corballis Park**
- **South Apron**
- **Eastland's**
- **Castlemoate**
- **OCTB**
- **Westlands**
- **Westpoint**

The age of the buildings ranges from the late 1980s to present day. The campus properties are managed, developed and maintained using in-house expertise, supported by development and maintenance specialist service providers within the terminal buildings.

Just Built Monitor performance to design	>10-year planning Period	Monitor – On the radar within 10-year planning period	Plan & close monitor – Next 5-year planning period	Action now – This planning period	Excluded in this Project Sheet	Property Boundary Lines

CIP.20.01.018
Campus Buildings Critical Maintenance

In many cases the airport campus buildings specialised in design to meet the requirements of aviation business. Whilst the age profile of the campus portfolio suggests they have reached the latter end of their design life, continuous upgrading and the "re-life" of these buildings ensures they are in good condition subject to continuous and timely upgrades. The depreciation life for a commercial building is 50 years primarily for structures. There are various building elements that have lifespans shorter than 50 years. These include;

Roofing Materials	**20 - 30 Years**
Fire Alarm Systems	**15 - 20 Years**
Mechanical & Electrical Systems	**25 – 30 Years**

Note: Several buildings have received extensive refurbishment, these building include Skybridge House (formerly TASC Building) and the ESBI. Buildings which are due to be demolished / re-purposed to facilitate for larger capacity projects will be excluded from the Campus Building Critical Maintenance allowance.

This project entails:

- **Campus Buildings: Due to the varying states of envelope, roof fabric and business criticality of the buildings, this project provides for the delivery of several essential improvement works to the structure and roofs of existing campus properties. This project also entails supplementary safety works.**
- **Wider Campus Buildings: There are protected structures within Dublin Airport (DAP) lands that are required by law to be maintained to a level so that they do not degrade into ruin. This project proposes demolishing derelict buildings, maintain known protected structures, restore farmlands and improve external land fencing.**

CIP.20.01.018
Campus Buildings Critical Maintenance

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Stakeholder Requirements / Safety	**Total Capex requirement** €1.5m
Underpinning Assumptions and Cost Benchmarks	• The following building considerations to be included are: Performance, sustainability, environmental, utilization of space and health & safety • Cost based on similar projects such as the M50 Garage and the re-roofing of Cloghran house • Condition surveys to be carried out on selected buildings • Scope to include all DAA owned campus buildings	
Opex Impact	• No material impact on opex cost.	
Project Output	• Structural Improvements to Existing Campus Properties • General Campus Building Roof Repairs • Equipment Storage Facilities • Provision for cladding repairs and replacements • Walkway Renewals • Demolishing derelict buildings, • Maintain known protected structures, • Restore farmlands • Improve external land fencing.	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Campus Building Upgrades:	**Q1 2020 - Q4 2024**	

CIP.20.01.018
Campus Buildings Critical Maintenance

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	100%	€1,519,750
Escalation, Contingency & Design Variability	0%	€0
Total		**€1,519,750**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & management (Deemed included below)	
Total - to summary	
Construction Costs	
Cost per year for maintenance of the buildings	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.020
T1 Façade, Roof & Spirals

Project Summary

- **This project proposes to rehabilitate the existing T1 façade. This will incorporate repair of the spiral ramps.**

A. Façade:

Terminal 1 was constructed in two phases. The 8-Bay/6 storey section was constructed circa 1970 while the 6-bay/4 storey section was constructed in the mid-1990's. Collectively the terminal is responsible for 61% of all passenger throughput in Dublin Airport and handled 18.1 million pax in 2017. The building is a combination of a six-storey composite design with a semi-exposed structural steel frame, in-situ reinforced concrete cores and slabs and curtain walls. The façade of the 8-bay building is fitted with vertical, precast concrete fins, giving it a distinctive architectural look typical for the era it was developed.

Challenges:

The building envelope suffers from age-related defects such as water ingress, corrosion, spalling, heat loss and environmental issues and needs a significant upgrade. An in-depth feasibility study including full structural survey of the areas of the T1 Façade was carried out in 2014. This survey uncovered extensive degradation of the steel structure of the 8-Bay building as well as localised concrete spalling to the fins on all sides of the 8-Bay building, to the extent that immediate remedial works on the steel structure and concrete fins were required. Note: Asbestos is present in the plant room louvres of the front façade (confirmed by OHSS Safety Consultants 28th Oct 2015).

Ongoing remedial works:

Minimal remedial works to address the worst of the safety issues associated with the façade are currently underway (not part of this request) and are prioritised to mitigate immediate safety issues associated with spalling concrete and the steel super-structure as a minimum (integrity of the façade structure will be assured for 3-5 years). The works being carried out are:

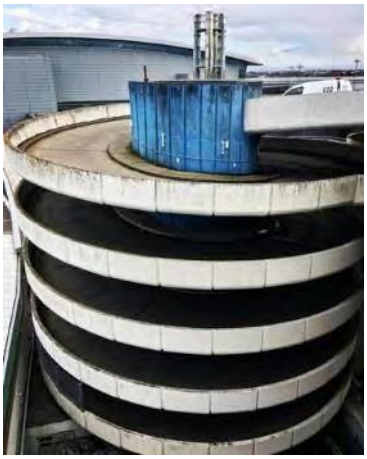
- **Identify, clean down and repair all corroded structural steel connections**
- **Identify, clean down and repair concrete fins locally where concrete spalling occurs**
- **The replacement of the plant room louvres is not included in this scheme.**

CIP.20.01.020
T1 Façade, Roof & Spirals

Project Proposal:
The T1 Façade is nearing the end of its useful economic life and the costly maintenance and remedial works are no longer sustainable. A full refurbishment must be considered for the T1 Façade & Envelope to sustain the building into the future to ensure DAP meets the expectation of the business. Preventing a cyclical reactive repair and maintenance programme (uneconomical and provides no real extension to the asset life) is required. Investment is required to re-life the asset and extend the useful service life of the building for at least 10-15 years.

Relocation of the existing Antenna Mounting facility is required. This in turn will help to optimise maintenance of all facilities.

B. Spirals:



Originally constructed as part of the Terminal building in the 1970's, the spirals originally served as access to 600 car parking spaces on the upper two floors. Since the closure of Levels 4 & 5 as public car parking spaces in the early 1970's the spirals have been used as a primary fire escape route for levels 4 & 5, to access a smaller number of staff car parking spaces on Level 4, to facilitate deliveries to stores and access to plant rooms. Located at the base and supported by the spirals is a significant amount of extraction vents and other essential M&E equipment and a diesel storage tank. In recent years the spirals have started to show structural defects.

Many of the defects occur in the upper levels of the Spiral and on both link bridges (confirmed by Cora Report 2015 and ongoing Asset Care photo surveys).
Defects include the following:

- **Blown cover and exposed reinforcement**
- **Spalling**
- **Grout Loss – poor original workmanship**
- **Debonding on some previous remedial work (Hollow sound)**
- **Cracking**
- **Discolouration**

Demolition of the spirals was analysed with the cost considered prohibitive at €6.4m given the need to construct new fire escapes and goods lifts before demolition and extensive protection measures for the energy centre and to protect passengers and staff from demolition work.

This project proposes:
Remedial work to repair all structural defects identified. This is critical to preserve the spirals and prevent further degradation.

CIP.20.01.020
T1 Façade, Roof & Spirals

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Safety	**Total Capex requirement** €25.8m
Underpinning Assumptions and Cost Benchmarks	• The following building considerations to be included are: Performance, sustainability, environmental, utilization of space and health & safety • Feasibility to be undertaken to examine the current operational and business needs at Dublin airport and recommend an appropriate scalable solution that is fit for purpose and aligned with Dublin Airport business needs and development plan	
Opex Impact	• Increase in opex of approx. €50k/annum.	
Project Output	Re-life existing Façade to include • 8-bay Terminal 1 Façade • T1 Roof Upgrade Phase 3b (8-Bay section) and other roof considerations • Rectify balcony drainage issues • Repair of Spiral Ramps • Relocation of Antenna Mounting Facility	
Asset Life	• 20 years	

Project Delivery Key Milestones	
Feasibility / Outline Design Complete:	**Q3 2020**
Planning Complete:	**Q3 2020**
Detail Design Complete:	**Q4 2020**
Procurement Complete:	**Q2 2021**
Construction Commence:	**Q1 2021**
Project Handover:	**Q3 2023**

CIP.20.01.020
T1 Façade, Roof & Spirals

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	9%	€2,432,680
Construction Costs	68%	€17,449,861
Escalation, Contingency & Design Variability	23%	€5,947,960
Total		**€25,830,500**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
T1 Façade	
Spirals Upgrade + Antenna	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.022
T1 Storm Water Drainage System

Project Summary

- **This project proposes to upgrade the existing T1 roof surface water drainage system**

The T1 roof surface water discharges through roof gullies and into an internal network of downpipes and eventually discharges into the external storm water drainage infrastructure. This internal drainage system (downpipes) has remained relatively unchanged since T1 was built in the 1970's.
The catchment area at that time was the 8-bay terminal building itself and was designed for a 1 in 100-year storm event.

Increased demand on original drainage system:
Since then, the T1 building has been added to with extensions and additional piers. Therefore, the catchment area has been extended and rainfall levels have also increased and has surpassed the design criteria set in the 70's. Issues occur whereby the building rainwater outlets are unable to cope with the volumes of water during heavy rainfall events.

This leads to the pipes reaching full capacity, water backs up to the vertical downpipes causing leaks and pipe failures. These leaks are only identified when water appears on the terminal ceiling tiles or floors and are contained by use of receptacles under the source with warning signage. This provides poor optics within the public realm and has potential to undermine the structure of the building and tarnish the airports reputation. Where leaks are not identified by Dublin Airport staff, there is a high risk of the public slipping on wet tiles.

Past remedial works:
Some works have taken place over the past 5-year period, but these only addressed a minor number of issues. This project serves to address issues throughout the terminal building and associated piers.

This project proposes to:
- **Carry out an in-depth CCTV survey of the internal surface water drainage network (3d mapping required) to better understand the sub-optimal location and configuration of the drainage network**
- **Complete a feasibility study to determine the preferred solution (continue with gravity drainage or install syphonic drainage)**
- **Following feasibility, proceed with preferred option**

CIP.20.01.022
T1 Storm Water Drainage System

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Safety	**Total Capex requirement** €1.1m
Underpinning Assumptions and Cost Benchmarks	• The following building considerations to be included are: Performance, sustainability, environmental, utilization of space and health & safety • Scope to include 8-bay, 6-bay, T1X, Piers 2 & 3, P2 Link, street and all other associated areas	
Opex Impact	• Reduction in ongoing maintenance works. Minor impact on Opex.	
Project Output	• Carry out an in-depth CCTV survey of the internal surface water drainage network • Survey the drainage network to create a 3Dmap throughout the building • Understand the sub-optimal location and configuration of the drainage network • Complete a feasibility study on the preferred solution, whether to continue with gravity drainage or install syphonic drainage. • Following feasibility, install preferred option	
Asset Life	• 15 years	

Project Delivery Key Milestones	
Feasibility / Outline Design Complete:	**Q2 2020**
Planning Complete:	**Q2 2020**
Detail Design Complete:	**Q3 2020**
Procurement Complete:	**Q1 2021**
Construction Commence:	**Q1 2021**
Project Handover:	**Q1 2022**

CIP.20.01.022
T1 Storm Water Drainage System

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	11%	€120,000
Construction Costs	67%	€750,000
Escalation, Contingency & Design Variability	23%	€254,162
Total		**€1,124,162**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Leak Repairs/General Pipework	
Flashings	
Internal Pipework and Drains	
Facade /Glass Box & Roofs interface	
Deep Clean & Lining & CCTV Inspection	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.023
Piers & Terminals Critical Maintenance

Project Summary

- **This project proposes to complete necessary maintenance works on the existing Piers and Terminals (Floors, walls, doors & back-of House).**

The terminal buildings are part of the core infrastructure for Dublin Airport's (DAPs) business of facilitating inter-modal change for travellers. The terminals have one of the highest rankings in terms of Business Criticality following that of the main runway and apron area. The building facilitates the departure and arrival passenger processes including Check-in, Security, Boarding Gates, Immigration, Customs, Meet & Greet, Passenger comfort facilities (e.g. toilets), Retail and Food & Beverage to name a few. They also accommodate airport related (mostly operations) businesses that need to be near the passenger flows such as Airline and DAP management offices, as well as the necessary plant and equipment rooms for the functioning of the building.

The general condition of the terminal buildings at DAP (Terminals, Piers and associated Multi-storey Car parks) is considered good although there are certain areas to be addressed. Terminal 1 is now over 45 years old (constructed in 1972) and requires ongoing maintenance investment to ensure expected standards of service are met. Terminal 2 will require increasing maintenance investment in the 2020- 2024 CIP period as it will reach 10+ years old (constructed in 2010).

Critical ongoing maintenance:
Continuous maintenance, improvement and replacement works have been carried out over the last five years to keep airport operations running as efficiently as possible. These works need to continue into the next 5 years and beyond to maintain the level of service the passenger has come to expect from Dublin Airport.

This project proposes to:
Upgrade or replacement of various critical items within the airport piers and terminals to ensure the smooth and efficient operation of the airport and ensuring the business needs are met (project details are outline in the Project Output section).

CIP.20.01.023
Piers & Terminals Critical Maintenance

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Customer Experience	**Total Capex requirement** €1.9m
Underpinning Assumptions and Cost Benchmarks	• The following building considerations to be included are: Performance, sustainability, environmental, utilization of space and health & safety • Scope to include terminals 1 & 2 and all associated piers and links • Costs based on tender returns for similar works in 2017 and quotations from recently costed works. The replacement costs are based on Asset Care costs for similar projects delivered in the last 2 years	
Opex Impact	• N/A	
Project Output	• Floor Covering Replacements • Wall panelling replacements • Door replacements • Back of House floor Replacements	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Piers & Terminals Maintenance	**2020-2024**	

CIP.20.01.023
Piers & Terminals Critical Maintenance

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	11%	€216,000
Construction Costs	75%	€1,440,000
Escalation, Contingency & Design Variability	13%	€256,680
Total		**€1,912,680**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Replacement of Floors in T1/T2	
Wall panels/Door & back of house floor replacements	
Main Contractor Preliminaries	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.024
Skybridge Rehabilitation

Project Summary

- **This project proposes a structural assessment of the Skybridge be undertaken and necessary rehabilitation works be executed.**

Constructed in 2007 to increase the gate capacity of Terminal 1 ahead of the delivery of planned Terminal 2, the Skybridge Link and Pier 1 and Skybridge link structures are the most northerly section of T1. Pier 1 is over 600m long and together with the curved 400m long Skybridge link is one of the longest combined buildings in Dublin Airport.

The Skybridge is suspended over 60% of its length. Its structure is of structural steel with in-situ concrete floor and a flat membrane roof. The structure is supported at its ends from the ground columns. The central section is suspended by high tensile steel ties from two inclined super-columns. The walls are constructed from glass and cladding panels.

In recent times the following irregularities have been identified on the Skybridge:

- **Corrosion of the Skybridge steel ties**
- **Cracks in the Terrazzo Floor Joints**

A study is required to determine the extent of degradation of the steel cables. Following the study remedial work is required on the identified defects. The cracks at each joint location on the terrazzo floor indicate that the movement joints may be inadequate for a cable stayed structure and will need to be replaced. Overall the building envelop is in fair condition with leaks evident in the roofing membrane. The condition needs to be monitored regularly to detect any developing difficulties due to its nature over time.

This project proposes to:
Carry out a full structural assessment of the suspension cables and expansion joints. Following this a recommended work programme will be developed to carry out the essential remedial works.

CIP.20.01.024
Skybridge Rehabilitation

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Safety	**Total Capex requirement** €1.2m
Underpinning Assumptions and Cost Benchmarks	• The following building considerations to be included are: Performance, sustainability, environmental, utilization of space and health & safety	
Opex Impact	• N/A	
Project Output	• Full structural survey and assessment of the current condition of the structural cables and floor joints • Remedial works to all identified structural defects in suspension cables • Replace/upgrade joints • Replace Terrazzo flooring where defective	
Asset Life	• 20 Years	

Project Delivery Key Milestones	
Feasibility / Outline Design complete:	**Q1 2021**
Detail Design Complete:	**Q3 2021**
Procurement Complete:	**Q4 2021**
Construction Commence:	**Q1 2022**
Project Handover:	**Q4 2022**

CIP.20.01.024
Skybridge Rehabilitation

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	9%	€103,438
Construction Costs	69%	€827,500
Escalation, Contingency & Design Variability	23%	€271,964
Total		**€1,202,902**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Work to existing buildings	
Main Contractor Preliminaries	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.034
Campus Roads Critical Maintenance

Project Summary

- **This project proposes to continue to upgrade the existing internal campus road network.**

Dublin Airport DAP is responsible for the provision, maintenance and operation of internal public use campus roads. This road network provides access to DAP Terminals 1 & 2, hotels, multi-tenant commercial buildings, multi-storey car parks, surface car parks, bus and taxi terminals, cargo transport hubs and alternative routes into the airport and the exterior of the airport facility.

The road network incorporates approximately 26 kilometres of roads. The Annual average daily traffic (AADT) on the main access route for passenger traffic in to Dublin Airport (East link/Corballis road) is approximately 24,000 vehicles per day on Eastlink Road in the southbound direction. HGV's make up approximately 1.7% of the total daily flow amounting to circa 200 HGVs per lane per day.

2018 SCRIM Survey Results

These roads are currently in a reasonable state of repair; however, sections of the road network will need to be improved within the next 2 years. Two kilometres of pavement have been identified as having very low skid resistance which will need immediate re-surfacing. A further seven and a half kilometres of pavement will require resurfacing works within this 2020-2024 CIP period to continue to meet obligatory safety standards. The replacement and/or upgrade of footpaths is also required to mitigate the risk to the health and safety of the public and airport staff due to the presence of trip hazards and low friction surfaces.

This project proposes to:

- **Deliver essential improvement / upgrade works to the internal campus road network and its infrastructure. This will ensure the needs of the airport and airline customers are met in a cost- effective and sustainable manner and the risk to public health and safety is reduced as far as practicably possible.**
- **Rehabilitation of Cargo Bridge Road**
- **Road Furniture Upgrades**
- **Upkeep of road surface markings**

CIP.20.01.034
Campus Roads Critical Maintenance

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Safety	**Total Capex requirement** €6.8m
Underpinning Assumptions and Cost Benchmarks	• The following building considerations to be included are: Performance, sustainability, environmental, utilization of space and health & safety • Costs based on tender returns for similar works in 2017 and quotations from recently costed works. The replacement costs are based on Asset Care Opex and Capex costs for similar projects delivered in the last 2 years. • Night Works to be priced • Traffic Management required for all projects	
Opex Impact	• N/A	
Project Output	• Internal Road improvements • Access Roads Improvements to Staff Car Parks • Maintenance facility roads • Existing drainage upgrades • Walkway renewals • Landscaping • Rehabilitation of Cargo Bridge Road • Road Furniture Upgrades • Upkeep pf road surface markings	
Asset Life	• 15 Years	

Project Delivery Key Milestones	
Internal Road improvements	**Q1 2020 – Q4 2024**
Access Roads Improvements to Staff Car Parks	**Q1 2020 – Q4 2024**
Existing drainage upgrades	**Q1 2020 – Q4 2024**
Walkway renewals	**Q1 2020 – Q4 2024**
Road Furniture Improvements	**Q1 2020 – Q4 2024**
Road surface marking and delineation	**Q1 2020 – Q4 2024**
Cargobridge Road Rehabilitation	**Q1 2020 – Q3 2020**

CIP.20.01.034
Campus Roads Critical Maintenance

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	10%	€664,208
Construction Costs	65%	€4,428,056
Escalation, Contingency & Design Variability	25%	€1,671,536
Total		**€6,763,801**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Fittings / Furnishings & Equipment	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.039
Airport Roads Critical Maintenance

Project Summary

- **This project proposes to upgrade and improve the existing external road networks at Dublin Airport.**

Due to airport development since the 1980's, Dublin Airport (DAP) owns and maintains a number of external public roads. These roads provide access to long-term carparks, fire station, ATC facility and alternative routes into the airport and the exterior of the airport facility. The road network incorporates approximately 14kms which include the following sections of road:

Forrest Little Road	**2,490m**
Barberstown Road	**2,060m**
Pickardstown Road	**2,600m**
Portmellick Road	**2,500m**
Harristown Road	**2,790m**
Collinstown Lane	**660m**
Miscellaneous minor access roads	**1,100m**

These roads are currently in a reasonable state of repair and account for a high percentage of annual average daily traffic (AADT). The total combined AATD for the northern diversion road, south parallel road and Collinstown Lane is 59,700 light vehicles and 5,330 HGV's with the majority of the traffic using the Northern Diversion Road.

CIP.20.01.039
Airport Roads Critical Maintenance

This project proposes:
Sections of the road network will need to be improved within the next 2 years. Six kilometres of pavement have been identified as having very low skid resistance which will need immediate re-surfacing. A further three kilometres of pavement will require re-strengthening works within the 2020-2024 CIP period. Several remaining sections will need improvement within the next CIP period to continue to meet obligatory safety standards.

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Regulation	**Total Capex requirement** €5.1m
Underpinning Assumptions and Cost Benchmarks	• The following building considerations to be included are: Performance, sustainability, environmental, utilization of space and health & safety • Costs based on tender returns for similar works in 2017 and quotations from recently costed works. The replacement costs are based on Asset Care costs for similar projects delivered in the last 2 years.	
Opex Impact	• N/A	
Project Output	• External Roads Improvements • Inlay Works • Strengthening Works • Survey Requirements	
Asset Life	• 15 Years	

Project Delivery Key Milestones	
Forrest Little Road	**2020 & 2021**
Barberstown Road	**2020**
Portmellick Road	**2020**
Harristown Road	**2021-2024**
Collinstown Lane	**2021**

CIP.20.01.039
Airport Roads Critical Maintenance

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	9%	€442,759
Construction Costs	69%	€3,542,068
Escalation, Contingency & Design Variability	23%	€1,164,127
Total		**€5,148,954**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Fittings / Furnishings & Equipment	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.046
Staff Car Parks Critical Maintenance

Project Summary

- **This project proposes to rehabilitate existing staff car parks Spine roads.**

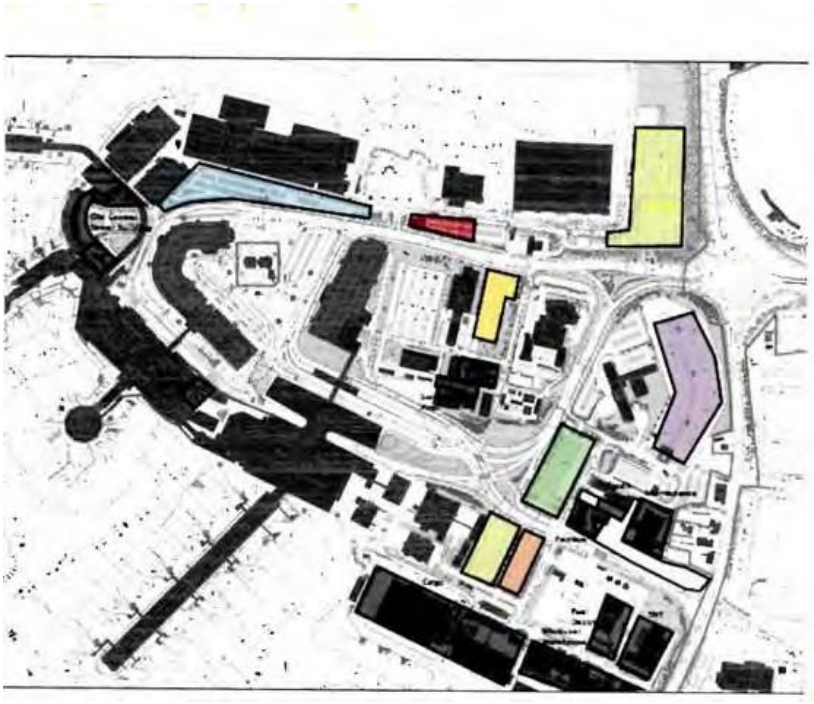
There are currently 12 No. staff car parks within the Dublin airport campus with 2,827 available spaces. Car park sizes range from 14 spaces in the Sillogue Gold to 818 spaces in the Purple car park at the back of the Radisson Hotel.

The important factors of car parks to staff are;

- **Walking distance to terminals**
- **Quality of surface**
- **Line marked spaces**

The condition of the staff car parks is considered to be fair, however some parking lots are in need of investment. The spine road of the silver staff car park for example has reached the end of its useful life and needs to be replaced. There are general drainage issues that need to be resolved to prolong the life of pavements throughout.

This project proposes to:
Deliver essential improvement and rehabilitation and upgrade works to staff car park spine roads at Dublin Airport.



Car Park	Spaces
Blue	484
OCTB/VIP & Spiral	67 & 39
Red	83
Yellow	234
Pink	87
Orange	222
Green	391
Maroon	32
Purple	818
White	295
Sillogue Gold	14
Cargo Buildings (Black)	61
EI Hanger 6	860
EI Shamrock House	217

CIP.20.01.046
Staff Car Parks Critical Maintenance

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Customer Experience	**Total Capex requirement** €1.7m
Underpinning Assumptions and Cost Benchmarks	• The following building considerations to be included are: Performance, sustainability, environmental, utilization of space and health & safety • Costs based on tender returns for similar works in 2017 and quotations from recently costed works. The replacement costs are based on Asset Care costs for similar projects delivered in the last 2 years such as LTred car park	
Opex Impact	• N/A	
Project Output	• Drainage Improvements • Staff Car Park Spine Road Improvements	
Asset Life	• 15 Years	
Project Delivery Key Milestones		
Drainage Improvements		**Q1 2020 – Q4 2024**
Staff Car Parks Spine Road Improvements		**Q1 2020 – Q4 2024**

CIP.20.01.046
Staff Car Parks Critical Maintenance

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	9%	€145,206
Construction Costs	69%	€1,161,647
Escalation, Contingency & Design Variability	23%	€381,784
Total		**€1,688,637**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Staff Carparks	
Main Contractor Preliminaries	
Other Development Costs	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.049
Public Carpark Critical Maintenance

Project Summary

- **This project proposes to upgrade and improve public carparking (Spine Roads & MSCP Structural Defects).**

Dublin Airport (DAP) is responsible for the provision, maintenance and operation of public car parks. There are currently;

- **4,000 short term spaces in two multi-storey car parks (MSCP)**
- **18,600 long term spaces in three remote car parks**

Public car parks are a core piece of infrastructure at airports. They provide a necessary facility to the travelling public and meters & greeters. Income from existing car parks represents approximately 5% of total turnover. Due to increasing passenger numbers, this percentage is likely to increase. With passenger numbers set to increase, busing movements with increase causing an increased rate of deterioration of the condition of the spine roads

This project proposes to:

- **Delivery of essential upgrade and improvement works to public car park spine roads at Dublin Airport.**
- **Implement structural and waterproofing improvement works required at both Multi Storey Car Parks (MSCP) at Dublin Airport.**

CIP.20.01.049
Public Carpark Critical Maintenance

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Customer Experience	**Total Capex requirement** €2.4m
Underpinning Assumptions and Cost Benchmarks	• The following building considerations to be included are: Performance, sustainability, environmental, utilization of space and health & safety • Costs based on tender returns for similar works in 2017 and quotations from recently costed works. The replacement costs are based on Asset Care costs for similar projects delivered in the last 2 years such as LTred car park	
Opex Impact	• N/A	
Project Output	Public Parking (Long Term): • Drainage Improvements • Spine Road Upgrades Long Term Car Parks (LTCPS) (Green, Blue, Red) • Structural Improvements to MSCP T1 & T2 MSCP • Replace/Repair Structural Movement Joint • Investigate and Repair drainage issues • Investigate moisture ingress issues and repair • Walkway renewals • Waterproofing membrane Repair	
Asset Life	• 15 Years	

Project Delivery Key Milestones	
Drainage Improvements	**Q1 2021 – Q4 2024**
Spine Road Upgrades Long Term Car Parks (LTCPS) (Green, Blue, Red)	**Q1 2021 – Q4 2024**
Multi-Storey Car Park Optimisation	**Q1 2020 – Q4 2024**

CIP.20.01.049
Public Carpark Critical Maintenance

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	7%	€168,214
Construction Costs	76%	€1,819,737
Escalation, Contingency & Design Variability	17%	€421,376
Total		**€2,409,327**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Public Carpark Spine Roads	
MSCP Upgrade	
Main Contractor Preliminaries	
Other Development Costs	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.056
Campus Facilities & Landside Snow Base

Project Summary

- **This project proposes providing a new purpose-built Campus Facility and Snow Base at Castlemoate.**

The Campus Facility & Snow Base is a crucial part of landside operations at Dublin Airport. It supports the efficient maintenance of all campus roads and is in a strategic location for the snow and ice response for the landside facilities. The base is housed in the original farm sheds as part of Castlemoate House and adjacent to the Dublin Airport Police K9 Unit.

The semi-open lean-to shed on the southern boundary is used for the storage of rock salt and grit and has been there for over 30 years. The salt-store is currently in a very poor condition and has reached its end of useful economic life. The current state poses a significant health and safety risk with continued use. The large shed is used for the storage of airport vehicles, equipment & contractor vehicles involved in winter maintenance landside. The layout within the building is based on an old farm shed and is not conducive for the movement & parking of vehicles. The roof is in poor condition and at the end of its useful economic life. The welfare facilities in the shed are not fit for purpose and pose a high risk to its users. In summary, the facility is not fit for purpose, the space is not being utilized to its full potential and is now impacting on the proper maintenance of the landside roads and facilities. Therefore, it needs to be rehabilitated or replaced.

Risks:
There are numerous risks associated with this facility in its current state such as:

- **Health & Safety: Buildings beyond their functional life to a point where maintenance will no longer extend the asset life. There is a risk to personnel health and safety when further degradation occurs.**
- **Environment: Currently no waste water treatment for the run-off from the yard. Salt run-off may affect water table / sources.**
- **Efficiency: Salt store open to the elements and not suitable for the storage of salt (damp causes clumps resulting spreading problems). Exposed equipment in open/semi open areas are deteriorating.**

CIP.20.01.056
Campus Facilities & Snow Base Upgrade

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Safety	**Total Capex requirement** €2.9m
Underpinning Assumptions and Cost Benchmarks	• To upgrade/replace the current facilities and equipment to ensure they are fit for purpose and meeting business requirements • Current site remains available but improved access is required. • Planning permission may be required	
Opex Impact	• N/A	
Project Output	• Construction of a new weathered salt store large enough to accommodate articulated vehicles to reverse into and discharge load • Adjoined equipment storage facility • Vehicle Wash Station • Task specific snow and maintenance equipment • New entrance onto Castlemoate Road • New surface water drainage and associated works • Pavement Overlay to Yard • Perimeter Fencing • Task Lighting Provision • Welfare Facilities • Works to accommodate future campus &facilities expansion • The scheme shall optimize the available space and provide the means to cope with the demands of any extreme weather event, quickly and efficiently and help keep the operation functional at all times.	
Asset Life	• 20 Years	

Project Delivery Key Milestones	
Feasibility / Outline Design complete:	**Q1 2020**
Planning complete:	**Q4 2020**
Detail Design complete:	**Q4 2020**
Procurement complete:	**Q2 2021**
Construction Commence:	**Q3 2021**
Project Handover:	**Q1 2022**

CIP.20.01.056
Campus Facilities & Snow Base Upgrade

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	11%	€304,763
Construction Costs	67%	€1,904,768
Escalation, Contingency & Design Variability	23%	€645,492
Total		**€2,855,024**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Electrical Installation & Communication Systems	
Surface Water and Foul Water Drainage	
Work to existing buildings	
Ancillary Buildings and Structures	
Main Contractor Preliminaries	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.065
Airport Heavy Fleet & Equipment Replacement

Project Summary

- **This project proposes to provide an efficient and effective Heavy Vehicle Fleet to meet the needs of the business.**

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 support equipment such as hoists, cargo loaders and fork lifts. The provision of this equipment is essential for the safe and efficient operation of the airport, particularly airfield operations.

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 efficiency and standardisation. Many of these vehicles, such as the Fire Tenders, are required to fulfil the requirements of the airport licence.

The heavy fleet currently includes seventy-five vehicles, distributed between five work areas including Fire & Emergency, Snow & Ice Operations, Operational Cleaning, Airfield Maintenance, Landside Maintenance and Support. These sub-fleets have been examined in detail and an optimisation plan for the period 2020 – 2024 has been put in place taking into account the current and expected growth in demand and the introduction of new infrastructure such as Apron 5H and the North Runway.

This project proposes to:

- **Replacement of seven existing foam tenders with six new single-type vehicles**
- **Augmentation of the Snow & Ice fleet to allow for the introduction of the North Runway, additional aircraft pavement and to improve the efficiency of snow removal activities**
- **Purchase additional glycol collection sweepers, friction tester and maintenance equipment due to the introduction of additional airfield pavement**

The heavy fleet optimisation plan supports the Dublin Airport Sustainability Policy and prioritizes the purchase of Low Emission Vehicles (LEVs) where possible. It also seeks to minimise the number of vehicles needed to meet EASA Standards and the Airport Licence while providing the foundation for efficient and effective airport operations.

CIP.20.01.065
Airport Heavy Fleet & Equipment Replacement

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Operational Efficiency and Safety	**Total Capex requirement** €11.0m
Underpinning Assumptions and Cost Benchmarks	• Fleet Optimisation Plan will be kept under review in line with the introduction of new infrastructure and growth in aircraft movements • The use of Low Emission Vehicles (LEV) will be prioritized where appropriate • Cost of vehicles excludes VAT & VRT as appropriate	
Opex Impact	• Increase in maintenance cost of approx. • €100k/annum due to an increase in volume of equipment.	
Project Output	• Efficient operation of Dublin Airport through the provision of vehicles and equipment that are fit-for-purpose. • Promotion of daa Sustainability Policy and the use of LEVs where possible • Fleet Optimisation Plan in line with business needs and growth	
Asset Life	• 7 Years	
Project Delivery Key Milestones		
Provision of vehicles and equipment through the 2020-2024 period	**Q1 2020 – Q4 2024**	

CIP.20.01.065
Airport Heavy Fleet & Equipment Replacement

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	100%	€11,040,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€11,040,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & management (Deemed included below)	
Total - to summary	
Construction Costs	
Fittings / Furnishings & Equipment	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability (Deemed included above)	
Total - to summary	

CIP.20.01.069
Airport Light Vehicle Fleet Replacements and Augmentation

Project Summary

- **This project proposes to maintain mobility within the airport wide campus by provision of an effective Light Vehicle Fleet that meets the needs of the business.**

The Dublin Airport (DAP) Light Vehicle Fleet comprises 100 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 supporting such functions as Airport Police, Fire Service, ASU, Airport Operations & Asset Care. The mobility of these functions across the airport through the provision of a reliable light vehicle fleet is critical for the efficient, safe and secure operation of the airport.

Vehicle are selected based on fitness for purpose, whole life cost optimisation and standardisation. They 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 economic life which varies between 3 – 7 years. The light fleet is managed centrally by specialist fleet managers and the number of vehicles in the fleet is strictly controlled and in accordance with a rolling Fleet Optimisation Plan. Vehicles associated with capital projects are not included in the core airport fleet. Vehicles at the end of their useful lift are disposed of after the removal of any equipment where appropriate. Any value achieved from the sale of the vehicle is returned to the business unit P&L account in accordance with accounting rules.

Since 2015 the airport fleet has grown from 95 to 100 vehicles with the growth in aircraft movement and the need for greater ramp supervision as well as the extension of the CPSRA. The Light Fleet will need to be increased to allow for the introduction of the North Runway and the extended airfield operations and maintenance.

The planned provision of replacement and additional vehicles for the light vehicle fleet between 2020 & 2024 will be in accordance with a 6-year rolling fleet optimisation plan as recommended by the specialist fleet managers. This plan optimises the number of vehicles in use as well as the vehicle type to ensure they are fit-for-purpose and are properly maintained to reach their full life cycle. The plan also supports the DAP Sustainability Policy with the prioritized used of Low Emissions Vehicles (LEVs). LEVs will be introduced into the fleet where there is proven fitness-for-purpose and cost competitiveness.

CIP.20.01.069
Airport Light Vehicle Fleet Replacements and Augmentation

Project Details Summary		
Category: Capital Maintenance		
Primary Driver Operational Efficiency	**Secondary Driver** Safety	**Total Capex requirement** €2.4m
Underpinning Assumptions and Cost Benchmarks	• Fleet size will grow to 111 vehicles • Fleet Optimisation Plan will be kept under review in line with the introduction of new infrastructure and growth in aircraft movements • The use of Low Emission Vehicles (LEV) will be prioritized where appropriate • Cost of vehicles excludes VRT & VAT	
Opex Impact	• Increase in maintenance cost of approx. • €75k/annum due to an increase in volume of equipment.	
Project Output	• Efficient operation of Dublin Airport through the provision of mobility options that are fit-for-purpose. • Promotion of daa Sustainability Policy and the use of LEVs • Modern, well maintained light vehicle fleet to meet road safety standards • Fleet Optimisation Plan in line with business needs and growth	
Asset Life	• 5 Years	
Project Delivery Key Milestones		
Provision of vehicles through the 2020-2024 period	**Q1 2020 – Q4 2024**	

CIP.20.01.069
Airport Light Vehicle Fleet Replacements and Augmentation

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	100%	€2,408,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€2,408,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Construction Costs	
Fittings / Furnishings & Equipment	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability (Deemed included above)	
Total - to summary	

CIP.20.01.071
Electric Charger Network Facilities

Project Summary

- **This project proposes to install publicly accessible, electrical vehicle charging facilities.**

An electric vehicle network is an infrastructure system of publicly accessible charging stations to recharge electric vehicles. Government, car manufacturers, and charging infrastructure providers have entered into many agreements to create such networks.

With an abundance of accessible wind and ocean energy and distances from the capital city to key neighbouring cities ranging from 170km to 260km, Ireland is well suited to become an early adopter of electric vehicle technology. In the context of an EU commitment to achieve an 80% reduction in carbon emissions by 2050, and concerns about future scarcity, alternatives to oil will be encouraged by the EU and Irish government. In May 2017, the Government approved and published the National Policy Framework on Alternative Fuels Infrastructure for Transport in Ireland 2017 to 2030. This policy framework sets an ambitious target that by 2030 all new cars and vans sold in Ireland will be zero emissions (or zero emissions capable).

Electric vehicles (EVs) offer an increasingly realistic solution to the challenge of reducing the transport sector's Greenhouse Gas Emissions, increasing the use of renewable energy in transport and reducing reliance on imported fossil fuels. To achieve this, stimuli packages such as grants, tax incentive, tolls and parking are available.

This project proposes to:
Provide necessary infrastructure for car charging points across the campus to be made available to the public and to the growing electric maintenance fleet. It will also encourage busing providers to consider the shift into non-combustible engine vehicles.

Consequentially, this initiative will help facilitate government targets and show Dublin Airport to be a leader in sustainable solutions and improve its carbon footprint.

CIP.20.01.071
Electric Charger Network Facilities

Project Details Summary		
Category: Capital Maintenance		
Primary Driver Environmental	**Secondary Driver** Future Proofing	**Total Capex requirement** €1.6m
Underpinning Assumptions and Cost Benchmarks	• The following building considerations to be included are: Performance, sustainability, environmental, utilization of space and health & safety • Cost based on similar project such as charging points in landside Maintenance base	
Opex Impact	• Provision of electric charging station will result in increased maintenance opex amounting to approx. €30k/annum.	
Project Output	• Feasibility Study • Provision of underground ducting network and future proofing • Associated civil works • Electric charger network facilities	
Asset Life	• 10 Years	
Project Delivery Key Milestones		
Electric Charger Network Facilities	**Q1 2020 – Q4 2024**	

CIP.20.01.071
Electric Charger Network Facilities

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	10%	€161,564
Construction Costs	65%	€1,077,090
Escalation, Contingency & Design Variability	25%	€406,588
Total		**€1,645,242**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Electricity Distribution to External Plant and Equipment: (Power supply from main switchgear to external plant and equipment.)	
Main Contractor Preliminaries	
Other Development Costs	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.074
Advance Visual Docking Guidance System (5G, Pier 1 & 2)

Project Summary

- **This project proposes to install additional A-VDGS screens to drive operational efficiency Airside**

The A-VDGS technology guides the aircraft to within 10cm of its parking position using invisible infrared lasers to attain the aircraft's type and position. It will also display critical Airport Collaborative Decision Making (A-CDM) operational data (TOBT, TSAT, etc.) and in turn automatically distribute accurate, real-time data over the IT network.

The primary drivers for investing in A-VDGS are;
A) More Efficient use of stand Infrastructure

- **Faster and more efficient turnaround times for airlines.**
- **Better OTP through display of key turnaround information.**
- **Improved predictability through display of key arrival and departure information.**

B) Enhanced safety at gates

- **Greater visibility during reduced visibility conditions.**
- **Reduced jet blast issues due to fewer requirements for aircraft to stop before entering stand.**
- **Addressing existing DAAD's (Deviation acceptance and action document) on Pier 4 (5 Stands currently with reduced clearance).**

C) Environmental

- **Reduced ramp congestion, through less occurrences of aircraft holding on taxiways.**
- **Reduced fuel burn and emissions through less occurrences of aircraft holding on taxiways and the Airport Licence while providing the foundation for efficient airport operations.**

This project proposes:
This project entails the installation of Advanced Visual Docking Guidance System (A-VDGS) technology to aircraft parking stands on Apron 5H and Stands 102 -104.

CIP.20.01.074
Advance Visual Docking Guidance System (5G, Pier 1 & 2)

Project Details Summary		
Category: Capital Maintenance		
Primary Driver Operational Efficiency / Safety	**Secondary Driver** Stakeholder Requirements	**Total Capex requirement** €5.3m
Underpinning Assumptions and Cost Benchmarks	• Cost based on tender returns for similar works (installed as part of PACE) • A-VDGS – T1 type unit with apron scan function. • Cost based on phased construction with minimum impact on operations. This project will require stand closures for a short period of time. • All units networked and connected to Dublin Airport - Airport Operations System (AOS).	
Opex Impact	• Additional opex costs include regular maintenance and servicing of the proposed units amounting to €40k/annum.	
Project Output	• A-VDGS units on Apron 5H and Stands 102 -104. • Provision of real time operational data to pilots on stand	
Asset Life	• 10 Years	
Project Delivery Key Milestones		
Installation of additional A-VDGS	**Q1 2020 – Q1 2024**	

CIP.20.01.074
Advance Visual Docking Guidance System (5G, Pier 1 & 2)

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	14%	€750,000
Construction Costs	69%	€3,652,583
Escalation, Contingency & Design Variability	17%	€927,411
Total		**€5,329,994**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
AVDGS - Installation (23 Units)	
Main Contractor Preliminaries	
Other Development Costs	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.087
AGL Fibre Optic Communication Network Improvement Programme

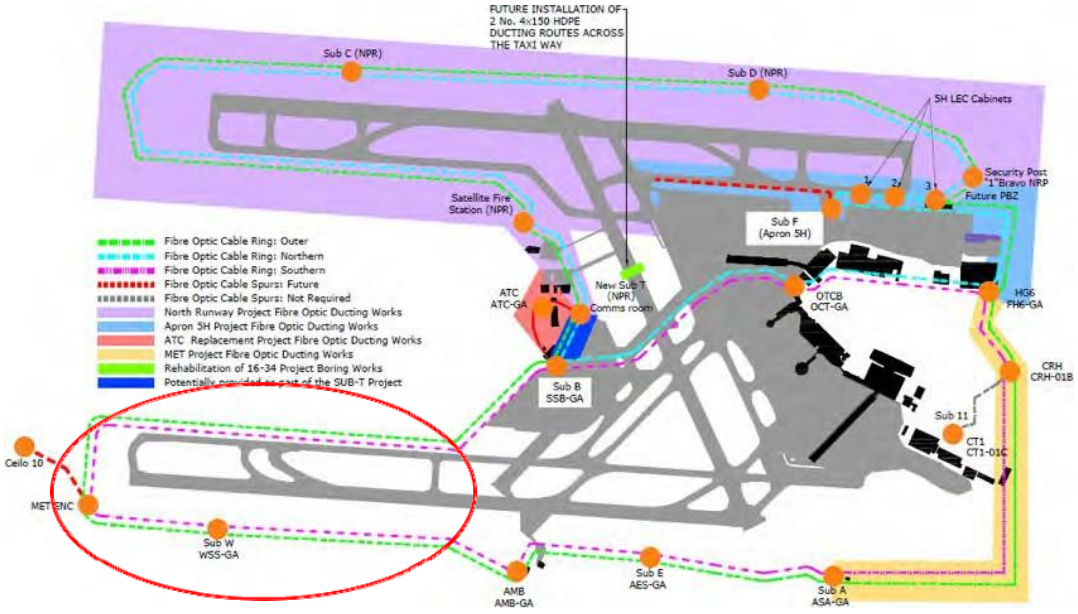
Project Summary

- **This project proposes to provide a ring configuration for the airfield fibre optic network (complete ring around RWY 10)**

The airfield ground lighting systems are controlled from the ATC control tower. The information to each substation, which controls the AGL system, is sent via a fibre optic cable network in a star formation with a copper cable back up system. This system has proven to be reliable to date but cannot accommodate changes easily. It is also not resilient in some areas.

To improve this the fibre system is been reconfigured to operate in a notational ring configuration. This resolves the capacity issues, but the Airport is still left with a major single point of failure in the Southeast corner of the airfield. To create the ring circuit the fibre pairs are part on the same cable between the Maintenance Base and West Substation. If this section of cable gets damaged control of the West Substation is lost.

Currently the fibre cable is routed from Sub B across runway 10/28 to the Maintenance Base, from there the cable becomes a radial to the West Substation. It is proposed to install a pit, duct and fibre network system which will run from the West Substation to the MET enclosure and from there to Sub B. With this facility the fibre network can be configured in a ring circuit without the cables running adjacent to each other or using more than one set of pairs from the same cable to achieve a ring circuit (see image below).
Note: The North Runway development will facilitate the 'ring' around the North Runway. This project is required to complete the ring around the South Runway only.



Airfield Fibre Optic – Proposed Network

CIP.20.01.087
AGL Fibre Optic Communication Network Improvement Programme

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Capacity / Constraints	**Total Capex requirement** €2.0m
Underpinning Assumptions and Cost Benchmarks	• Installation of pit, duct and fibre network between Sub W and Sub B • New electrical equipment required • Night-time working in most areas as required • Works to be carried out in discrete portions to minimise operational disruption • Costs based on recent construction projects.	
Opex Impact	• IT related opex costs of approx. €50k/annum.	
Project Output	• Pit & Duct System. • Fibre Network • Reconfiguring of fibre network	
Asset Life	• 20 Years	

Project Delivery Key Milestones	
Pit & Duct System.	**Q1 2022 – Q1 2024**
Fibre Network	**Q1 2022 – Q1 2024**
Reconfiguring of fibre network	**Q1 2022 – Q1 2024**

CIP.20.01.087
AGL Fibre Optic Communication Network Improvement Programme

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	4%	€79,401
Construction Costs	79%	€1,588,026
Escalation, Contingency & Design Variability	17%	€350,160
Total		**€2,017,588**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Telecommunications and other Communication System Connections	
Preparatory Ground Works	
Roads and associated footways	
Main Contractor Preliminaries	
Other Development Costs	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.01.099
RWY 16/34 Lighting for Low Visibility Procedures (LVP)

Project Summary

- **This project proposes to install LVP taxiing guidance lighting on Runway 16/34 to allow it to be used as a formal LVP Taxiway route.**

Runway 16/34:
Runway 16/34 (R16/34) is Dublin Airports' secondary and crosswind runway, primarily used during dual operation and extreme cross winds conditions as an alternative to R10/28. It is also used as the operational runway when maintenance works are being undertaken on R10/28. R16/34 is currently used as a taxiway in daylight hours, particularly as a line-up to R28. However, it cannot be used in the hours of darkness or in LVP conditions as there is no centreline lighting system.

The runway pavement extends in a general Northwest-Southeast direction between the southern R28 threshold and the midpoint of the future Northern Runway. As such the runway pavement connects the parallel runways across the full width of the site. The emerging Dublin Airport masterplan has taken this into account and, while it has confirmed that that the runway remains operational, it proposes that it also be used as a principle North-South taxiway route (both runway & taxiway). This will be a central plank of the proposed airfield circulation plan following the completion of the North Runway and will combine with the outputs from CDP2 Critical Apron Taxiway System to greatly enhance the circulation within the central airfield network.

It is further proposed that this taxiway will be used for a LVP Taxiway with enhanced centreline lighting systems to guide aircraft in the hours of darkness and in low visibility. An interleaved lighting system with back-up power supply will be installed along the centreline of the taxiing length of the runway as well as the curves and turns of the taxiway intersections. The new system will be connected to the current and updated AGL control system for ATC activation as required.

This project proposes:

Installation of LVP taxiway route lighting along Runway 16/34 and its intersections

CIP.20.01.099
RWY 16/34 Lighting for Low Visibility Procedures (LVP)

Project Details Summary		
Category: Capital Maintenance		
Primary Driver Operational Efficiency / Safety	**Secondary Driver** Capacity / Constraints	**Total Capex requirement** €5.5m
Underpinning Assumptions and Cost Benchmarks	• R16/34 pavement has been improved under separate project • Enabling works (secondary cables and pots) for R16/34 LVP centreline has been completed prior to new surface being installed • New primary cables along length of runway and connecting back to Sub T required • New primary ducts and pit system is required to house the proposed primary cable system to Sub T. • Pits to be able to accommodate transformers and ILCMS switches. • Ducting system to include LV control ducts for future ILCMS • New CCRs required • New AGL control connections to existing system required • New secondary cables required • New LED light fittings and pots required	
Opex Impact	• Project has an opex impact of circa €50k per annum split €15k energy and €35k maintenance.	
Project Output	• Full LVP Taxiway Lighting on R16/34 and ancillary intersections	
Asset Life	• 10 Years	

Project Delivery Key Milestones	
Feasibility / Outline Design complete:	**Q1 2020**
Planning complete:	**Q1 2020**
Detail Design complete:	**Q1 2020**
Construction Commence:	**Q1 2020**
Project Handover:	**Q1 2021**

CIP.20.01.099
RWY 16/34 Lighting for Low Visibility Procedures (LVP)

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	100%	€5,500,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€5,500,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Construction Costs	
Low Visibility Procedures	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability (Deemed included above)	
Total - to summary	

CIP.20.07.013
Airfield Taxiway Re-Designation Project

Project Summary

- **This project proposes to roll out an Airfield Taxiway Re-designation programme.**

The Dublin Airport Local Runway Safety Team (LRST) consisting of representatives from DAA, IAA – SRD, Air Traffic Services and based airlines (Aer Lingus, Ryanair, Air Contractors and Cityjet) completed a review of the existing taxiway naming conventions in 2013 to address the following issues:

- **Complexity of airfield layout following the completion of various airfield infrastructural developments over the previous 6 years**
- **Elongated taxiway routing instructions between ATC and pilots in radio communications**
- **Safety recommendation set out in AAIU report into the serious incident which occurred in May 2011 (Runway Incursion on Runway 16/34)**

The output from this review was that a revised taxiway designation strategy should be devised to address the issues. This strategy has now been devised and a full review of the existing airfield signage layout has been completed and a revised layout based on the new taxiway designation convention has been developed. In addition, IAA approval for certain aspects of the scheme was sought and this approval was received in September 2013. Subsequently a revised scheme with different designations as agreed with the airlines was put forward and approved by the IAA.

CIP.20.07.013
Airfield Taxiway Re-Designation Project

Business Need
The taxiway infrastructure at Dublin Airport is identified by a naming convention in compliance with ICAO (SARPS), whereby each taxiway is given a distinctive designator.

To accommodate higher traffic volumes, Dublin Airport has in recent years delivered projects to expand and improve the existing infrastructure. In many cases, these improvements have resulted in a more complex aerodrome environment within which pilots, drivers and ATS personnel must function. These projects have included changes to the apron and taxiway layout, as a result of the expansion of the Central and South Apron areas east of Runway 16/34 through the construction of Piers 1 and 4 and the construction of the West Apron to the west of Runway 16/34. As a result of increased infrastructure (and associated increase in naming e.g. F-Inner & F-Outer) communications between ATC and pilots have become complex, leading to lengthy R/T communications specifically
regarding taxi instructions, which at peak times of aircraft movements on the airfield can be a source of confusion, particularly to non-based pilots and could give rise to a reduction in safety and the potential for a runway incursion.

In addition, a separate review of the signage in place in the vicinity of the five 'Hot Spot' locations currently identified on the EIDW Aerodrome and Parking / Docking charts was completed last year and has identified a set of recommended changes to existing signs to address any ambiguity or possible misinterpretation by pilots / drivers (currently over complex). These changes have not been implemented as yet and it is now planned to implement them as part of the Taxiway Re-designation project.

Project Delivery Strategy
It is proposed to deliver the Project on a phased basis through Airfield Capital Projects (e.g. Runway 10/28 Overlay, Apron 5H, North Runway, Dual Foxtrot Taxiways, Link 6, Link 3 etc.) to minimise disruption to the business and to optimise cost.

CIP.20.07.013
Airfield Taxiway Re-Designation Project

Project Details Summary		
Category: Capital Maintenance		
Primary Driver Safety	**Secondary Driver** Operational Efficiency	**Total Capex requirement** €1.5m
Underpinning Assumptions and Cost Benchmarks	• Delivery to be coordinated with other Airfield Capital Projects (e.g. Runway 10/28 Overlay Project, Apron 5H, North Runway Project, Dual Foxtrot Taxiways, Link 6, Link 3 etc.) • Night time working where agreed with operations • Multi construction phasing to minimise route interruptions for taxiing aircraft	
Opex Impact	• No material impacts on opex.	
Project Output	• All Airfield Taxiways & Taxilanes will have new signage and paint marking designations	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Airfield Taxiway Re-designation	**Q1 2020 – Q4 2024**	

CIP.20.07.013
Airfield Taxiway Re-Designation Project

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	100%	€1,500,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€1,500,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Construction Costs	
Airfield Re-designation	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability (Deemed included above)	
Total - to summary	

CIP.20.07.032
Unit Load Device Storage - Stillage

Project Summary

- **This project identifies the need for new Unit Load Device Storage at Dublin Airport.**

Unit load devices (ULDs) are used to load luggage, freight, and mail on wide-body aircraft and specific narrow-body aircraft. ULDs allows a large quantity of cargo to be bundled into a single unit. Since this leads to fewer units to load, it saves ground crews time and effort and helps prevent delayed flights.

When not in use, ULDs are parked in dedicated zones away from other apron / airfield activity but within reach of airline and ground handler agents. In recent years the space available for ULD parking has reduced significantly due to increased activity at DAP. Annual passenger numbers have grown by 50% since 2013 resulting in a significant increase in GSE including ULDs on the airfield. Over the same period, GSE parking areas have been reduced due to various construction projects (e.g. PBZ Project, Pier 1 Extension). The lack of available space will be compounded by the removal of Aircraft Park Charlie (as part of North Runway Project) and up to 7,000m3 of GSE parking in September 2019.

As a result of the above challenges, DAP and stakeholders will need to be more efficient with all available space on the airfield. The provision of stillage by DAP for use by the ground handlers and airlines is a key enabler for more efficient use of the airfield.

The following benefits will be realized by the provision of ULD Stillage:

- **Safety:** Poor weather conditions (e.g. high winds) can result in ULDs being blown around the apron causing damage to vehicles and aircraft as well as injuries to airport ground staff and passengers

- **Efficient Use of Space:** Stillage of two to three storeys high will maximise the use of existing pavement on the airside and also result in the unlocking of additional space on the airside

- **Operator Efficiency:** Stillage will have a positive impact on the operating efficiency of the airlines and ground handlers with certainty over where the ULDs should be placed or taken from before, during and after aircraft turning around operations

This project proposes:

- **The provision ULD Stillage to improve Apron utilization and improve operational safety.**

CIP.20.07.032
Unit Load Device Storage - Stillage

Project Details Summary		
Category: Other		
Primary Driver Safety / Stakeholder Requirements	**Secondary Driver** Capacity / Constraints	**Total Capex requirement** €5.0m
Underpinning Assumptions and Cost Benchmarks	• Delivery to be coordinated with other Airfield Capital Projects (e.g. Runway 10/28 Overlay Project, Apron 5H, North Runway Project, Dual Foxtrot Taxiways, Link 6, Link 3 etc.) • Night time working where agreed with operations • Multi construction phasing to minimise disruption to operations	
Opex Impact	• Opex costs shall be minimal and will mainly involve preventative and reactive maintenance of the equipment – Capital and opex costs will most likely form part of a commercial lease agreement between daa and the ground handlers/airlines	
Project Output	• Provision of still for Stakeholders (ground handlers and airlines) for their ULDs resulting in enhanced safety and efficiency on the airfield	
Asset Life	• 15 Years	
Project Delivery Key Milestones		
Provision of ULD Stillage	**2020-2024**	

CIP.20.07.032
Unit Load Device Storage - Stillage

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	10%	€500,000
Construction Costs	75%	€3,750,000
Escalation, Contingency & Design Variability	15%	€750,000
Total		**€5,000,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs (Deemed included above)	
Total - to summary	
Construction Costs	
ULD Stillage	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

B ASSET CARE - MECHANICAL & ELECTRICAL

Appendix B
Asset Care - Mechanical and Electrical (M&E)

Appendix B - Asset Care Mechanical & Electrical (M&E)			
CIP Number	**Project Title**	**Cost €m**	**Pg. No.**
CIP.20.02.001	Medium Voltage (MV) Electrical Network	€6.3	B2
CIP.20.02.002	Second Medium Voltage (MV) Connection Point	€1.0	B5
CIP.20.02.004	Passenger Boarding Bridges (Maintenance & P3 Enhancement) & Fixed Electrical Ground Power	€18.1	B8
CIP.20.02.005	Lift Upgrade Programme - Terminal and Multi-Storey	€6.2	B13
CIP.20.02.006	Airport Water & Foul Sewer Upgrade	€5.0	B16
CIP.20.02.007	Life Safety Systems (LSS) Upgrade Programme Terminal and MSCP Buildings	€10.1	B19
CIP.20.02.008	Terminal Buildings HVAC Upgrade	€17.8	B22
CIP.20.02.009	Campus Buildings: Mechanical, Electrical & LSS Upgrade	€9.5	B25
CIP.20.02.010	Pier 3 Life Extension Works - Mech, Elec and Foul Drainage	€14.0	B28
CIP.20.02.013	Small Energy Projects	€4.8	B31
CIP.20.07.030	Large Energy Project - Photovoltaic Farm	€10.0	B34
TOTAL:		**€102.8m**	

CIP.20.02.001
Medium Voltage (MV) Electrical Network

Project Summary

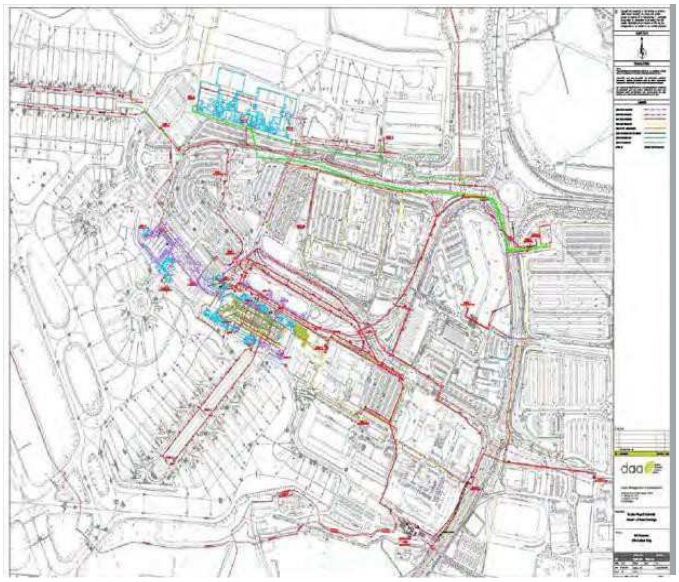
- **This project entails the upgrade and capital maintenance required on the Dublin Airport Medium Voltage (MV) Electrical Network.**

The Dublin Airport Medium Voltage (MV) Electrical Network comprises of a main110kV/10kV Substation at Dardistown and forty-five 10kV/440v substations in various locations around the airport campus. Following a hazard and operability (HazOps) Study and Asset Health Review Workshops, a number of projects have been identified for addressing during the period of 2020 – 2024 under life cycle planning for the MV Network.

Note: The projects have been identified by daa Asset Management, Asset Care & Asset Development personnel along with the daa's external specialist MV Service Provider and specialist sub-contractors.

Works required as part of this project are as follows:

- **Replacement of old end of life sections of cable on the existing MV network. Planned Partial Discharge Testing has been undertaken to determine performance and degradation of the existing system, these tests have identified several sections of cable in need of replacement;**
- **Replacement of old (end of asset life) substation switchgears and transformers;**
- **Replacement of the existing MV SCADA system. The current MV SCADA system was installed in 2008 & 2009 and while still fully operational the system will require a complete replacement as control equipment and software are reaching end of life. Dublin Airport has been advised that the existing SCADA system will no longer be supported efficiently from 2020 (components and software).**



CIP.20.02.001
Medium Voltage (MV) Electrical Network

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Safety	**Total Capex requirement** €6.3m
Underpinning Assumptions and Cost Benchmarks	• Costs based on recently completed projects and consultation with MV specialists. • Works to be carried out in discrete portions to minimise operational disruption • Phased work fronts to be utilised where possible.	
Opex Impact	• No material opex impact.	
Project Output	• Replacement of remaining old section of the Airfield Ring • Replace MV SCADA system • Replacement of 10 No Transformers and 7 No Switch Gear	
Asset Life	• 20years	

Project Delivery Key Milestones		
Airfield Ring	**Q3 2021**	
Switch Gear in Substations 6, 9, 10 & 11	**Q42020**	
Transformers in Substations 5 &19 and Switchgear in Substation 19	**Q42020**	
Transformers in Substations 1 ,8, 6 Bay & Hangar 6	**Q2 2023**	
MV SCADA system	**Q3 2021**	

CIP.20.02.001
Medium Voltage (MV) Electrical Network

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	5%	€339,818
Construction Costs	72%	€4,530,907
Escalation, Contingency & Design Variability	23%	€1,422,934
Total		**€6,293,659**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Electricity Distribution to External Plant and Equipment.	
Telecommunications and other Communication System Connections	
Main Contractors Preliminaries	
Other Development Costs	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.02.002
Second Medium Voltage (MV) Connection point

Project Summary

- **This project proposes that a second electrical supply point be provided at Dublin Airport to protect the entire airport campus from the risk of a single-point failure at the current electrical connection point at Dardistown Substation.**

Electricity is supplied to Dublin Airport via a dual 110kVsupply from ESB Networks. The two supplies come from Finglas and Kilmore, over diverse underground routes. The two supplies enter the airport at the main airport 110kV/10kVsubstation known as Dardistown Substation. A dual supply at 110kV is generally considered secure and dependable but both incoming supplies connect to the Dublin Airport network at the same point in Dardistown, this represents a single point of failure. Although a single point of failure event is unlikely (e.g. catastrophic fire or explosion, aircraft incident or terrorist attack) the operational impact would be significant. The recovery time from a single point failure is likely to be greater than 1 month. This project will provide for feasibility / investigation into the need for a second 110kV substation (location to be a significant distance away from existing single Dublin Airport electricity connection point at Dardistown 110kV substation).

Can existing generators maintain the operation?

While on-site standby generators would keep the airfield and some terminal operations functioning, several of the terminal services would not be operational, nor would campus infrastructure such as car parks and campus buildings. Overall, it would not be possible to continue with normal airport operations. Note: Existing standby generators are designed to keep the airport operational in the event of a short power interruption, this is typically not more than for a two-hour outage.

How many connection points do other Airport have?

In the UK and Europe, the provision of more than one connection point to critical industries is common to ensure business continuity assurance. In the case of airports, Heathrow, Gatwick and Bournemouth airports have two electricity connection points.

CIP.20.02.002
Second Medium Voltage (MV) Connection point

Project Details Summary		
Category: MV Network		
Primary Driver Operational Efficiency	**Secondary Driver** Safety	**Total Capex requirement** €1.0m
Underpinning Assumptions and Cost Benchmarks	• Costs based on similar feasibility study.	
Opex Impacts	• N./A.	
Project Output	• Feasibility / investigation into optimum second MV connection	
Asset Life	• 5 Years	
Project Delivery Key Milestones		
Second Medium Voltage (MV) Connection Point	**Q1 2022**	

CIP.20.02.002
Second Medium Voltage (MV) Connection point

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	100%	€1,000,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€1,000,000**

LEVEL2-CostAnalysis	
Design and Management Costs	Redacted Cost Information
General allowance- Design & Management Costs (Deemed included below)	
Total-to summary	
Construction Costs	
Investigation / feasibility for Elect Mains & Sub Mains Distribution	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.02.004
Passenger Boarding Bridges (Maintenance and Pier 3 Enhancements) & Fixed Electrical Ground Power

Project Summary

- **This project relates to the refurbishment of Passenger Boarding Bridges (PBB's), the provision of a dual airbridge on Pier 3 and the expansion of FEGP at Dublin Airport (including the upgrade of Pier 4 FEGP).**

Passenger Boarding Bridges (Maintenance):

There are currently 27 PBB's at Dublin Airport; 19 on Pier 4 and 8 on Pier 3. This project requests investment in PBBs to carry out the following refurbishment:

- **Replace end of life flooring, weathering and external finishes to the older 6 No. Pier 3 PBB's**
- **Mid-life control systems upgrade for the 19 No Pier 4 PBB's and the 6 No. Pier 3 PBB's to maintain the required level of reliability.**
- **Replace flooring with improved slip resistance to all PBB's and replacement of cable looms in the 19 Pier 4 PBBs.**

Passenger Boarding Bridges (Pier 3 Dual Airbridge):

This project seeks to provide a second dual airbridge docking solution to Pier 3 to meet demand (the growth in widebody docking on Pier 3). The project includes the addition of a new airbridge, rotunda & fixed link. Stand 315 Cha s been identified as the preferred location for the proposed second dual airbridge docking solution. Note: Terminal 1 currently only has one stand (316) with dual-airbridge docking capability. The growth in wide body long-haul operations has resulted in Pier 3 now operating at maximum capacity with scheduled widebody operations every morning.

CIP.20.02.004
Passenger Boarding Bridges (Maintenance and Pier 3 Enhancements) & Fixed Electrical Ground Power

Fixed Electric Ground Power (FEGP):

Fixed Electrical Ground Power (FEGP)units are installed at airports to provide electrical power to aircraft while they are on stand e.g. during turnarounds and while parked e.g. for overnight maintenance activities. This project seeks to provide the following:

- **Replacement of 27 No Pier 4 FEGP units with modern solid-state technology. The existing 27 No units are approaching the end of their asset life. The proposed replacements are more reliable than the existing technology which will result in greater availability, less downtime and lower maintenance costs.**
- **The installation of 33 No FEGP units to stands on Pier 1, Pier 2 and Apron 5G. Expanding the FEGP availability to the wider airfield is a key business development, sustainability and customer objective for Dublin Airport.**

CIP.20.02.004
Passenger Boarding Bridges (PBB) & Fixed Electrical Ground Power (FEGP)

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Customer Experience	**Total Capex requirement** €18.1m
Underpinning Assumptions and Cost Benchmarks	• PBB Costs based on recent costs for PBB Replacement and for similar Upgrade Works • FEGP Costs based on recent tendered rates	
Opex Impact	• Operating costs estimated at €0.3m p.a. this is for increased costs for energy and maintenance.	
Project Output	• Pier3DualAirbridgeInstallation. • Pier 3&4 PBB Control Systems Upgrade 25 No. PBBs • Pier23& 4 PBB Flooring Replacements, Weathering and Cable Loom replacements. • Pier4FEGP Replacements (27noPBBMounted FEGP) • FEGP Installation to Pier1, Pier2 & 5G (33 No Ground Mounted FEGP)	
Asset Life	• 15Years	

Project Delivery Key Milestones	
Pier 3 Dual Airbridge	**Q2 2020**
Pier 3 A/B's Painting and Weathering	**Q1 2020**
Pier 3&4 A/B Control Systems Upgrade 26 No A/Bs	**Q4 2022**
Pier 4 A/Bs Flooring Replacement	**Q1 2022**
Pier 3 A/Bs Flooring Replacement	**Q1 2022**
Pier 4 A/Bs Cable Loom Replacement	**Q1 2024**
FEGP Pier 4 Ground Power Replacements	**Q3 2020**
Pier 2, 11 No FEGP	**Q2 2023**
Pier 1, 8 No FEGP	**Q3 2020**
Apron 5G, 14 No FEGP	**Q3 2024**

CIP.20.02.005
Lift Refurbishment & Replacement Programme for Terminal and Multi Story Buildings

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	3%	€513,995
Construction Costs	76%	€13,706,525
Escalation, Contingency & Design Variability	21%	€3,846,651
Total		**€18,067,171**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General allowance- Design & Management Costs	
Total-to summary	
Construction Costs	
Air Bridges	
Electricity Distribution to External Plant and Equipment (incl. Telecommunications)	
Minor Building Works & Ancillary Buildings	
Main Contractors Preliminaries	
Other Development Costs	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.02.005
Lift Refurbishment & Replacement Programme for Terminal and Multi Story Buildings

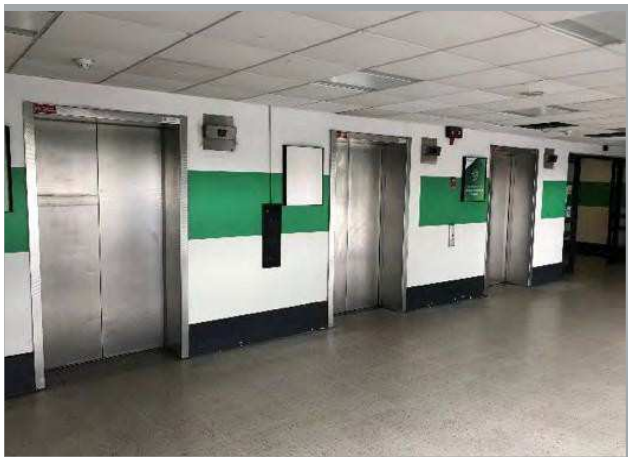
Project Summary

- **This project entails the end of life replacement of passenger and business critical lifts & escalators, refurbishment upgrades, lift door replacements and controller upgrades to lifts and escalators.**

Lifts, Escalators and Travellators are provided in Terminals and Multi Story Carparks in Dublin airport to ensure the efficient vertical circulation of passengers, airport users, staff, baggage trolleys and goods. They are particularly important to meeting the vertical movement requirement of Passengers with Reduced Mobility (PRMs). In the next 5 years many of Terminal 1 Lifts, Escalators and Travellators will have exceeded 25 years in service.

This project seeks to achieve the following:

- **Complete phase 1 of a 2 phase Terminal 1 lift and escalator replacement programme, component upgrade to extend equipment life and reliability and refurbishment of Lifts and escalators to extend asset life. Phase 1 requires the full replacement of 6 lifts & 4 No Escalators. Note: Several of the lift shafts will also require altering to satisfy new EN standards.**
- **Installation of a lift monitoring technology across terminals, carparks and campus buildings to allow for accurate monitoring of lift performance, optimised maintenance, improved availability, instantaneous notice of lift failures and passenger lift entrapments;**
- **Replacement of 13 No Lift Door Replacements for Heavy Goods Lifts across both terminals and door controller upgrades in T1**
- **Complete replacement of 7 lifts and 3 escalators in T1 Multi Story Car Park. These lifts and escalators have in the past received a midlife rebuild but are now end of life.**



CIP.20.02.005
Lift Refurbishment & Replacement Programme for Terminal and Multi Story Buildings

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Customer Experience	**Total Capex requirement** €6.2m
Underpinning Assumptions and Cost Benchmarks	• Costs based on providing fully operational lifts in compliance with current building Regulations	
Opex Impact	• No material opex impact.	
Project Output	• PT1 Lift Replacement Programme (Phase1) • MSCP Blocks A, B & C Lift Replacements (7Lifts) • T1&T2 Lift&Escalator Capital Upgrades (Doors, controls, controllers and Lift Monitoring system) • T1 Escalator Replacement Programme (Phase 1) • T1 MSCP Replacement of 3 No Escalators	
Asset Life	• 20 years	
Project Delivery Key Milestones		
Terminal 1 replacement programme (6 lifts & 4 Escalators)	**Q1 2023– Q2 2024**	
Terminal 1 MSCP replacement programme (7 lifts & 3 Escalators)	**Q1 2021 – Q1 2023**	
Lift Door Replacements (13 No)	**Q2 2020 – Q2 2021**	
Terminal 1 Lift Monitoring system	**Q4 2020 – Q2 2021**	
Upgrading Escalator Controllers (21 No)	**Q3 2020 – Q2 2021**	

CIP.20.02.005
Lift Refurbishment & Replacement Programme for Terminal and Multi Story Buildings

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	6%	€369,000
Construction Costs	79%	€4,920,000
Escalation, Contingency & Design Variability	15%	€950,856
Total		**€6,239,856**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Lifts & Enclosed Hoists	
Escalators	
Other Development Costs	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.02.006
Airport Water & Foul Sewer Upgrade

Project Summary

- **This project entails the replacement, upgrade and refurbishment of critical Airport Campus Utility Mains and Foul Water services.**

Mains Water:

Dublin Airport (DAP) is supplied with potable water from Ballycoolin Reservoir, via a 900mm diameter reducing to a 600mm diameter trunk main. From a connection on the 600mm trunk (owned by DAP) a two-cell reservoir with a 14,500 cubic metres capacity is supplied. The estimated length of DAP potable water mains is 32.5km, while the length of fire main on site is 6.7km. The two pipe networks overall contain approximately 550 sluice valves and 350 fire hydrants. The project for the mains ring entails the following

- **Installation of underground pipework to complete the mains water "Ring" between the terminals and the reservoir as this is currently a single point of failure;**
- **Installation of a Reservoir Mains Bypass to allow mains direct feeding of the Mains Water Ring main (eliminate risk of catastrophic failure or pollution in the mains water reservoir);**
- **Installation of a mains water interconnection from the T2 Domestic Water Storage to the T1 Domestic Water storage tanks to increase the T1 Water Storage capacity;**
- **Replacement of end of life and defective sluice valves, fire hydrants and sections of underground water mains.**

Foul Water:

The foul sewer infrastructure at Dublin Airport comprises a network of small sewer pipes from the two terminals and all campus buildings, a 450mm collector sewer and a 900mm outfall sewer. This outfall sewer in turn enters the Local Authority Owned Swords Road branch sewer, which then joins the Dublin City Council North Fringe sewer. While the main collector and outfall sewers convey under gravity, there are 5 No. ejector stations and 17 No. pumps installed to complete the system. The project for the foul water entails the following

- **End of life replacements of Ejector stations and pumping stations**
- **Replace sewer junctions. The South Apron to the main sewer outfall and an undersized junction between the ALSAA swimming pool and MC78.**

CIP.20.02.006
Airport Water & Foul Sewer Upgrade

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Environmental	**Total Capex requirement** €5.0m
Underpinning Assumptions and Cost Benchmarks	• T2 –T1 Domestic Water Services Project Feasibility completed Q2/2018 • Mains Water Ring Main Completion between Hangar 6 & Reservoir costed as part of 5H • Mains Water Reservoir By pass is a landside project and external rates should be accurate. • Replacement of Defective Valves and Fire Water Hydrants are localised works • Ejector Pump Replacements are localised projects. • Costs based on tender returns for similar works in 2017 and quotations from recently costed works. The replacement costs are based on Asset Care Opex and Capex costs for similar projects delivered in the last 2 years.	
Opex Impact	• No material Opex Impact.	
Project Output	• Mains Water Hydrant &Valve Replacements • Potable Water Resilience & Main Reservoir Upgrade (Terminal 1, Mains Reservoir Bypass, Completion of Ring at Hangar 6) • Replacement of Water Mains (North, South, and West Aprons and Corballis park) adjacent to M50 Garage • Foul System Upgrade Works (South Apron Outfall & Pumping Stations Upgrades)	
Asset Life	• 25 years	

Project Delivery Key Milestones	
Airport Mains, Surface, Fire & Foul Water Upgrades:	**Q1 2020 – Q4 2024**
T1 Domestic Water Resilience	**Q3 2020 – Q3 2021**
South Apron & Corballis Park	**Q1 2021 – Q3 2021**
Mains Water Resilience Reservoir Bypass, Completion of Ring at Hangar 6, Replacement of mains water pipework and valves at North Apron and Hangars	**Q3 2020 – Q1 2022**
Address South Apron Complex Sewer	**Q1 2021 – Q3 2021**

CIP.20.02.006
Airport Water & Foul Sewer Upgrade

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	6%	€296,858
Construction Costs	75%	€3,710,725
Escalation, Contingency & Design Variability	19%	€945,629
Total		**€4,953,212**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Services - Water Mains Supply	
Ex Works - Supply to Building	
Ex Works - Fire mains & hydrant	
Main Contractors Preliminaries	
Other Development Costs	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.02.007
Life Safety Systems (LSS) Replacement Programme Terminal and MSCP Buildings

Project Summary

- **This project entails replacement, upgrade and refurbishment of LSS (Life Safety Systems) infrastructure across terminals, piers and Carparks (adjacent to T1 & T2) to maintain system availabilityas required per regulatory service requirements.**

The LSS systems at Dublin Airport includes fire alarm, sprinkler, PAVA and other ancillary systems associated with fire detection, control and evacuation. The availability of LSS systems require continuous investment to ensure the terminal is fully compliant, failure to carry out these works could lead to non-compliance and subsequent closure. Due to the criticality of the LSS systems, target compliance must be 100%. Works required as part of this project include:

- **Fire Alarm Replacement Programme: Replacement of fire alarm panels and devices inboth terminalsthatwillhaveexceeded or areapproachingendofsupported and maintainable life. This project identifies an upgrade of control and field components to ensure the required level of service is met. Opex and life cycle costs are key drivers behind the need for upgrades**
- **Fire and smoke damper replacement: Execution of Phase 3 smoke damper replacement (as per Michael Slattery Fire Consultants Report). Essential work to ensure complaint building fire compartmentation.**
- **Smoke extract fans: Replacement / upgrade smoke extract fans across both terminals.**
- **Static invertors: Replace end of life static invertors. Critical to ensure safe back-up power for Emergency lighting.**
- **PAVA: Replace Terminal PAVA system as it will be at end of life during the 2020-2024 CIP period. Required replacement of all active equipment (amplifiers, desk microphones, control software) as supportandpartsbecomeobsolete.**

Note: TheTerminal1 Life Safety systems have been upgraded over the previous 2 CIP Periods. The funding sought from this project is to replace ageing assets >10 years old in next CIP period. Also, the Terminal 2 Fire Safety systems will be over 10 years old in the 2020-2024 CIP period.

CIP.20.02.007
Life Safety Systems (LSS) Replacement Programme Terminal and MSCP Buildings

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ProjectDetails Summary	
Category: Capital Maintenance	
PrimaryDriver Regulation	**SecondaryDriver** • End of Life
Underpinning Assumptions and Cost Benchmarks	• Underpinning Assumptions and Cost Benchmarks
Opex Impact	• No material impact on opex costs.
Project Output	• T1Fire Alarm, Static Invertors Replacement& Upgrade Programme • T2 Fire Alarm, Static Invertor and UPS& Ancillary Equipment Replacement & Upgrade Programme. • T1SmokeDamper&SmokeFansReplacement • T1PAVA&SprinklerEquipmentReplacement& Upgrade Programme.
AssetLife	• 10 Years

ProjectDeliveryKeyMilestones	
T1 Fire Alarm Replacement	**Q3 2022– Q2 2024**
T2 Fire Alarm Panels & Device Replacement & MSFD Battery Replacement	**Q2 2023 – Q2 2024**
T1 & T2 Replacement of Static Invertors & Static Invertor Battery's	**Q3 2020 – Q1 2023**
T2 Major UPS Replacements	**Q32020**
T1 Smoke Fan Replacements	**Q2 2022 – Q1 2024**

CIP.20.02.007
Life Safety Systems (LSS) Replacement Programme Terminal and MSCP Buildings

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	7%	€694,567
Construction Costs	72%	€7,260,895
Escalation, Contingency & Design Variability	21%	€2,151,953
Total		**€10,107,415**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General allowance- Design & Management Costs	
T1 Sprinkler System Capacity Review	
Total-to summary	
Construction Costs	
Fire Fighting System (Other)	
Other Development Costs	
Lighting Installation	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.02.008
Terminal Buildings HVAC Replacement Programme

Project Summary

- **This project entails the upgrade of T1 MTHW and BMS Systems and replacement of End of Life Primary and Secondary HVAC Equipment.**

HVAC (Heating Ventilation & Air Conditioning) is required for passenger and staff comfort, heating of domestic water systems and temperature control of communication rooms and all other occupied locations. Works required as part of this project include:

- T1 HVAC Programme: Continuation of upgrade to the T1 Central MTHW HVAC systems with replacement of the boilers, water heaters and associated energy controls. This work also incorporates the replacement of end of life major and minor chiller plants, major pumps, ancillary equipment and to continue the BMS upgrade programme started in the previous CIP.
- Refurbishment of the T1 Energy Centre: This work involves the replacement of primary boilers, CHP, pumps, hot water generators and pipework. The works will also require the hire of a fully controllable temporary boiler and hot water generator equipment for the duration of the works.
- T2 HVAC: The T2 HVAC system will be over 10 years old during the 2020-2024 CIP period, therefore this project includes for the replacement of primary circulation pumps and end of life secondary equipment such as door curtains and fan coil units. The work also includes upgrades to the T2 BMS operating system and field controllers
- T2 CHP Rebuild: The T2 CHP will require a major rebuild as part of this project. Upgrade of operating and control equipment is also required.

The majority of the T1 HVAC distribution is 50 years old and has exceeded end of life.

The replacement of these systems is difficult and disruptive and will result in areas being taken out of service for considerable periods of time. The major areas requiring these works are Terminal 1 Basement, Level 4 & level 5 and Pier 1.

CIP.20.02.008
Terminal Buildings HVAC Replacement Programme

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** Environmental	**Total Capex requirement** €17.8m
Underpinning Assumptions and Cost Benchmarks	• The current projects identified are listed as individual projects. • BMS system: upgrade of T2 system with current versions of software and controllers and to replace the entire T1 system on a phased basis (online with other projects)	
Opex Impact	• Upgraded system in Terminal 1 will deliver a reduction in energy costs of circa €0.15m per annum.	
Project Output	• T1 HVAC Upgrade T1 Energy Centre Refurbishment • / Decentralisation & CHP • T1 BMS Upgrade • T1 Chiller & Ancillary HVAC Equipment Replacements • T1DomesticWater&ElectricalBoardsUpgrade works • T2CHP4MidLifeRebuild • T2BMSUpgrade&MinorHVACPumpsand	
Asset Life	• 20 Years	

Project Delivery Key Milestones	
T1 HVAC Upgrade & T1 BMS Upgrade (1, 2 & 6)	**Q1 2020 – Q2 2024**
T1 Chiller Replacements (3)	**Q3 2020 – Q2 2021**
Terminal 1 Domestic Water Services Upgrade	
T1 & T2 HVAC Minor Equipment Replacement (4,10)	**Q3 2020 – Q3 2021**
T2 BMS Software and Controller Upgrade	**Q2 2021 – Q2 2022**
T2 Minor HVAC Pumps and Equipment Replacement	**Q3 2021 – Q3 2024**

CIP.20.02.008
Terminal Buildings HVAC Upgrade Programme

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	6%	€1,002,459
Construction Costs	75%	€13,366,125
Escalation, Contingency & Design Variability	19%	€3,412,539
Total		**€17,781,123**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Domestic Water Distribution	
Central Heating & Cooling: T1 MTHW upgrades (incl. T1 Energy Centre refurbishment)	
Central Heating & Cooling: Other	
Ventilation Systems: Central Ventilation	
Ventilation Systems: Local & Specialist Ventilation	
Ventilation Systems: BMS System	
Elec: Mains & Sub mains distribution	
Elec: Local Generation Systems	
Minor Build Works and Ancillary Buildings	
Main Contractor Preliminaries	
Total-to summary	
Escalation, Contingency & Design	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.02.009
Campus Buildings - Mech., Elec. & LSS Upgrade

Project Summary

- **This project identifies the required upgrades of Mechanical, Electrical and Life Safety Systems to the DAP Campus buildings to ensure buildings are compliant with Regulatory Standards and facilities are fit for use (maintained on a risk-based approach).**

The Dublin Airport (DAP) strategy for maintaining Campus buildings has been to maintain and refurbish the facilities and services where necessary to improve asset performance and satisfy tenant requirement. For all refurbishments, the current approach is to deliver upgrade works to a minimum technical requirement whilst encouraging and utilising new equipment, materials and technology to reduce Whole Life Cycle Costs and improved tenant comfort and the sustainability of the facility.

The two key components of this project are as follows:

- **Life Safety Systems: The upgrade of Life Safety Systems and other statutory systems are prioritised as they are a legal requirement. This project requires LSS fire alarm replacement in a number of buildings.**
- **M&E Systems (predominately HVAC): The upgrade of campus buildings HVAC systems is required to ensure Dublin Airport meets customer service and regulatory Energy and Sustainability targets. The investment approach is centred around life cycle analysis, reinvestment and intervention where failure is likely to occur. The projects identified are mainly the replacement of local boilers and heating systems, incorporation of low level controls and replacement of local electrical distribution boards and re-wiring where required.**

CIP.20.02.009
Campus Buildings - Mech., Elec. & LSS Upgrade

Project Details Summary		
Category: Capital Maintenance		
Primary Driver Regulation	**Secondary Driver** End of Life	**Total Capex requirement** €9.5m
Underpinning Assumptions and Cost Benchmarks	• Upgrade costs (for most projects) are based upon minimum technical solutions delivered by asset care to achieve regulatory, sustainability and tenant requirements.	
Opex Impact	• Nil opex impact as reduction in energy costs will be offset by a reduction in energy recharges passed onto concessionaires.	
Project Output	• Mechanical, electrical and life safety systems compliant campus buildings as per regulatory, sustainability and tenant requirements.	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Campus Buildings – Mech., Elec, & LSS upgrades:	**Q1 2020 – Q4 2024**	

CIP.20.02.010
Pier 3 Life Extension Works - Mech, Elec and Foul Drainage

LEVEL1-Cost Analysis	Represents	Total
Design and Management Costs	6%	€573,705
Construction Costs	77%	€7,262,086
Escalation, Contingency & Design Variability	17%	€1,640,619
Total		**€9,476,410**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Campus Small Energy Projects	
Campus building LSS replacement Projects	
Campus building Elec MDB replacement programme	
Lighting Upgrades to Campus Buildings	
Landside Base Expansion	
Collinstown House	
Cloghran House	
Others (31 other buildings)	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.02.010
Pier 3 Life Extension Works - Mech, Elec and Foul Drainage

Project Summary

- **This project proposes life extension works to Pier 3 to ensure the facility meets current Health and Safety requirements and improves the overall passenger experience. The project includes the replacement of M&E plant and equipment and upgrade of foul waste system.**

Pier 3 was constructed in the early 1970's and has been continually maintained over this period to ensure an acceptable level of service whilst maintaining statutory requirements with a number of passenger experience capital projects completed during the last CIP. The two key components of this project are as follows:

Mech & Elec – Plant and Equipment:

One of the key drivers behind this upgrade project is the non-compliance of the existing Pier 3 central service core. The Pier 3 M&E services plant and equipment (in service since the early 1970's) are contained within a central services core which is now categorised as a confined space as per the current Building Regulations. Subsequently access and egress to the area is now restrictive. This project proposes:

- **Decentralisation and replacement of mechanical and electrical equipment: All mechanical equipment is end of life and it is proposed to replace and relocate to available roof. A new external services riser is required to connect the plant and equipment.**
- **Note: The project will require careful planning and co-ordination as the Pier operation and level of service cannot be interrupted and tie ins to existing primary M&E services will require specialist intervention.**
- **Relocation and upgrade of electrical services: All electrical services are to be moved out of the core with a safe access central electrical switch room provided. Full re- wire of primary and secondary electrical services and local distribution boards is also required.**

Foul Waste:

The collection of foul waste also requires re-design in Pier 3. The current design comprises of a below ground level retention tank which is accessed via an internal 'bolted lid'. The location of tank is now categorised as a confined space as per current Building Regulations. The tank also possesses a biological hazard as the foul waste becomes pressurised and has in the past caused local soiling. The project proposes:

- **Relocate foul waste service: All foul waste services in Pier 3 are to be relocated to an external ramp secondary storage tank / ejector station with connectivity to the main head of stand foul sewer.**

CIP.20.02.010
Pier 3 Life Extension Works - Mech, Elec and Foul Drainage

Project Details Summary		
Category: Capital Maintenance		
Primary Driver End of Life	**Secondary Driver** • Customer Expectation	**Total Capex requirement** €14.0m
Underpinning Assumptions and Cost Benchmarks	• Upgrade to be compliant with current health and safety standards. • Large areas of the Pier require complete re-wiring.	
Opex Impact	• No material impact on opex.	
Project Output	• T1 Pier 3 HVAC Replacement • T1 Pier 3 Electrical Replacement • T1 Pier 3 Drainage/Foul Sewer Upgrade	
Asset Life	• 15 years	
Project Delivery Key Milestones		
M&E Plant and Equipment	**Q2 2021 – Q3 2023**	
Foul Waste upgrade	**Q2 2021 – Q2 2023**	
Pier 3 Façade upgrade	**Q2 2023 – Q2 2024**	

CIP.20.02.010
Pier 3 Life Extension Works - Mech, Elec and Foul Drainage

LEVEL1-Cost Analysis	Represents	Total
Design and Management Costs	9%	€1,260,918
Construction Costs	72%	€10,087,343
Escalation, Contingency & Design Variability	19%	€2,695,212
Total		**€14,043,473**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
T1 Pier 3 HVAC Replacement	
T1 Pier 3 Electrical Replacement	
T1 Pier 3 Drainage /Foul Sewer Upgrade incl. Sump/Pumps and Lines	
Main Contractor Preliminaries	
Design Development	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.02.013
Small Energy Projects

Project Summary

- **This project proposes using new energy efficient and sustainable equipment and control systems for the purposes of improving energy consumption, reducing energy cost, reducing carbon emissions, improving air quality and reducing noise. The project entails a range of works across Energy Utilities, HVAC, Transport and Lighting that will replace, upgrade and install new systems across the campus.**

Compliance with recent legislation and policy statements will require Dublin Airport to upgrade existing systems and equipment to improve energy consumption and environmental performance. At a time of increased cost, market volatility and climate change awareness the co-benefits of cost, sustainability and social responsibility represented by the projects cannot be overstated. The most notable legislation and policy statements applicable to DAP include:

- **Clean Energy for all Europeans (Clean Energy Package, CEP)**
- **National Energy Efficiency Action Plan (NEEAP) and National Mitigation Plan (NMP)**
- **iSEM (Integrated Single Electricity Market)**

The works associated with this project include:

- **Terminals Lighting Upgrades: Continuation of the conversion of the Terminal buildings to full LED lighting systems.**
- **Campus and Road Lighting Upgrades: Upgrade of the road and street lighting around the campus to latest LED technology.**
- **Electrical Demand Management: The provision of technology and control systems to reduce Time of Use (TOU) electrical tariffs at peak times on campus. The technologies include battery storage systems and microgrid management that will also allow for future revenue generation. Implementation of the works will allow a reduced electrical recharge rate to tenants and concessionaires on campus.**
- **Thermal Demand Management: The continued improvement in thermal infrastructure across stand-alone campus buildings. Retrofit of oil to natural gas for heating, and the use of thermal storage systems and improved building management systems to reduce cost and maximise efficiency. Conversion to natural gas also facilitates the emergence of bio gas onto the nation gas network.**
- **Gas & Water monitoring and Power Generation: Telemetry and automatic monitoring systems to ensure continuous improvement. Localised and smaller distributed power generating systems to be used to ensure minimal reliance on the main electrical network.**

CIP.20.02.013
Small Energy Projects

Project Details Summary		
Category: Capital Maintenance		
Primary Driver Regulation	**Secondary Driver** Environmental	**Total Capex requirement** €4.8m
Underpinning Assumptions and Cost Benchmarks	• Costs based on recently completed project Consultation with industry	
Opex Impact	• Energy savings of approx. €300k/annum will be delivered by the project.	
Project Output	• Terminals Lighting Upgrades • Campus road and street lighting upgrades • Battery Storage and microgrid control systems • Heating and thermal energy storage systems • Localised small-scale power generation at remote buildings • Gas and Water Network Telemetry Upgrades, Bore Well provision • Revenue stream from electrical demand and capacity markets.	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Small Energy Projects – Dublin Airport	**Q1 2020 – Q4 2024**	

CIP.20.02.013
Small Energy Projects

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	7%	€337,099
Construction Costs	93%	€4,494,656
Escalation, Contingency & Design Variability	0%	€0
Total		**€4,831,755**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Campus Lighting LED upgrades	
Terminals LED Upgrades	
Electrical Demand Management	
Thermal Demand Management Projects	
Power Generation	
External Street Lighting Systems	
Main Contractor Prelims	
Other Development Costs	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.07.030
Large Energy Project – Photovoltaic Farm

Project Summary

- **This project entails developing and integrating a Solar PV Farm to generate electricity at Dublin Airport. The installation will provide opex cost reduction, facilitate long term price certainty, revenue generation capacity and compliance with regulatory energy and carbon emissions targets.**

This project is to develop a 40-45-acre Solar PV Farm to supply electricity to Dublin Airport to reduce its on-site import of peak cost electricity and energy/carbon footprints.

Since commencing engagement with the voluntary ACI Airport Carbon Accreditation (ACA) Scheme in 2009, Dublin Airport's footprint decreased by 27% from a baseline of 36,917 tonnes CO2 in 2011 to 27,018 tonnes CO2 in 2016, and it has recently committed to making the significant step of achieving carbon neutrality under the UNFCC and ICAO recognised ACA scheme by 2020.

Dublin Airport entered the public sector energy monitoring and reporting scheme with SEAI in 2012 to reduce its energy consumption by 33% by 2020 and is on target to achieve this through implementation of a range of projects including replacing existing lighting systems with more energy efficient LED technology, installing more efficient heating and cooling systems, and improved building management systems to assist in the active management of energy consumption. The new phase of the public-sector scheme will apply from 2020-30 with targets based on average consumption from 2016-2018. Dublin Airport achieved certification in 2016 under the ISO 50001 standard for its energy management systems and has implemented energy management processes to ensure this will be retained in future.

Dublin Airport has already implemented a small scale Solar PV array as part of a shift towards renewable energy generation and is currently generating 90,000KWh per annum.

As these technologies have matured it has become feasible to use lands at Dublin Airport for the development of new energy facilities, which could be of benefit to the wider Fingal region. Furthermore, with energy generating and/or storage facilities developed at the airport, the capability to offset energy import from the grid will reduce peak energy demand and associated energy consumption and costs. The ability to export to the grid and provide demand reduction services will provide further revenue generation capacity and the ability for Dublin Airport to maintain its lower cost of electricity to the campus and its tenant's.

CIP.20.07.030
Large Energy Project – Photovoltaic Farm

Project Details Summary		
Category: Other		
Primary Driver Sustainability / Regulation	**Secondary Driver** Revenue Opportunity (Opex Offset)	**Total Capex requirement** €10.0m
Underpinning Assumptions and Cost Benchmarks	• Costs assumptions based on costs for similar project within the airport campus – PV Solar supply at reservoir at Dublin Airport. • Consultation with industry specialists and collaborative partners ESB and Enernoc.	
Opex Impact	• Opex cost savings of up to €0.6m on energy per annum. • Potential future carbon tax costs.	
Revenue Impact	• Revenue Generation of €0.13m per annum through electrical demand and capacity markets.	
Project Output	• Supply of 4.5% of Dublin Airport overall energy requirements and 9.3% of its electrical requirements. • Assist in compliance with regulatory Energy Targets applicable to daa. • Effective Energy hedge to secure long term lower price of electricity for daa and tenants of the airport campus. • Reduction in Carbon Emissions from airport operations. • Assist with compliance of Masterplan development with new Building Regulations and Near Zero Energy Buildings legislation.	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Initial Set-up:	**Q3 2020**	
Planning Permission:	**Q3 2021**	
Construction Commence:	**Q1 2022**	
Construction complete:	**Q4 2023**	

CIP.20.07.030
Large Energy Project – Photovoltaic Farm

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	10%	€1,000,000
Construction Costs	75%	€7,500,000
Escalation, Contingency & Design Variability	15%	€1,500,000
Total		**€10,000,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Supply & Installation of 1kw PV panel and ancillaries (8m2 panel)	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

C CAPACITY

Appendix C
Capacity

Appendix C - Capacity		Terminal 1	Terminal 2	Airfield	Pg. No.
CIP Number	Project Title	Cost €m			
CIP.20.03.004	Gate Post 9 Expansion (West Lands)			€9.2	C2
CIP.20.03.006	Terminal 1 Kerbs	€13.6			C6
CIP.20.03.011A	Terminal 1 Check-In	€30.2			C10
CIP.20.03.012	Terminal 1 Central Search - Relocation to Mezz Level	€42.6			C13
CIP.20.03.013	Terminal 1 Departure Lounge (IDL) Reorientation and Rehabilitation	€42.4			C17
CIP.20.03.015	Terminal 1 Baggage Reclaim Upgrade & Alterations	€22.2			C21
CIP.20.03.016	Terminal 1 - Rapid Exit Arrivals	€2.2			C25
CIP.20.03.017	Terminal 1 Shuttle, bus lounges and injection points	€2.8			C28
CIP.20.03.018	Terminal 1 - Immigration Hall	€1.5			C31
CIP.20.03.020	Terminal 2 Check-in Area Optimisation		€14.8		C34
CIP.20.03.021	Terminal 2 Central Search Area Expansion		€5.6		C38
CIP.20.03.028	Terminal 2 Early bag store and transfer lines		€27.9		C41
CIP.20.03.029	New Pier 5 (T2 and CBP Enabled)		€323.6		C45
CIP.20.03.030	Expansion of US Pre-Clearance Facilities		€50.3		C49
CIP.20.03.031	South Apron Expansion (Remote Stands, Taxiway and Apron)		€89.8		C53
CIP.20.03.033A	Enablement of Pier 3 for Precleared US bound passengers		€8.5		C57
CIP.20.03.034	Pier 3 Immigration (Upgrade & Expansion)	€1.4	€4.3		C61
CIP.20.03.036	North Apron Development – Pier 1 Extension (Module 1) & Apron 5H PBZ	€175.3			C65
CIP.20.03.043A	Terminal 1 Piers - New Airbridges (6NBE / 3WB)	€33.9			C70
CIP.20.03.049	De-icing pad at Runway 10R			€5.0	C74
CIP.20.03.051B	West Apron Vehicle Underpass - Pier 3 Option			€171.0	C77
CIP.20.03.052	Surface Water Environmental Compliance	€25.5	€25.5		C81
CIP.20.03.054	New Remote Apron 5M - 17 NBEs	€54.1	€18.0		C86
CIP.20.03.057	Airside GSE Charging Facilities (Ground Handlers)			€5.0	C89
CIP.20.03.071	Hydrant Enablement - Pier 2 & 3			€23.7	C92
TOTAL		€447.8	€568.4	€213.9	

CIP.20.03.004
Gate Post 9 Expansion (West Lands)

Project Summary

- **Dublin proposes the construction of a new Gate post similar to the existing gate post 4 with dedicated lanes for construction traffic to improve the efficiency of works on the West campus of the airport.**

The existing Gate Post 9 opened in January 2016 as part of the delivery of the CPSRA project and was designed and delivered with a life of just 7-8 months to allow construction of a permanent gate post. The approval for continued use of the temporary post was extended to July 2020 when the original 'permanent post' solution did not proceed. This proposed development will provide access to the CPSRA for all stakeholders operating West of Runway 16-34 and should safeguard for future expansion to increase capacity at the post for all airport and construction operations.

While the primary driver to construct a new gate post 9 is a security requirement, there are also operational benefits/drivers;

- **The existing Gate post 9 was delivered as a temporary solution in lieu of permanent gate post at Westlands. It continues to operate under a temporary approval from IAA, which has been extended until July 2020 on the premise that the permanent solution (this project) is delivered before the approval expires.**
- **The temporary gate post was purchased as a used modular unit with an intended life of 7-8 months. As such, it is now incurring additional OPEX costs to maintain, as it was not designed to facilitate the volume of throughput that it is now experiencing.**
- **Operational demand is also exceeding capacity, with numerous conflicts between cargo and construction traffic being reported, which is also resulting in delays to the cargo operations. This reinforces the requirement for dedicated construction lane(s)**
- **The requirement to permanently relocate additional cargo operators to the West Campus in the short-medium term to release valuable stand capacity East of Runway 16-34 will further increase the volumes of traffic accessing the airfield via Gate 9. This includes conflict between operating times of cargo traffic, which is driving the requirement for a second entry lane. The relocation of some cargo operations is currently contingent on the provision of a second entry lane.**

This project will consist of a 5 lane Vehicle Check Point with 4 inbound lanes and 1 outbound lane. 2 no. inbound lane will be designated for construction traffic only with the other 2 inbound lanes for other airport operations. The lanes will be covered by a canopy and will be provided with all the equipment to function as a vehicle airlock. A control post with all the security requirements will be constructed.
The facility will be equipped with all the necessary security equipment.

CIP.20.03.004
Gate Post 9 Expansion (West Lands)

The design of the VCP will be similar to the existing VCP4 which has proven to perform more than adequately. The area will include a car park and equipped staff facilities to provide a comfortable working environment.

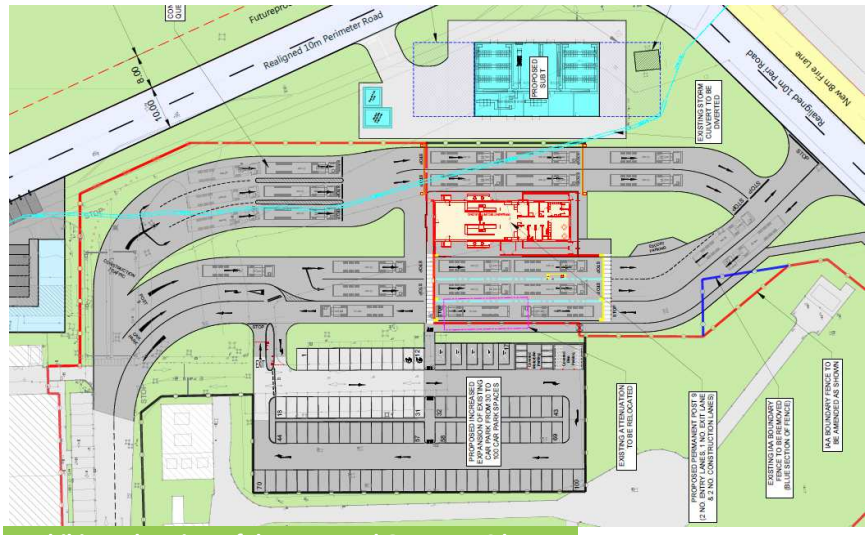

Exhibit 1. Plan view of the proposed Gate Post 9 layout

CIP.20.03.004
Gate Post 9 Expansion (West Lands)

Project Details Summary		
Category: Capacity Development		
Primary Driver Capacity Constraint	**Secondary Driver** Security	**Total Capex requirement** €9.2m
Underpinning Assumptions and Cost Benchmarks	Cost assumptions: (refer to general cost assumptions) • Contingency is calculated at 15% of the TDC plus Design & Management costs Cost Exclusions: (refer to general cost exclusions) • This cost does not include the requirement to re-locate and infill existing attenuation tank (132m2) built for the CPSRA project in the event of further expansion of the gate.	
Opex Impact	• Increased opex costs of €0.6m p.a. for additional resources manning the increased number of lanes at the gate post.	
Project Output	• A 5 lane Vehicle Check point. 4 inbound lanes and 1 outbound lane. 2 inbound lane will be designated for construction traffic only with the other 2 inbound lanes for other airport operations. • Control post with all security requirements • Perimeter Security mitigations – boundary breach etc. • Entry and exit barrier control with panic alarm • ASU stations • Airside layby for escort vehicles to pull in/wait • Hostile vehicle mitigations at the 90 degree turn to the post. Delta Blocks • Security equipment for scanning pedestrians / drivers (2 lanes) • Car parking	
Asset Life	• 20 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q3 2018**	
Planning complete	**Q2 2019**	
Detailed design complete	**Q1 2019**	
Procurement complete	**Q2 2019**	
Construction commence	**Q2 2019**	
Construction complete	**Q1 2020**	
Project handover	**Q2 2020**	

CIP.20.03.004
Gate Post 9 Expansion (West Lands)

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	**13%**	€1,190,000
Construction Costs	**64%**	€5,950,000
Escalation, Contingency & Design Variability	**23%**	€2,090,000
Total Installed Cost (TIC)	**100%**	**€9,230,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Facilitation & Demolition Works	
Substructure	
Superstructure - Frame	
Superstructure - Others	
Internal Finishes	
Fitting /Furnishings & Equipment	
Services	
External Works	
Main Contractors Preliminaries	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.006
Terminal 1 Kerbs

Project Summary

- **Dublin Airport proposes the relocation of Terminal 1 drop-off kerbs to the other side of the Multi Story Car Park as envisaged in the Masterplan and retrofitting of the atrium to become the new gateway to the airport.**

Terminal 1 kerb side departures level traffic is currently beyond capacity. To accommodate future growth the drop off kerb requires lengthening and expansion.

A solution is required which considers potential future trends in security regulation. It is anticipated that a minimum clearance distances between public cars and the façade entrance to terminals may become mandatory, as it has in the UK. It is therefore prudent to develop additional kerb capacity remote from the terminal.

This area is identified in the Masterplan as the Ground Transport Centre (GTC) it is an important multifunctional public realm that will become the main access point to the airport. This area will contain the future metro station, main drop-off pick-up facilities, short-term multi-story carparks and coach services. Operational efficiency, commercial offering and architectural quality of this space will all be critical to its success.

This project proposes to build the following components as a first phase to developing the GTC to become the new gateway to the airport:

- **Relocation and increase in the Terminal 1 kerbs drop off to the other side of the multi-storey car park (MSCP) where bussing services are currently located**
- **A refurbished MSCP atrium space with passenger segregation to become the new entrance to Terminal 1**
- **Reconfiguration of vehicle access and pedestrian routes to and from the GTC and the main road network around the airport**

This proposal has the added benefit that it safeguards against future regulation change by moving public vehicles away from the face of T1. Public vehicles will now set down where the busses are currently located, and the bus bays will be reconfigured to a more space efficient new saw-toothed bay configuration to accommodate the displaced bussing services. This project is integrate with the proposed MSCP expansion.

The existing Terminal 1 kerbsides will be reduced at departures and will be used for registered vehicles only (Airport Police, hotel buses etc.). At arrivals level taxi and commercial bus services will remain as existing.

CIP.20.03.006
Terminal 1 Kerbs

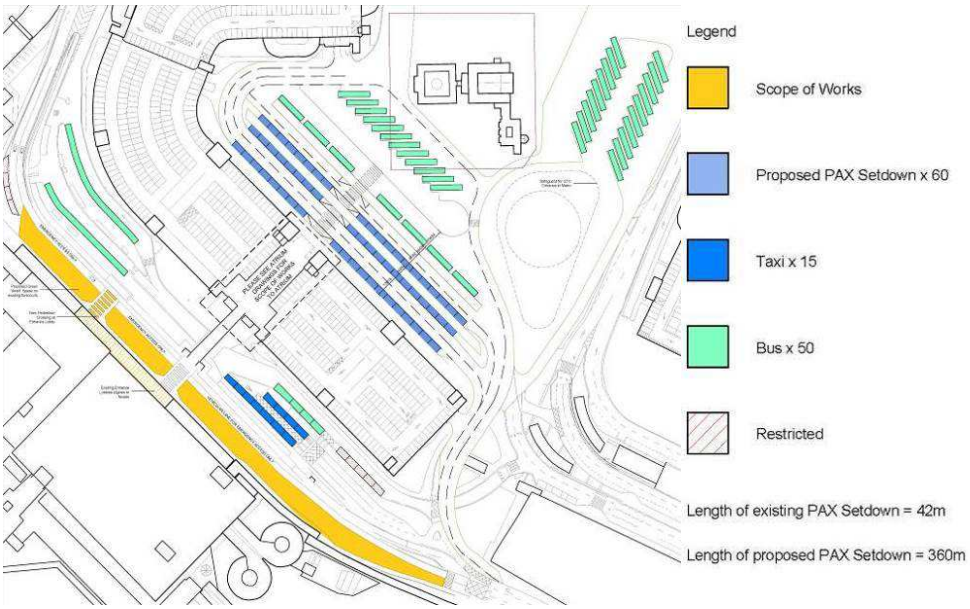

Exhibit 1. Overall view of the new proposed GTC phase 1

Another focus area of this project is the retrofitting of the central Atrium to the MSCP building. This space will be enhanced to become the new entrance to the terminal with new stair lifts for passenger segregation to Departures and arrivals levels.

New canopies extending from the MSCP atrium into the GTC and Terminal 1 forecourt will provide shelter all along the passenger circulation area.

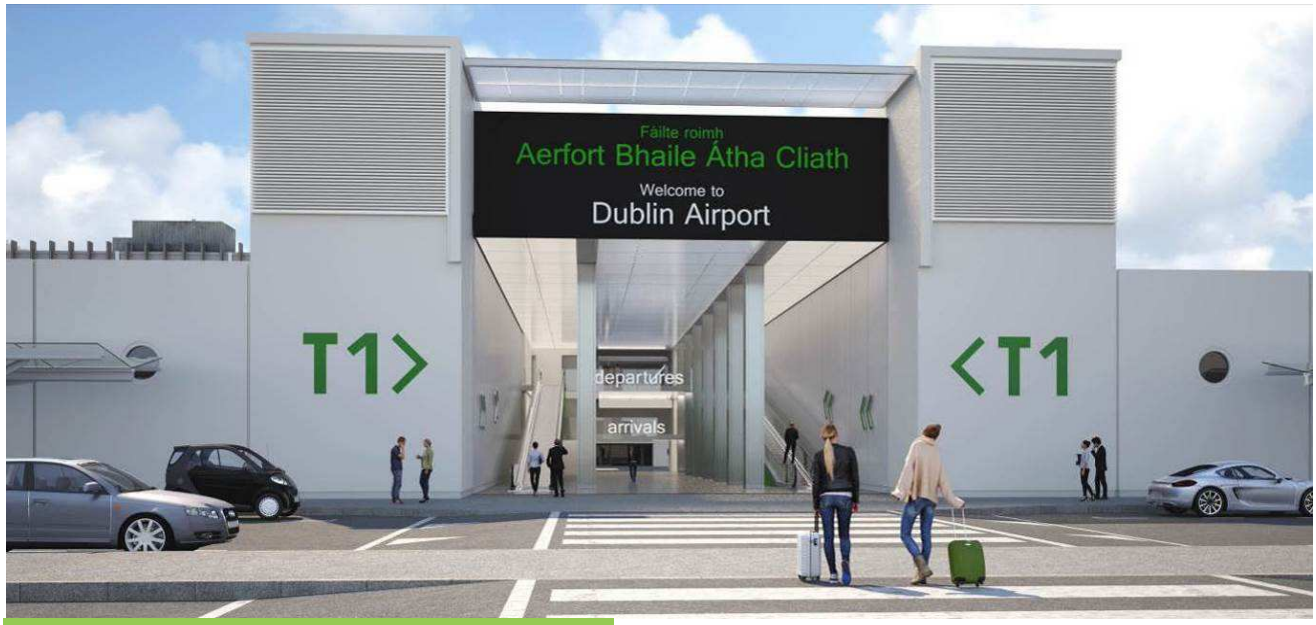

Exhibit 2. New entrance to terminal via MSCP atrium

CIP.20.03.006
Terminal 1 Kerbs

Project Details Summary		
Category: Capacity Development		
Primary Driver Capacity Constraint	**Secondary Driver** Security	**Total Capex requirement** €13.6
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • Provision of additional private vehicle and coach set down areas • Safeguarding for potential future standoff distance • Safeguards for future link to Metro Pavilion • Retains Church (but impacts parking) • Reduced dwell time to buses Cost assumptions: (refer to general cost assumptions) • Does not include for potential disruption from the development of or final design of potential Metrolink station • Contingency is calculated at 15% of the TDC plus Design & Management costs • Development in coordination with MSCP Cost Exclusions: (refer to general cost exclusions)	
Opex Impact	• Increased kerb lengths will require additional policing; however, it will be accommodated within current resources.	
Project Output	• Departures forecourt split between existing forecourt and new private vehicle parking in horseshoe • Existing forecourt retained for premium product and registered vehicles • New set down and coach parking in horseshoe • Ground level routing for passengers with implementation of zebra crossings • Improved passenger flows into Terminal 1	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q4 2018**	
Planning complete	**Q1 2020**	
Detailed design complete	**Q4 2019**	
Procurement complete	**Q4 2020**	
Construction commence	**Q4 2020**	
Construction complete	**Q4 2021**	
Project handover	**Q2 2021**	

CIP.20.03.006
Terminal 1 Kerbs

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€1,711,999
Construction Costs	63%	€8,559,996
Escalation, Contingency & Design Variability	25%	€3,371,783
Total Installed Cost (TIC)	**100%**	**€13,643,778**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Facilitation & Demolition Works	
Buildings	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.011A
Terminal 1 Check-In (Partial Shoreline)

Project Summary

- **Dublin Airport proposes the redesign of the check-in hall to provide new check-in capacity, and modifications to the reconfigured circulation areas.**

With anticipated growth in passenger numbers, as well as the increasing number of airlines operating at the Airport, the existing check-in provision will not meet anticipated demand. Increased demand drives the requirement for more check-in positions, self-service kiosks (SSK's), and bag drop points and queueing areas. An increase in the number of passengers transiting through to the central search area also requires improved circulation areas within the hall.

This project falls within the Terminal 1 development and is driven by the following:

- **Check-in demand requirements and hall size requirements**
- **SSK and bag drop requirements**
- **Circulation areas to service increase passenger numbers and desks, SSK's and bag drop positions**

This project proposes the reinstatement of a check-in island 1, (Area 1 and 2). The project provides a single island configuration with new check-in desks and additional SSK's throughout the hall. It also allows for the modification of entrance lobbies in the future to increase circulation space within the hall.

In addition, it reconfigures the right-hand side of the fall to a shoreline configuration. This configuration allows for improved circulation and flexibility of check in operations. Given the reduced number of desks it requires a greater up take in the use of SSK's than the alternate island configuration. Located behind the proposed seven island check-in desks additional space will be allocated for fast track security lanes.

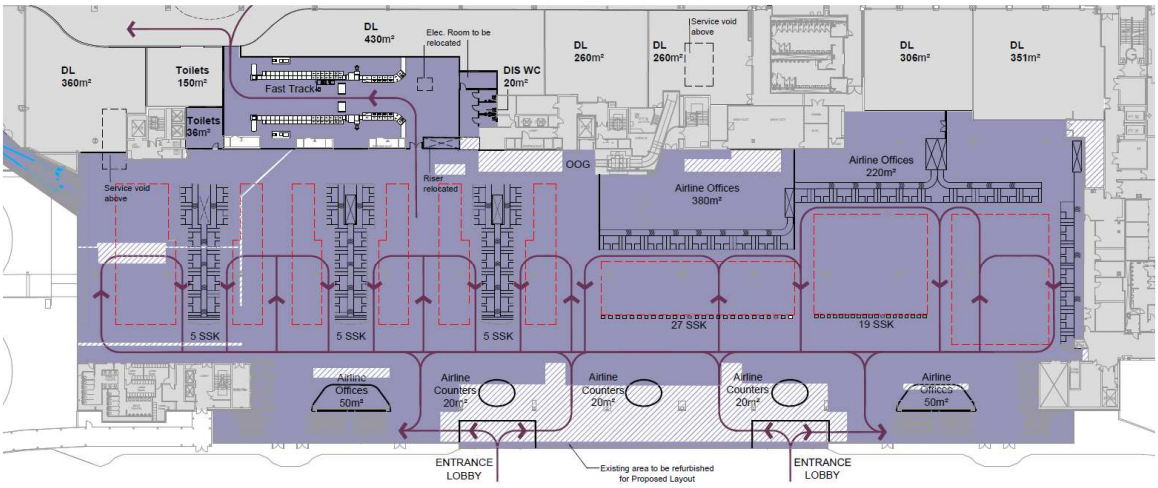

Exhibit 1. Proposed layout of check in hall in Terminal 1

CIP.20.03.011A
Terminal 1 Check-In (Partial Shoreline)

Project Details Summary		
Category: Capacity Development		
Primary Driver Business Volume Growth	**Secondary Driver** Capacity	**Total Capex requirement** €30.2m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • Provision of additional check-in processing capacity • Greater uptake in SSK to accommodate demand • Create better access, wayfinding and improve passenger flows within the Check-Infacility • Existing security to be relocated to mezzanine level Cost assumptions: • Flooring to be made good • Minor allowance included for existing check in area and existing check in island counters to cover maintenance/very light touch refurbishment • Contingency is calculated at 15% of the TDC plus Design & Management costs • Cost of fast track security costed in T1 IDL project sheet CIP.20.03.013 Cost Exclusions: (refer to general cost exclusions) • Façade development as shown – forms part of future phased development	
Opex Impacts	• Increase of €0.3m p.a. for servicing of additional check-in desks.	
Project Output	• Check-In Island Area 1-2 reinstated, adding 20 new positions • New Shoreline configuration to right hand side of hall, to create better passenger movement and queuing space • SSK's provided at front of shoreline configuration • New Landside Food and beverage at check-in level • Airline back of house Offices located to rear of shoreline configuration • Airline/ Ticketing Offices kiosks provided to front of concourse • Entrance Lobbies pulled forward to align with T1 façade	
Asset Life	• 10 years	

CIP.20.03.011A
Terminal 1 Check-In (Partial Shoreline)

Project Delivery Key Milestones		
Feasibility/outline design complete	Q4 2018	
Planning complete	Q3 2020	
Detailed design complete	Q3 2021	
Procurement complete	Q3 2021	
Construction commence	Q3 2021	
Construction complete	Q2 2023	
Project handover	Q2 2023	

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€3,794,000
Construction Costs	63%	€18,968,000
Escalation, Contingency & Design Variability	25%	€7,471,000
Total Installed Cost (TIC)	100%	€30,233,000

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Refurbishment / Relocations	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.012
Terminal 1 Central Search – Relocation to Mezzanine level

Project Summary

- **Dublin Airport propose the relocation of the already congested central search area (CSA) to mezzanine level of T1**

During peak demand hours, the existing central security search has reached its capacity limit, resulting in a below standard service level. Additionally, the adjacent facilities of departure lounge and check-in are nearing their respective capacity limits.

In addition, there is no further space on the same level in which to extend when future technology requirements, such as C3 scanners, and anticipated passenger growth numbers (increased queuing), are considered.

To achieve an appropriate level of service, the anticipated overall space required exceeds the existing floor area available. Therefore, it is proposed to relocate central search to the mezzanine level above to provide a more seamless security screening process.

This project will be part of Terminal 1's development and is driven by the following:

- **The need to provide additional security processing capacity**
- **Safeguard for future body scanning demand**
- **Provide standard C3 scanning equipment**
- **Provide space for the growth of the check in area and the departure lounge**

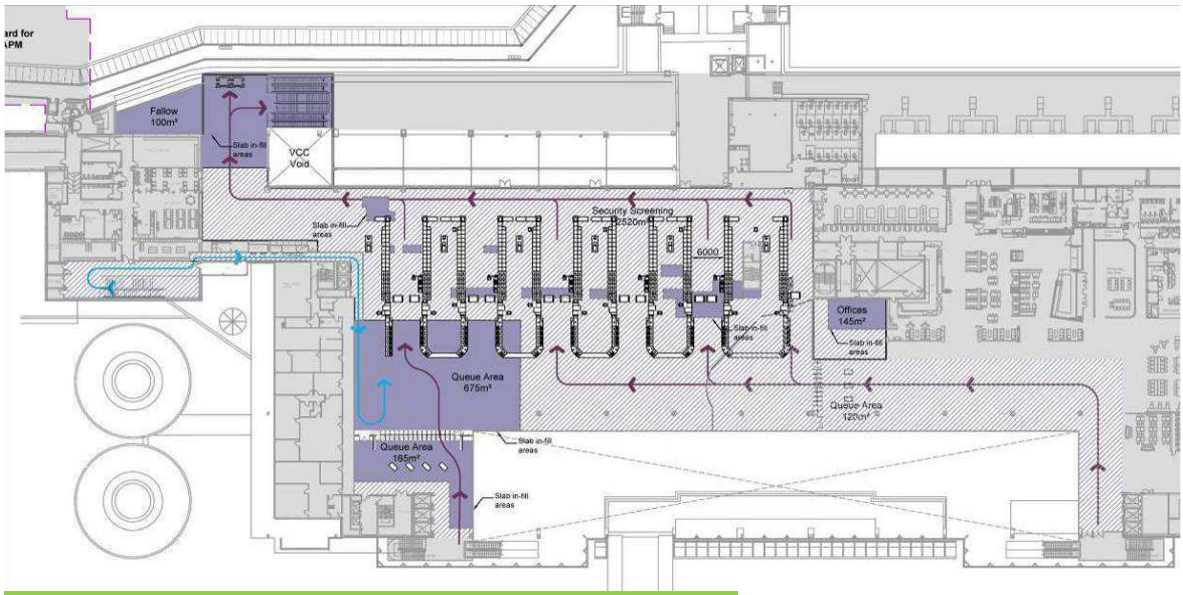

Exhibit 1. Layout of new proposed CSA at mezzanine level in Terminal 1

CIP.20.03.012
Terminal 1 Central Search – Relocation to Mezzanine level

The mezzanine floor will be enlarged, through the extension of the floor slab, with new floored areas to accommodate 11 ATRS security screening lanes. The floor will have two main dedicated check-in level access points; the first at the existing food court escalator and lift core, and the second escalator accessible from the eastern side of the check-in area. Main Passenger flows are further modulated through two security combs to enter the central queuing area. The passengers will access the extended departure lounge area (CIP 20.03.013) via a new vertical circulation core.

Exhibit 2. Layout of new proposed CSA at mezzanine level in Terminal 1

CIP.20.03.012
Terminal 1 Central Search – Relocation to Mezzanine level

Project Details Summary		
Category: Capacity Development		
Primary Driver Capacity	**Secondary Driver** Business Volume Growth	**Total Capex requirement** €42.6
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • IAA submission required, and approval needed prior to implementation • Central Search facility to move to Mezzanine level • Slab infill at mezzanine level required • Safeguarding for increased body scanning demand Cost assumptions: (refer to general cost assumptions) • Contingency is calculated at 15% of the TDC plus Design & Management costs Cost Exclusions: (refer to general cost exclusions) • Costs exclude new security equipment	
Opex Impact	• Opex increase of €0.8m p.a. for additional Customer Service Assistants.	
Project Output	• Space for 25m ATRS lanes added • Slab infill as indicated • New Vertical Circulation Core (VCC)	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q4 2018**	
Planning complete	**Q1 2020**	
Detailed design complete	**Q4 2019**	
Procurement complete	**Q2 2020**	
Construction commence	**Q4 2020**	
Construction complete	**Q4 2021**	
Project handover	**Q4 2021**	

CIP.20.03.012
Terminal 1 Central Search – Relocation to Mezzanine level

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€5,350,000
Construction Costs	63%	€26,740,000
Escalation, Contingency & Design Variability	25%	€10,540,000
Total Installed Cost (TIC)	**100%**	**€42,630,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Refurbishment to Mezzanine	
Vertical Circulation Core	
Structural Infill	
Equipment	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.013
Terminal 1 Departure Lounge (IDL) Reorientation & Rehabilitation

Project Summary

- **Dublin Airport proposes to extend and reconfigure of the IDL facility with the addition of circulation, seating, lounges and food and beverage offerings**

During peak demand hours, the departures lounge reaches its capacity. As does the adjacent Central Search and Check-In areas. Given the anticipated growth in passenger numbers, the future capacity requirements, in terms of area, will exceed the international departure lounge's current hold capacity.

The relocation of the Central Search facilities (CIP 20.03.012) from the departures level of T1 to the mezzanine level provides additional areas which it is not proposed that the departure lounge will grow into.

This project falls under the Terminal 1 development and is driven by:

- **The need to provide additional passenger area for passengers dwelling in the departures lounge**
- **Enhance passenger experience at Terminal 1**

The project proposes an extended IDL where screened passengers, exiting from new mezzanine level's central search area, will descend to the newly expanded departure lounge. The expanding areas will include for new business lounges, circulation, orientation, food and beverage and retail offering.

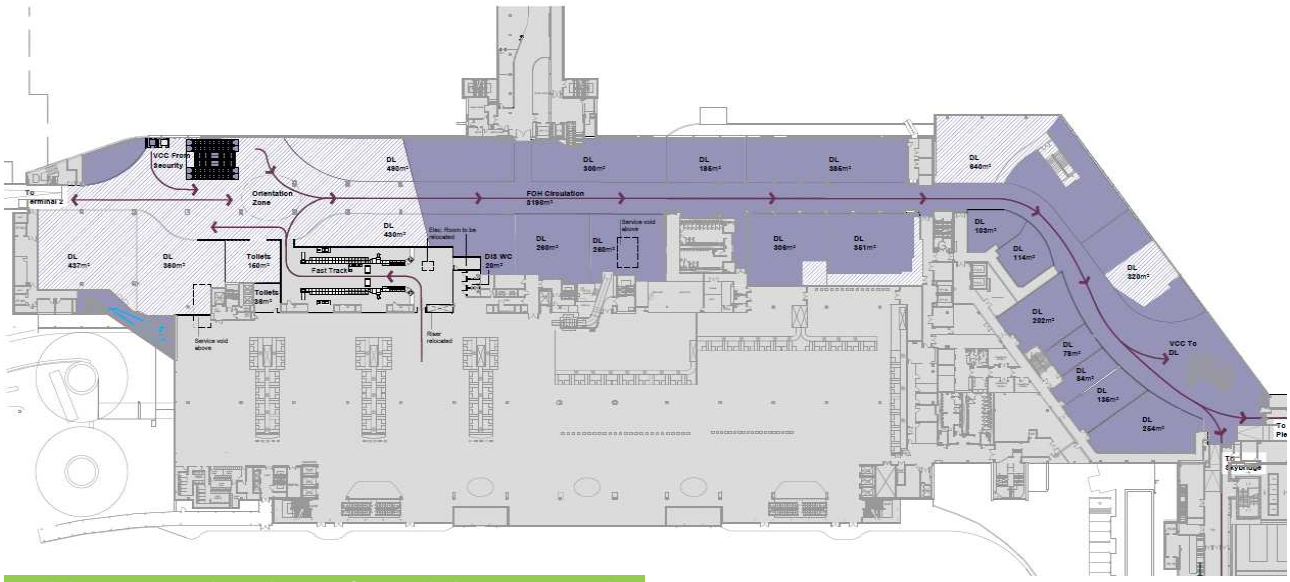

Exhibit 1. Proposed new layout of expanded IDL at Terminal 1

CIP.20.03.013
Terminal 1 Departure Lounge (IDL) Reorientation & Rehabilitation

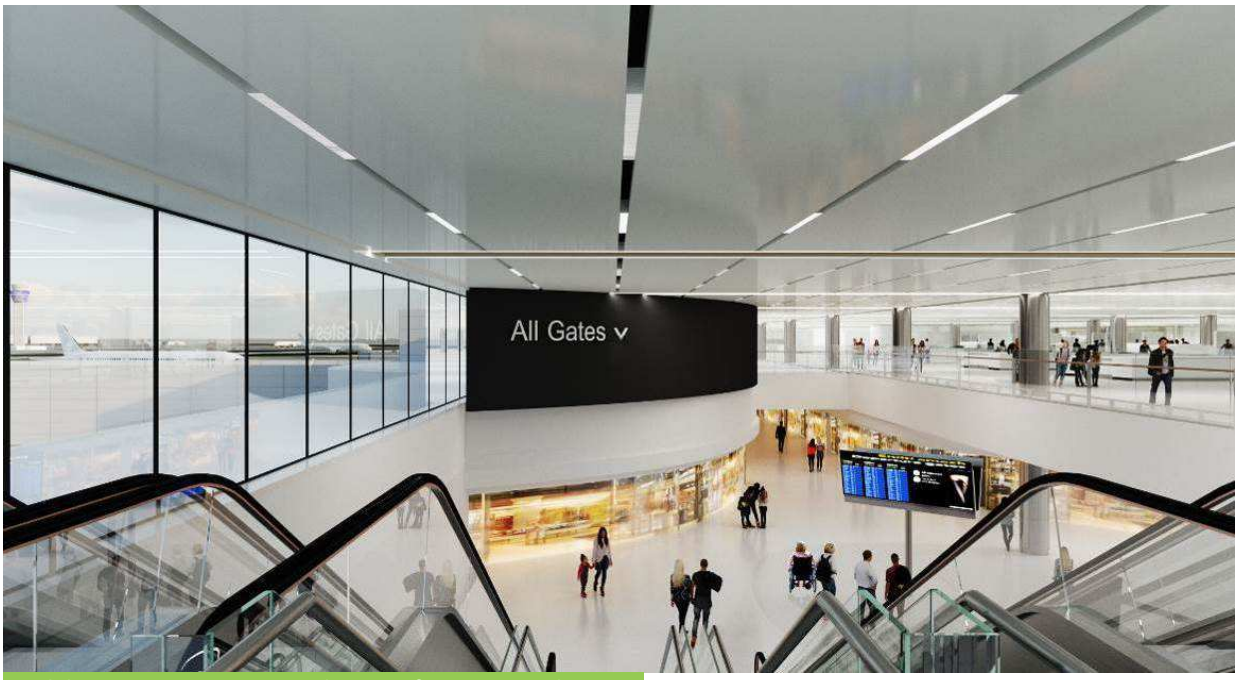

Exhibit 2. Computer Generated Image of new Terminal 1 IDL

CIP.20.03.013
Terminal 1 Departure Lounge (IDL) Reorientation & Rehabilitation

Project Details Summary		
Category: Capacity Development		
Primary Driver Business Volume Growth	**Secondary Driver** Business Development	**Total Capex requirement** €42.4m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • The central security screening area moves to the mezzanine level • Airline Lounges are relocated to IDL level Cost assumptions: (refer to general cost assumptions) • Cost estimate includes for providing new retail and F&B units in space previously occupied by security. • Minor allowance included for some minor maintenance works to existing retail and F&B units only • Contingency is calculated at 15% of the TDC plus Design & Management costs • Includes fast track security lanes Cost Exclusions: (refer to general cost exclusions)	
Opex Impact	• Opex increase of €3m p.a. for additional retail staff and variable costs associated with larger retail footprint.	
Revenue Impacts	• Revenue to grow in line with passenger growth - €0.9m.	
Project Output	• New Vertical Circulation Core (VCC) from Central Search directs passenger flows to the IDL • Extended departure lounge allowing for additional circulation space, retail, seating, food and beverage and business lounge offerings • Increased holding capacity for dwelling passengers and fast track	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q4 2018**	
Planning complete	**Q1 2020**	
Detailed design complete	**Q4 2019**	
Procurement complete	**Q2 2020**	
Construction commence	**Q4 2020**	
Construction complete	**Q1 2022**	
Project handover	**Q1 2022**	

CIP.20.03.013
Terminal 1 Departure Lounge (IDL) Reorientation & Rehabilitation

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€5,320,000
Construction Costs	63%	€26,590,000
Escalation, Contingency & Design Variability	25%	€10,480,000
Total Installed Cost (TIC)	**100%**	**€42,390,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Strip Out Existing Security Area	
New IDL Wait for Gate / F&B	
Refurbishment Existing Retail / F&B	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.015
Terminal 1 Baggage Reclaim Upgrade & Alterations

Project Summary

- **Dublin Airport proposes the reconfiguration of the baggage reclaim hall to provide increased reclaim belt lengths, additional queueing space, improved circulation and general refurbishment.**

With the anticipated growth in passenger numbers, the existing hall's capacity will not provide the circulation space requirement nor provide the length of reclaim belt length required to meet demand. Additionally, baggage hall's existing finishes and appearance requires extensive refurbishment.

This project will deliver a redesigned hall. Increased reclaim belt lengths will be achieved by combining belts 6+7, the removal of belt 1 and amendment of belt 2. Belts 3-5 and 8-10 will remain with minor retrofitting works required. Additional queueing space around belts and widened circulation areas will further reduce passenger congestion resulting in the need for the relocation of landside wall (immigration hall).

This project forms part of the T1's development and is driven by:

- **The need to relieve existing congestion in this area and improve circulation flows**
- **The need for additional baggage reclaim capacity**
- **Improve passenger experience by enhancing the appearance of the hall**
- **Provide a self-connect product for passengers at Terminal 1**

At the hall's eastern end, a self-connect product opportunity is provided to allow passengers check-in their bags immediately after belt collection via a single check-in desk.

The project will also provide limited refurbishment of walls and ceiling finishes.

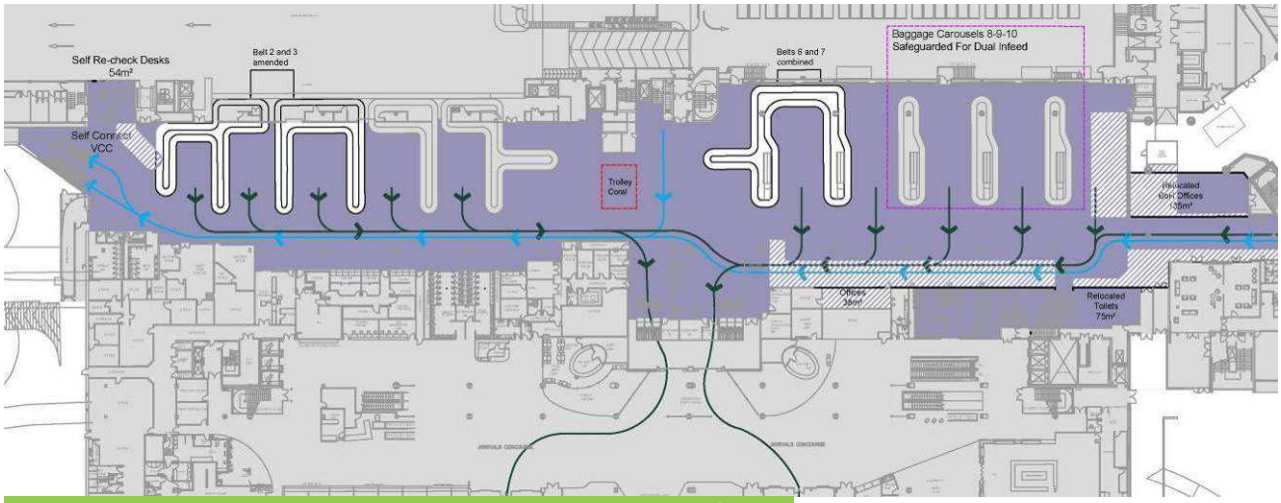

Exhibit 1. Proposed layout with enlarged belt and circulation corridors/areas

CIP.20.03.015
Terminal 1 Baggage Reclaim Upgrade & Alterations

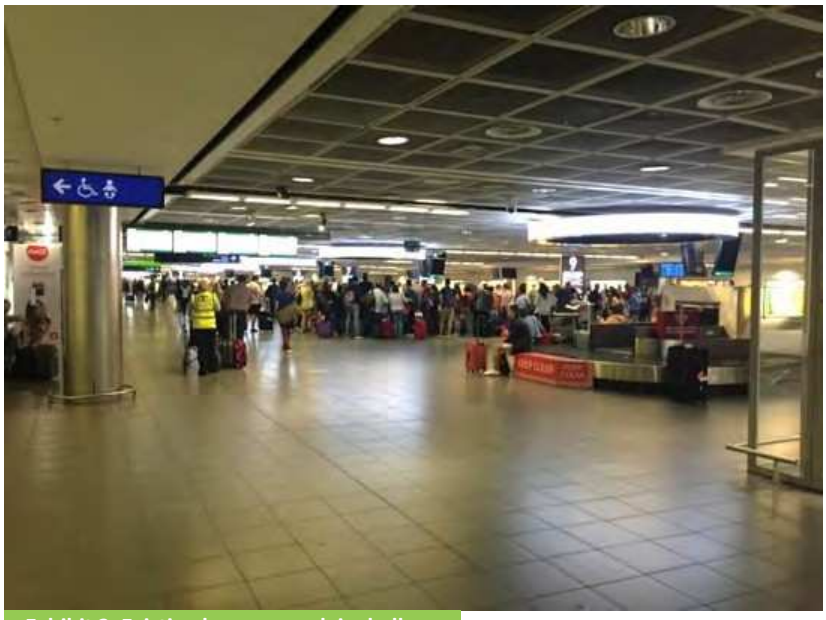

Exhibit 2. Existing baggage reclaim hall

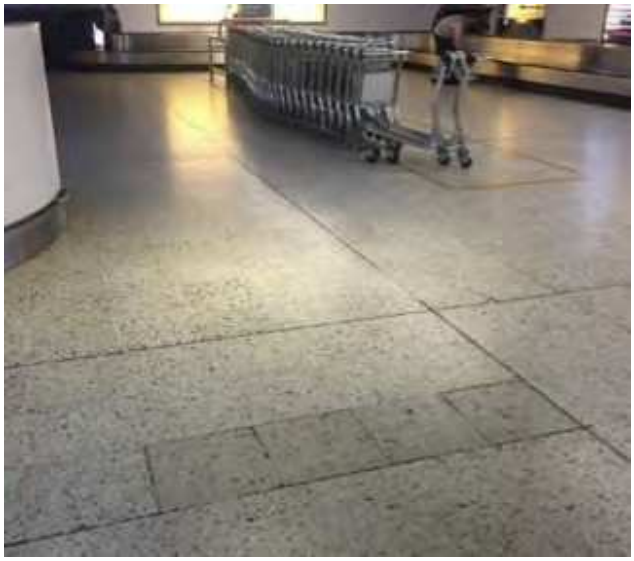

Exhibit 3. Existing baggage reclaim hall condition of floor

CIP.20.03.015
Terminal 1 Baggage Reclaim Upgrade & Alterations

Project Details Summary		
Category: Capacity Development		
Primary Driver Capacity	**Secondary Driver** User Requests	**Total Capex requirement** €22.2
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • Internal areas around Reclaim Hall to be relocated/ refurbished to improve circulation in Arrival Hall • Widened and improved circulation • Belts can be extended and reconfigured belts for capacity • Connectivity to HBS subject to final design of HBS upgrade Cost assumptions: (refer to general cost assumptions) • Contingency is calculated at 15% of the TDC plus Design & Management costs • Underlying structural flooring in good conditions Cost Exclusions: (refer to general cost exclusions)	
Opex Impact	• N/A	
Project Output	• Widening of corridor post immigration hall to Reclaim Hall • Belt 1 removed, Belt 2, 3 amended and increased in length • Belts 6-7 combined • VCC adjacent to Belt 10 removed • Offices relocated adjacent to Immigration corridor • Toilets partially relocated; to be made good; flooring in this area to match existing front-of-house finishes • Floors and ceilings refurbished around baggage reclaim area • New self-connect check in desks provided	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q4 2018**	
Planning complete	**Q1 2020**	
Detailed design complete	**Q4 2019**	
Procurement complete	**Q2 2020**	
Construction commence	**Q4 2020**	
Construction complete	**Q4 2022**	
Project handover	**Q4 2022**	

CIP.20.03.015
Terminal 1 Baggage Reclaim Upgrade & Alterations

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€2,780,000
Construction Costs	63%	€13,910,000
Escalation, Contingency & Design Variability	25%	€5,480,000
Total Installed Cost (TIC)	**100%**	**€22,170,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Refurbishment of Baggage Hall & Circulation Space	
Refurbishment / Construction of new toilets	
Construction of BOH offices	
Allowance for new floor and ceiling finishes to baggage hall	
Relocation of VCC	
Equipment	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.016
Terminal 1 Rapid Exit Arrivals

Project Summary

- **Dublin Airport proposes the construction of a new Rapid Exit for passengers with carry on only luggage**

At present arriving passengers exit into the arrivals area via the existing baggage reclaim hall. As passenger numbers grow, the existing baggage hall will meet the demand for circulation space requirements. A rapid exit point is proposed to relieve the growing circulation pressure.

All arriving passengers transit through the baggage hall at present. This includes passengers with carry-on only luggage and those with checked-in luggage. It is proposed to split these passenger types into two separate streams, by offering the carry-on luggage passengers the Rapid Exit option to bypass the baggage hall entirely and exit directly to the kerb. This thereby reduces the passengers' journey times, improves arriving passengers' experiences, while also reducing baggage hall congestion. The project drivers are:

- **Provide a requested "Rapid Exit" to reduce the length of the exiting passengers' journey and improve the arriving passengers' experience**
- **Alleviation of congestion at the baggage reclaim hall circulation areas**

This project proposes an alternative access to the kerb for arriving passengers located at the entrance of the baggage reclaim hall. This new corridor will allow passengers to exit the terminal, after passing T1 Immigration Hall and before entering the baggage reclaim hall itself.

The corridor will be fitted out with customs facilities and "no return" doors. The space will be shared with the trolley return corridor. The external space shall also be generally upgraded to a level appropriate for an arrivals area.

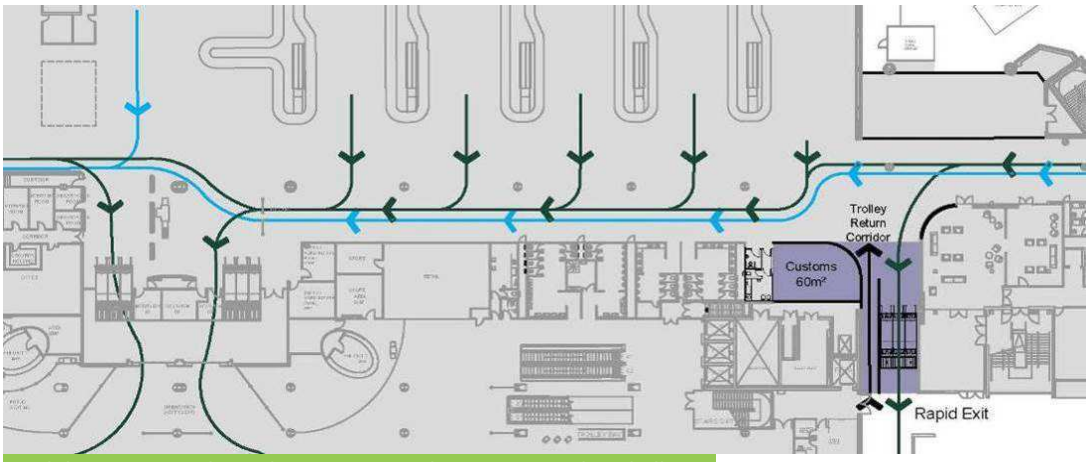

Exhibit 1: Proposed Rapid Exit at Terminal 1 Baggage Reclaim hall

CIP.20.03.016
Terminal 1 Rapid Exit Arrivals

Project Details Summary		
Category: Capacity Development		
Primary Driver Capacity	**Secondary Driver** User request	**Total Capex requirement** €2.2m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • Internal areas around reclaim Hall to be relocated/ refurbished to improve circulation in Arrival Hall • Provision of a 'Rapid Exit' facility for passengers who do not need to collect bags • Minimise impact on Platinum Lounge as far as possible • Customs product redefinition to include for rapid exit Cost assumptions: (refer to general cost assumptions) • Contingency is calculated at 15% of the TDC plus Design & Management costs Cost Exclusions: (refer to general cost exclusions)	
Opex Impacts	• N/A	
Project Output	• Exit corridor from Immigration Hall to improve passenger circulation towards forecourt • Rapid Exit provided prior to entry into Reclaim Hall, providing route through to the Car Park • New Customs Checkpoint and Back of House Office provided at Rapid Exit • New anti-backtrack doors at Rapid Exit • Provides smoother passenger movement and better wayfinding	
Asset Life	• 10 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q4 2018**	
Planning complete	**Q3 2020**	
Detailed design complete	**Q3 2021**	
Procurement complete	**Q3 2021**	
Construction commence	**Q3 2021**	
Construction complete	**Q2 2023**	
Project handover	**Q2 2023**	

CIP.20.03.016
Terminal 1 Rapid Exit Arrivals

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€280,000
Construction Costs	63%	€1,390,000
Escalation, Contingency & Design Variability	25%	€550,000
Total Installed Cost (TIC)	**100%**	**€2,220,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Internal Refurbishment	
New External Connection to Arrivals	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.017
Terminal 1 Shuttle, bus lounges and injection points

Project Summary

- **Dublin airport proposes the re-design and refurbishment of shuttle lounges, bus hold rooms, injection points and other bussing associated facilities.**

With the provision of a Pre-Boarding Zone (PBZ) on the North Apron and more operations in the Western Apron, there will be increased bussing demand. T1 provides bus gate capability at Pier 1, Pier 2 and at the ground level of the Old Central Terminal Building (OCTB).

This project will refurbish the Old Central Terminal Building ground floor to accommodate the anticipated passenger growth. The project includes the internal refurbishment of this hold room and associated facilities and the adjustment of the bus kerb to cater for the increasing bussing demand as the use of shuttle lounge.

Exhibit 1: OCTB bus hold gate rooms and proposed area of refurbishment

The OCTB bus lounges will be another component of the airport's overall bussing strategy and also includes the newly constructed transfer facility, the proposed bus lounges in Pier 5, Terminal 1 injection points and exiting Pier 1 and 2 bus lounges.

CIP.20.03.017
Terminal 1 Shuttle, bus lounges and injection points

Project Details Summary		
Category: Capacity Development		
Primary Driver Capacity	**Secondary Driver** User Requests	**Total Capex requirement** €2.8m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • - Cost assumptions: (refer to general cost assumptions) • Main contractor preliminaries included at between 15% and 20% depending on project Cost Exclusions: (refer to general cost exclusions)	
Opex Impact	Increased Opex costs of €0.1m p.a. for additional staff to manage new injection points at terminals	
Project Output	• New bus lounges at OCTB • New bussed operation to remote stands • New injection points to Terminals • New shuttle bus operation to North Apron PBZ building	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q4 2018**	
Planning complete	**Q2 2020**	
Detailed design complete	**Q3 2021**	
Procurement complete	**Q1 2022**	
Construction commence	**Q3 2022**	
Construction complete	**Q2 2023**	
Project handover	**Q2 2023**	

CIP.20.03.017
Terminal 1 Shuttle, bus lounges and injection points

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€360,000
Construction Costs	63%	€1,780,000
Escalation, Contingency & Design Variability	25%	€700,000
Total Installed Cost (TIC)	**100%**	**€2,840,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Refurbishment	
Building Works	
Glazed Canopy	
Covered walkway	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.018
Terminal 1 Immigration Hall reconfiguration

Project Summary

- **This project proposes increasing processing capacity throughput for immigrating passengers to the T1 Pier 1 and 2 immigration halls**

In 2017, 10 e-gates and 11 booths were delivered as part of an approved PACE project. A second phase PACE project will extend the immigration hall with an additional circa 1200m2 to providing processing capacity for a maximum of 32-35mppa.

This project proposes to reconfigure the booths and e-gates in order to increase their numbers s to 11 e-gates and 14 booths across the same queuing depth as provided by the second phase PACE project., providing processing capacity of 42mppa.

In a Brexit scenario it is anticipated that up to 18 booths may be required, but from a space allocation perspective this will be compensated by a reduction in demand on e-gates some of which can therefore be removed. This scenario can be therefore accommodated within the space.

This project also involves the relocation of the existing e-gates to the Pier 1 side of the hall. The e-gates are proposed for relocation to optimise their usage and throughput capacity. This is driven by shorter walking distance route to the gates from Pier 1 EU PAX and better presentation, visibility and approach.

The shuttle bus injection area shown falls into the OCTB project (CIP20.03.17)

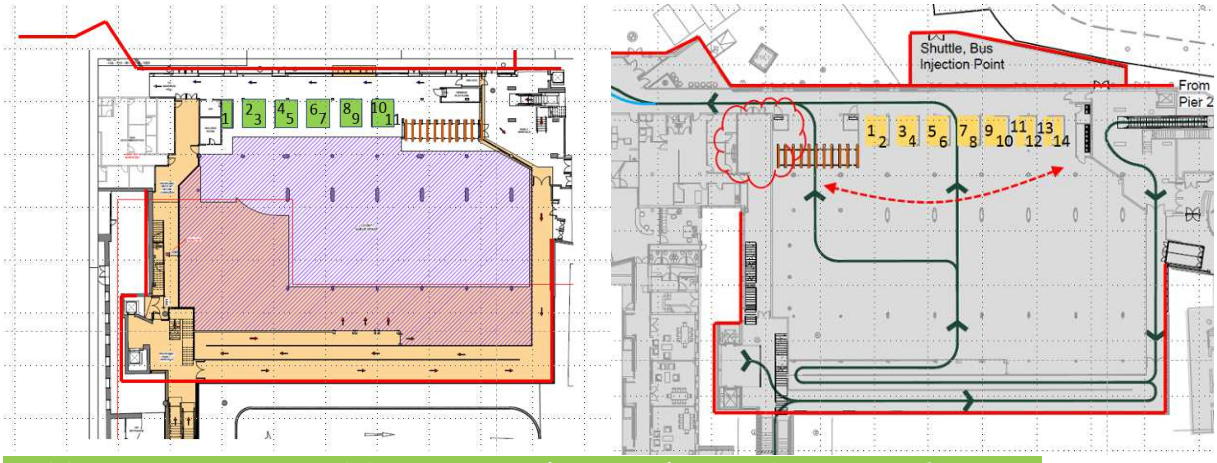

Exhibit 1. T1 Immigration: Second phase PACE project (32-35 mppa); Proposed CIP 2020 reconfiguration

CIP.20.03.018
Terminal 1 Immigration Hall reconfiguration

Project Details Summary		
Category: Capacity development		
Primary Driver Business Volume Growth	**Secondary Driver** -	**Total Capex requirement** €1.49m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • - Cost assumptions: (refer to general cost assumptions) • That PACE Phase II projects will be implemented. • Main contractor preliminaries included between 15% and 20% depending on project. • Contingency is calculated at 15% of the TDC plus design and management costs. Cost Exclusions: (refer to general cost exclusions)	
Opex Impacts	• Currently 4 CSAs deployed in hall daily. Potential to reduce the amount required to e-gates by 1 FTE.	
Project Output	• Provision of additional processing capacity from 35 to 42mppa • Reorganisation to facilitate optimum e-gate usage • Reduce queuing times	
Asset Life	• 15 Years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q4 2018**	
Planning complete	**Q3 2020**	
Detailed design complete	**Q3 2021**	
Procurement complete	**Q4 2021**	
Construction commence	**Q4 2021**	
Construction complete	**Q2 2023**	
Project handover	**Q2 2023**	

CIP.20.03.018
Terminal 1 Immigration Hall reconfiguration

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	13%	€190,000
Construction Costs	62%	€930,000
Escalation, Contingency & Design Variability	25%	€370,000
Total	**100%**	**€1,490,000**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Refurbishment / Alterations	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.020
Terminal 2 Check-In Area Optimisation

Project Summary

- **Dublin Airport proposes the upgrade of the Terminal 2 check-in hall infrastructure to facilitate ongoing passenger growth with technology upgrades and new installations.**

In the last five years, the passenger footfall in the Terminal 2 (T2) check-in area has increased, and the airport has facilitated this increased demand through technology upgrades, known as the "CUSS" project. Phase 3 of this project, using PACE funds, is now being implemented. While technology has led to an increased operational efficiency through quicker processing, anticipated future passenger growth, now requires more physical infrastructure in the form of check-in positions, bag drops and Self Service Kiosks (SSK's)to meet this increasing passenger throughput.

Installing more check-in desks, utilising technology for faster passenger processing, enhancing passenger experience solutions, providing queueing area managed solutions, and improving circulation spaces better utilises the existing floor area so that a further extension is not required.

Given the limited number of additional traditional check-in desks this solution is reliant on a greater uptake in the use of SSKs over current use, to meet demand.

This project falls under the Terminal 2 development and is driven by:

- **The requirement to accommodate additional check-in positions and SSK's.**
- **The need to maximise capacity within the existing check-in hall footprint**

This project delivers a redesigned check-in hall area, with additional self-service kiosks and new bag drop/check-in desks. Access to the extended Central Search Area (CIP.20.03.021) will remain the same. Construction works will be phased and aligned with other T2 projects.

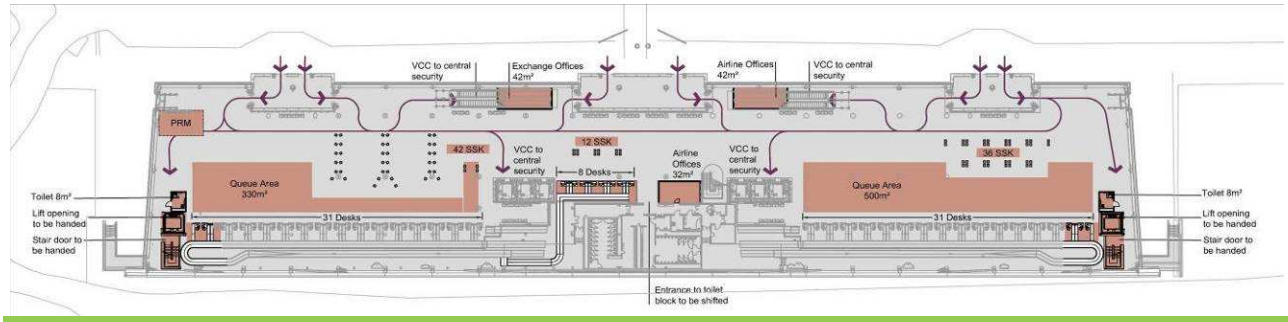

Exhibit 1. New Terminal 2 check-in proposed layout, with proposed baggage/check in reconfiguration and current PRM location

It is also prosed to move the PRM facility from its current location to provide an improved experience for PRMs in a centralised are of the terminal.

CIP.20.03.020
Terminal 2 Check-In Area Optimisation

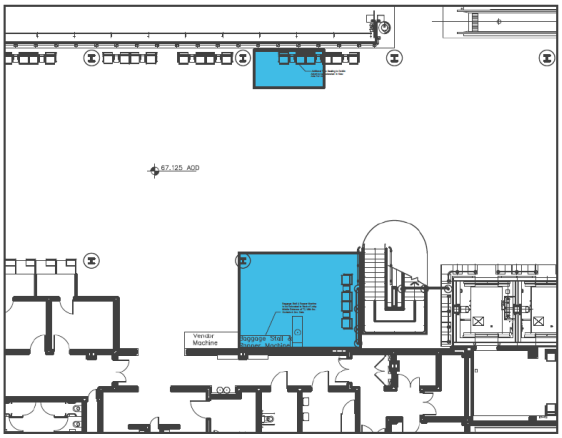

Exhibit 2. Propsoed new PRM location (Large blue box)

CIP.20.03.020
Terminal 2 Check-In Area Optimisation

Project Details Summary		
Category: Passenger Processing		
Primary Driver Business Volume Growth	**Secondary Driver** Operational Efficiency	**Total Capex requirement** €14.8
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • Increase in provision to cater to increased capacity • Facility Requirements require greater uptake in SSK usage over today • New locations of belts to be validated Cost assumptions: (refer to general cost assumptions) • Contingency is calculated at 15% of the TDC plus design & management costs Cost Exclusions: (refer to general cost exclusions)	
Opex Impact	• Opex increase of €0.5m p.a. for additional check-in deck and SSK running costs.	
Project Output	• Increase in capacity accommodated within existing footprint • Six additional check-in desks provided with collector belt connection to existing bag conveyors • Additional self-service kiosks required • Eight bag drop counters • Additional queuing area	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q4 2018**	
Planning complete	**Q3 2020**	
Detailed design complete	**Q3 2021**	
Procurement complete	**Q4 2021**	
Construction commence	**Q1 2022**	
Construction complete	**Q1 2023**	
Project handover	**Q1 2023**	

CIP.20.03.020
Terminal 2 Check-In Area Optimisation

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€1,850,000
Construction Costs	63%	€9,270,000
Escalation, Contingency & Design Variability	25%	€3,650,000
Total Installed Cost (TIC)	**100%**	**€14,770,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Refurbishment / Relocations	
Check-in & SSK's	
Baggage Modifications	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.021
Terminal 2 Central Search Area Expansion

Project Summary

- **Dublin airport proposes the Terminal 2 central search area be expanded and reconfigured.**

The central search area (CSA) of Terminal 2 (T2) is the critical passenger gateway connecting the Landside and Airside facilities. This secure area ensures passengers are compliant with EU security regulations and air travel security protocols. It is important that it operates smoothly and efficiently. For this CIP period, the anticipated peak passenger volumes travelling through the facility requires a larger area than the existing facility can accommodate.

The three major drivers for this project are as follows:

- **Anticipated increases in passenger volumes will require the following additional facilities:**
  a. Number of queuing lanes and repacking facilities.
  b. Increase in the central search processor area to accommodate future demand.
- **Security Equipment changes:**
  a. Provide for Automatic Tray Return Systems. The lessons learned from the use of ATRS in Terminal 1 highlight a significant improvement in the consistency of screening of cabin baggage when compared to the manual lane approach.
  b. Provide standard C3 scanning equipment
  c. Safeguard for future body scanning demand
  d. Remote Screening: The ability to deploy remote screening in Terminal 2 as well as Terminal 1 is dependent on the deployment of ATRS (Project CIP.20.06.012).

This area expansion project proposes a two-phase approach, as follows:

- **Landside dividing screens relocation: Existing glass screens to move further landside.**
- **Airside dividing wall relocation: The separation wall will be moved further into a previously safeguarded retail service corridor.**

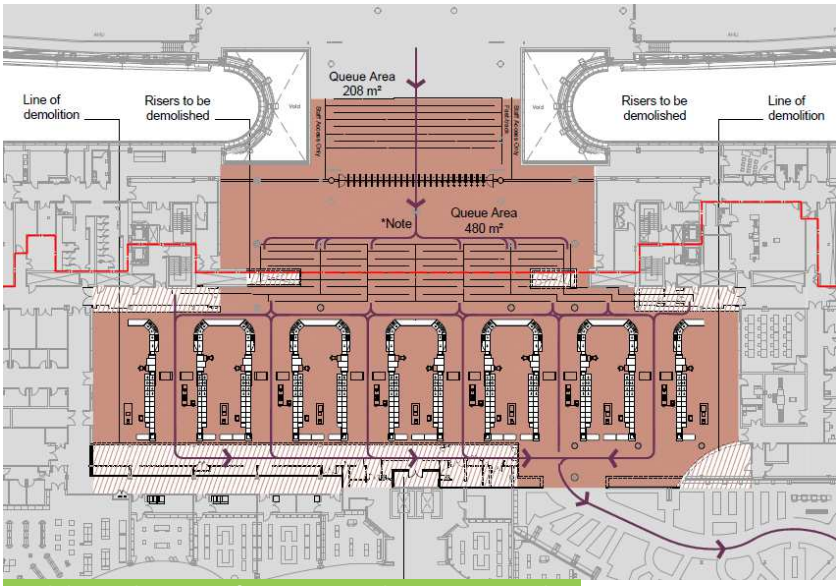

Exhibit 1. Plan view of new proposed CSA at Terminal 2.

CIP.20.03.021
Terminal 2 Central Search Area Expansion

Project Details Summary		
Category: Capacity Development		
Primary Driver Capacity	**Secondary Driver** Business Volume Growth	**Total Capex requirement** €5.6m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • IAA submission required, and approval needed prior to implementation • C3 Scanner and ATRS equipment Cost assumptions: (refer to general cost assumptions) • Contingency is calculated at 15% of the TDC plus Design & Management costs • Cost of risers accommodated within allowances Cost Exclusions: (refer to general cost exclusions) • Cost of screening equipment provided for under security project	
Opex Impact	• Increased opex costs of €0.1m p.a. for incremental access control system costs.	
Project Output	• Space provision for 17m of ATRS lanes • Partial removal of risers; general making good of finishes to match existing front-of-house finishes • Wall added to core on right side of queuing area • Retail back-of-house corridor removed to accommodate security lanes • Retail unit footprint reduced to line of lift cores • Entry to departure lounge from Security modified with new wall	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q4 2018**	
Planning complete	**Q3 2020**	
Detailed design complete	**Q3 2021**	
Procurement complete	**Q4 2021**	
Construction commence	**Q1 2022**	
Construction complete	**Q1 2023**	
Project handover	**Q1 2023**	

CIP.20.03.021
Terminal 2 Central Search Area Expansion

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€710,000
Construction Costs	63%	€3,540,000
Escalation, Contingency & Design Variability	25%	€1,390,000
Total Installed Cost (TIC)	**100%**	**€5,640,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Facilitation & Demolition Works	
Refurbishment Security Area & Queue Space	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.028
Terminal 2 Early Bag Store & Transfer Lines

Project Summary

- **Dublin airport proposes the installation of an Early Baggage Store system within the HBS room of Terminal 2.**

The transfers' product at Dublin Airport is a significant area of growth, due in part to the presence of US CBP in Terminal 2. The Terminal currently has 3 transfer input lines. As transfer demand is expected to grow dramatically in the future, there will be a need to increase the number of transfer lines. Capacity analysis of the Transfer system had identified a shortfall in existing capacity which will be exceeded during the next CIP period. A 4th Transfer Input line is required to facilitate the future demand of 40mppa.

Terminal 2 handles all US CBP flights and a significant number of long haul flights. Passengers travelling on these flights may originate in Ireland, or transfer through the Terminal. Early check-in products offered by airlines and long stop-over transferring passengers have resulted in a significant rise in early bags being processed through the HBS. These bags arrive at the sorter ahead of the make-up position being available, thus being classed as early bags. The bag sits on the sorter for long periods until a make-up location has been identified. This can cause 'die back' through the system, as no space is available to sort these bags to make-up locations.

With the increasing growth in transfer traffic there is a need for increased connectivity between terminals. The current HBS upgrade provides for a single connection, but capacity analysis indicates that its peak capacity will be exceeded, and a second line is required during this CIP period.

The proposed project will construct an early bag store on the HBS mezzanine of Terminal 2. The lane- based system will have the capacity of 950 bags. The EBS will provide sufficient capacity for the early bag demand over the next CIP period. The use of an early bag store will assist in reducing the demand on CBP allocated make-up positions, which are forecast to increase beyond the current provision. A 4th Transfer line will also be installed to increase the capacity and resilience of the transfer system.

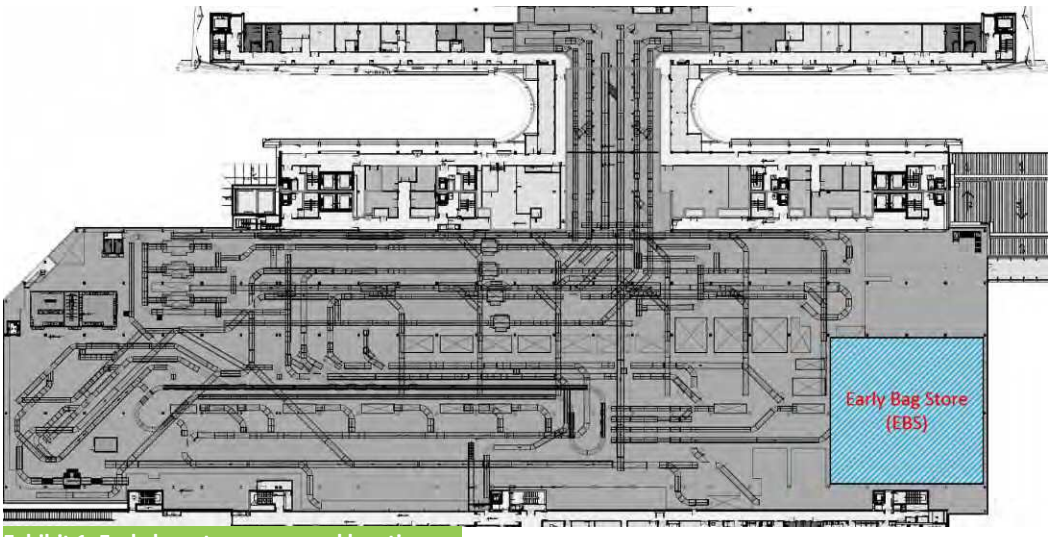

Exhibit 1. Early bag store proposed location

CIP.20.03.028
Terminal 2 Early Bag Store & Transfer Lines

Exhibit 2. Photograph of an EBS system - Typical

CIP.20.03.028
Terminal 2 Early Bag Store & Transfer Lines

Project Details Summary		
Category: Capacity Development		
Primary Driver Business Volume Growth	**Secondary Driver** HUB operations	**Total Capex requirement** €27.9m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • System costs based on market research. • System to be built within the HBS existing footprint. Cost assumptions: (refer to general cost assumptions) • Contingency is calculated at 15% of the TDC plus Design & Management costs • Escalation is included to mid-point of construction and is based on a rate of 6% per annum • Assumes traditional competitive main contractor tendering and procurement arrangements Cost Exclusions: (refer to general cost exclusions)	
Opex Impact	• N/A	
Project Output	• 950 position Early bag store • Bag transfer line in T2 • Additional Inter terminal transfer line	
Asset Life	• 10 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q4 2018**	
Planning complete	**Q3 2020**	
Detailed design complete	**Q3 2021**	
Procurement complete	**Q4 2021**	
Construction commence	**Q1 2022**	
Construction complete	**Q1 2023**	
Project handover	**Q1 2023**	

CIP.20.03.028
Terminal 2 Early Bag Store & Transfer Lines

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€3,600,000
Construction Costs	64%	€18,000,000
Escalation, Contingency & Design Variability	23%	€6,310,000
Total Installed Cost (TIC)	**100%**	**€27,910,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Provision of Additional EBS Positions	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.029
New Pier 5 (T2 & CBP Enabled)

Project Summary

- **This project proposes the construction of a new Pier 5 (as part of South Apron Development).**

As a result of the increased number and frequency of new long-haul routes, and in particular long-haul routes to the US; it is anticipated that there will, over the course of the forth coming CIP period, be continued growth in demand for US-precleared enabled Wide Body stands.

This demand is driven by Ireland's strategic position as a connecting node between USA and Europe, and further leverages Dublin's position of being the only European capital with US preclearance. This is reflective of the National Aviation Strategy's policy position of developing Dublin Airport as a hub airport.

In line with the wider South Apron Development, Pier 5 enables the provision of 4 wide body contact stands located close to Pier 4's US-preclearance facility. The pier's design incorporates maximum flexibility, and consists of the following key features:

- **The pier can service all flights across the airfield. The Pier's Apron level has been designed with 6 bus lounges accommodating both CBP and non CBP operations**
- **The departures level, (located on the first floor), has been designed with enclosed gate hold rooms which can be accessed directly from the same level US-preclearance facility or, for non-US-preclearance passengers, from the level above. This accommodates side by side CBP and Non CBP departures. The gate lounges are appropriately designed and sized to incorporate pre-boarding facilities.**
- **To maximize operational efficiency and minimize time on stand, the access to and from aircraft for passengers has been provided using fixed links, with the capacity for both airbridge and walk in/ walk out enplaning and deplaning**

The project safeguards options for impacted business operations. The construction of a secure road from the South Apron over the R132 with services brought to the Eastland's logistics park is proposed as part of this development. The project also provides for reconfiguration of the existing immigration facility to accommodate arrivals from Pier 5.

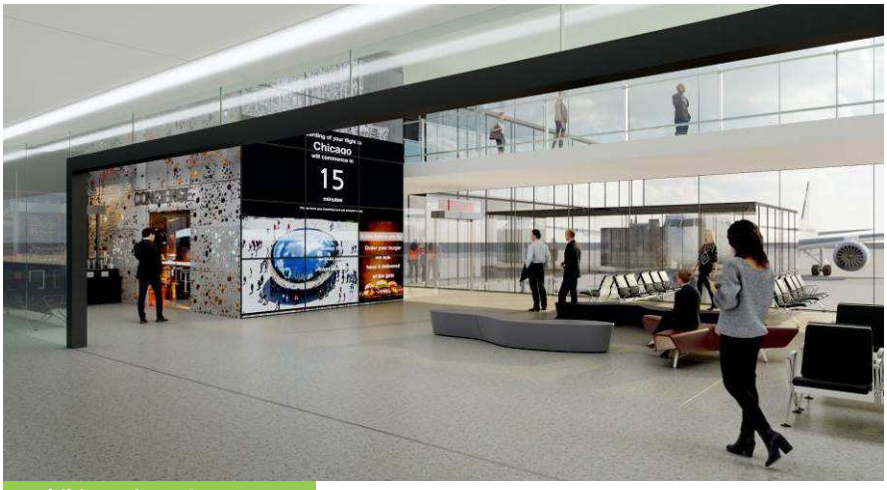

Exhibit 1. Pier 5 Gate rooms

CIP.20.03.029
New Pier 5 (T2 & CBP Enabled)

At Apron level Pier 5 includes 6 bus lounges. A bus injection point has been located to the Pier's western end to accommodate arriving passengers, providing direct access to Terminal 2's immigration and transfer facilities.

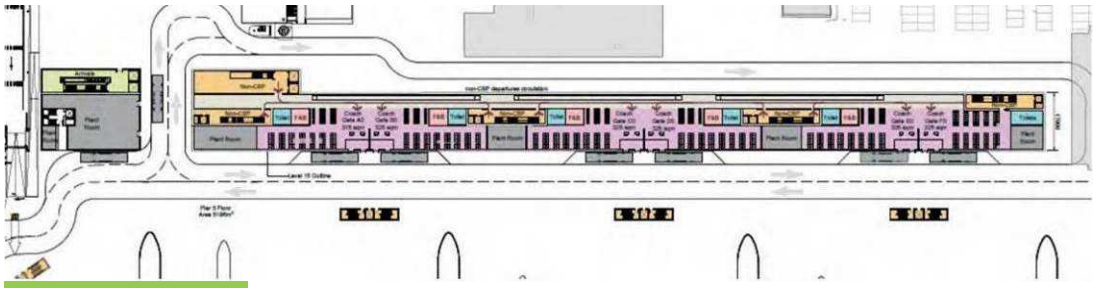

Exhibit 2. Apron Level

First Floor

The first floor is the primary departures floor with 8 gates accessed either by a CBP corridor or by a non-CBP vertical circulation core descending directly from the floors above. This flexibility allows each gate to be individually used for CBP or non CBP operations, as required. Fixed links are to be equipped with airbridges and vertical cores to apron level to allow for further flexible use of the stands. A food and beverage offering will be placed at the start of the pier for CBP passengers, and located next to an executive lounge.

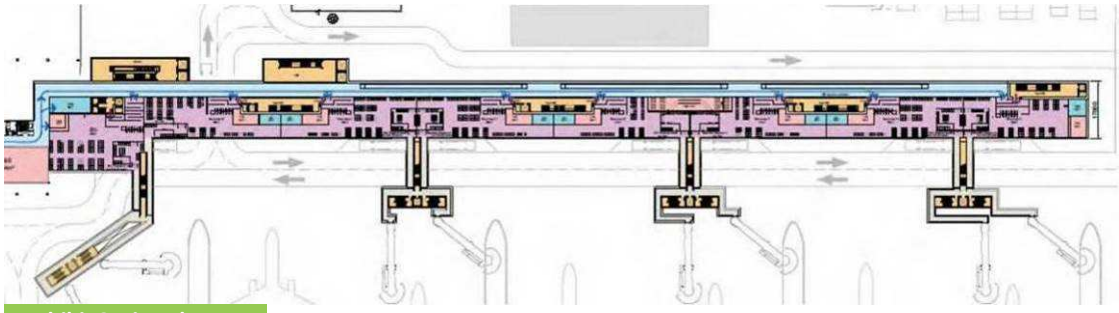

Exhibit 3. First Floor

Second and third floors

The second floor houses the arrivals corridor as well as the non-CBP departures corridor, (accessed via the third floor, not shown, which connects directly to the T2 departure lounge). This floor has the flexibility between corridors to accommodate future development of support facilities, including office space, commercial offerings and back of house support space.

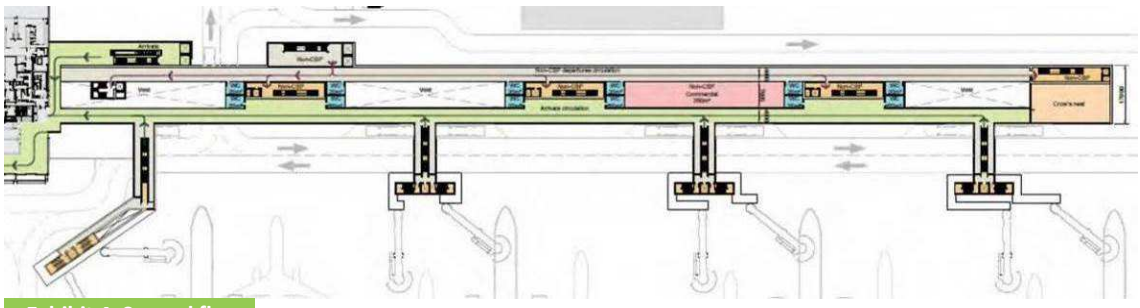

Exhibit 4. Second floor

CIP.20.03.029
New Pier 5 (T2 & CBP Enabled)

Project Details Summary		
Category: Capacity Development		
Primary Driver Business Volume Growth	**Secondary Driver** User Requests	**Total Capex requirement** €323.6m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • Flexibility of operations for simultaneous CBP /non-CBP flights • Operational accommodation to be accommodated as part of relocations • Segregated Arrivals and Departures • CBP/Non-CBP enabled bussing facilities • Safeguarding for future expansion of Terminal 2 Cost assumptions: • Demolition of existing buildings included • Airfield ramp around Pier 5 • Contingency is calculated at 15% of the TDC plus Design & Management costs • Similar specification to Pier 4 Program assumptions: • Phased relocation of tenants • Single phased construction	
Opex Impact	• Opex increase of €3.9m p.a. for: Cleaning, Customer Service Assistants, Repairs & Maintenance, Insurance, Rates and Energy costs.	
Revenue Impact	• Revenue loss of €4.6m p.a. due to demolishment of Cargo's 1 and 2, Flight Catering Facilities and office block.	
Project Output	• New 4 level Pier • Direct link to Terminal 2 and Pier 4 CBP facilities • 8 no. new Gate rooms, which can flex to provide space for larger aircraft and CBP / non-CBP operations • 6 no. new Bus Gates • Fixed links to serve 4 no. MARS (8 no. NBE) contact stands • 8 no. Airbridges to contact stands • New Food and Beverage and Executive Lounge offering on first floor • Segregated movements for arriving passengers and CBP and non CBP departing passengers • Serviced and Airside accessible Cargo sites, including development of secure road and bridge over R132 but excluding cargo site development.	
Asset Life	• 25 years	

CIP.20.03.029
New Pier 5 (T2 & CBP Enabled)

Project Delivery Key Milestones	
Feasibility/outline design complete	Q4 2018
Planning complete	Q1 2020
Detailed design complete	Q1 2021
Procurement complete	Q3 2021
Construction commence	Q4 2020
Construction complete	Q4 2022
Project handover	Q4 2022

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€41,740,000
Construction Costs	64%	€208,680,000
Escalation, Contingency & Design Variability	23%	€73,220,000
Total Installed Cost (TIC)	**100%**	**€323,640,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
South Apron - Pier 5 & Immigration	
South Apron - Demos & Relocations	
South Apron - Airfield	
South Apron - Cargo Village Enabling Works	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.030
Expansion of US Pre-Clearance Facilities

Project Summary

- **Dublin Airport proposes to reconfigure and expand the US Pre-Clearance facilities in Pier4**

Increasing Capacity of Pre-Clearance Facility

As a result of the increased number and frequency of new US long-haul routes; it is anticipated that there will, over the course of the forth coming CIP period, be continued growth in demand for US preclearance facilities. This demand is driven by Ireland's strategic position as a connecting node between USA and Europe, and further leverages Dublin's position of being the only European capital with US preclearance. This is reflective of the National Aviation Strategy's policy position of developing Dublin Airport as a hub airport. This resulting demand uplift translates into an increased requirement for US Preclearance capacity. Dublin Airport and US Immigration Authorities are currently engaged and are actively exploring the use of emerging technology to achieve this uplift in capacity while minimizing footprint.

The current facility's configuration limits how it can expand, therefore as part of this project, it is proposed to re-orientate and increase the facility to include a minimum of 11 US transport Security (TSA) security screening lanes and 30 US Customs and Border Protection (CBP) officer positions, as well as being tailored to the needs of emerging technologies. Security lanes will be fitted with 19m ATRS equipment. Additional space will accommodate secondary screening, queue space, circulation space and staff accommodation.

Exhibit 1. Pier 4 proposed CBP facility

The reconfiguration also safeguards for future expansion eastward. The new CBP facility will be directly linked to Pier 4 and the new Pier 5 by new vertical circulation corridors. The enlarged hall includes for a dedicated vertical circulation and direct link for screened passengers to access the new Pier 5 project (part of the South Apron development). This project is proposed to provide sufficient flexibility to implement optimal solution(s) facilitated by the adoption of new technology as it becomes viable and available, refer Chapter 7. The project also includes for the reconfiguration of the CBP baggage makeup carousels to facilitate increased volumes of CBP bags.

CIP.20.03.030
Expansion of US Pre-Clearance Facilities

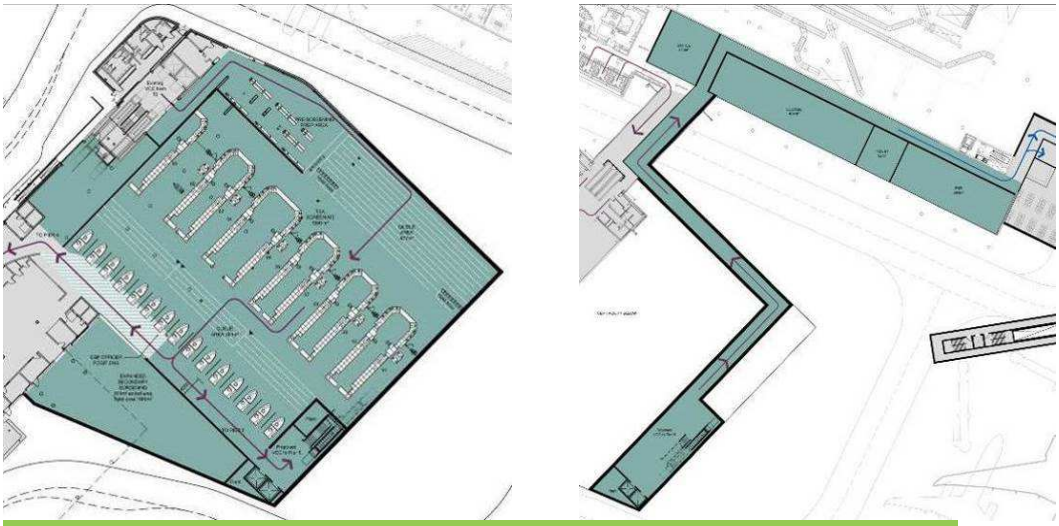

Exhibit 2. Pier 4 proposed enlarged CBP facility at Apron level and First floor access to Pier 5

Increased Flexibility on Pier 4

A second project component will allow for increased Pier 4 flexibility, known as 'de-flex' of Pier 4. In the event of a delay to a US bound flight scheduled to depart from Pier 4's central section, two ground floor available gate rooms will be assigned to board flights from either side of the pier without accessing to the first-floor gate rooms. Thereafter, these areas will be returned to non-CBP use as required. To achieve this, an external corridor connecting the existing gate hold rooms and vertical circulation cores on the ground floor of Pier 4 is proposed.

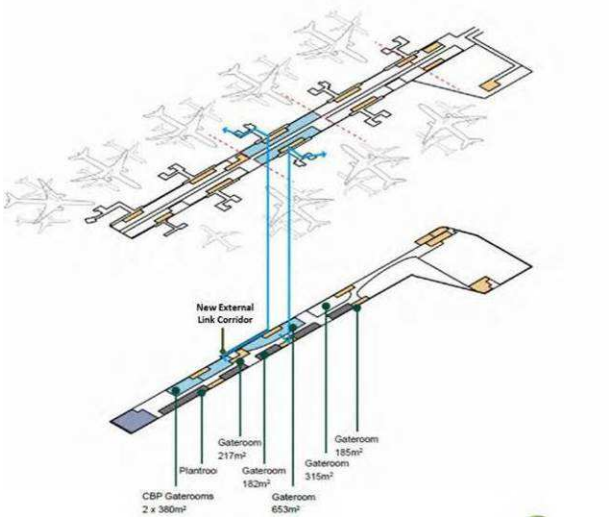

Exhibit 3. Axonometric view of Pier 4 Apron and First floor

In addition to increasing flexibility in pier 4 and in consideration of the operational flexibility required in order to balance US-preclearance requirements with technology & infrastructure it would be necessary, as a 1st phase, to enable pier 3 as a US-precleared sterile hold space via bussing from pier 4/5.

CIP.20.03.030
Expansion of US Pre-Clearance Facilities

Project Details Summary		
Category: Capacity Development		
Primary Driver Passenger Processing	**Secondary Driver** Addressing User Requirements	**Total Capex requirement** € 50.3m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • Reorientation and expansion of existing facility Reorientation to facilitate scalable development Pier 4 CBP Operation maintained • Dedicated link to Pier 5 Cost assumptions: • Contingency is calculated at 15% of the TDC plus Design & Management costs • Based on similar specification to current CBP facility • Based on 11 lane TSA facility Cost Exclusions: (refer to general cost exclusions)	
Opex Impact	• Opex increase of €1.9m p.a. for: • Cleaning, Customer Service Assistants, Repairs & Maintenance, Insurance, Rates and Energy costs.	
Project Output	• Increased footprint for US Pre-clearance facility hall • 11 no. new TSA 19m ATRS Lanes • 30 no. Officer Booths • Increased queuing areas for TSA Screening and CBP • New welfare facilities at US Pre-clearance Facility • New Vertical Circulation and access corridors to Pier 5 • US-preclearance sterile area and swing gate operation facilitation in pier 3	
Asset Life	• 25 years	

Project Delivery Key Milestones	
Feasibility/outline design complete	**Q4 2018**
Planning complete	**Q1 2020**
Design complete	**Q3 2019**
Procurement complete	**Q2 2020**
Construction commence	**Q4 2020**
Construction complete	**Q1 2022**
Project handover	**Q1 2022**

CIP.20.03.030
Expansion of US Pre-Clearance Facilities

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€6,490,000
Construction Costs	64%	€32,440,000
Escalation, Contingency & Design Variability	23%	€11,400,000
Total Installed Cost (TIC)	**100%**	**€50,330,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Buildings	
Airfield	
Baggage Make Up	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.031
South Apron Expansion (Remote Stands, Taxiway & Apron)

Project Summary

- **As part of South Apron Development, Dublin Airport proposes the relocation of the existing Pre-Boarding Zone and the expansion of the southern airfield including new aircraft stands and the extension of the Dual Code E taxi-lane.**

As a result of increased number and frequency new long-haul routes, and in particular long-haul routes to the US; it is anticipated that there will be continued growth in demand for CBP enabled Wide Body stands

This demand is driven by Ireland's strategic position as a connecting node between USA and Europe, and further leverages Dublin's position of being the only European capital with US preclearance.
This is reflective of the National Aviation Strategies policy position of developing Dublin Airport as a secondary hub European airport.

As part of the wider South Apron Development Pier 5 (CIP.20.03.029) meets this demand through the provision of 4 wide body contact stands which are strategically located close to TSA and CBP facilities on Pier 4 and other south apron short haul, narrow body stands.

It is therefore proposed to redevelop the southern airfield to include up to 17 stands and the extension of a Dual Code E taxi lane around Pier 4 and adjacent to the proposed Pier 5. This redevelopment is inclusive of the relocation of the existing PBZ building to accommodate the construction of Pier 5.

The new stands will be a mix of: 1) direct contact stands, served from Pier 5, walk to contacts stands, served from the relocated PBZ and; 2) remote contact stands, served by bussing operations from Pier 5. The increased apron area will provide: enlarged manoeuvring area with a Dual Code E taxilane to allow optimal operational flexibility; head and back of stand access roads; as well as additional areas for GSE parking and an extended road network.

The Dual Code E taxilanes layout eases ground operations by minimizing delays caused by pushback procedures of Wide Body aircrafts, using a joined loop. This will facilitate uninterrupted Code E Aircraft taxi from South Apron to Pier 1 (reinstatement of Taxiway Yankee as Code E – connecting Taxiway Zulu to F-Inner). This also provides for 34 Narrow Body Equivalent stands (NBE) or 14 MARS stands and 6 NBEs. The existing PBZ will be relocated with new walkways to serve up to 9 NBE. This projects also proposes a diversion of the cuckoo stream, the existing pollution control facility and contaminated runoff storage tank.

CIP.20.03.031
South Apron Expansion (Remote Stands, Taxiway & Apron)

Exhibit 1. South Apron airfield expansion, Dual Code E Taxiway Option

Features to the new South Apron:

- **New Dual Code E Taxilanes**
- **9 new remote stands incorporating PACE approved pavement expansion**
- **8 New NBE contact stands on Pier 5**
- **Relocated PBZ serving remote stands**
- **Diversion of the Cuckoo stream**
- **GSE parking areas**

As part of the airfield expansion the existing Pre-Boarding Zone (PBZ) building will be relocated further south and will include the development of the associated road access for shuttle bus operations. Additional weather protected walkways will be either side of the PBZ and will maximise the number of serviceable walks to contact stands.

CIP.20.03.031
South Apron Expansion (Remote Stands, Taxiway & Apron)

Project Details Summary		
Category: Capacity Development		
Primary Driver Business Volume Growth	**Secondary Driver** Capacity	**Total Capex requirement** € 89.8m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • Existing pavements retained • Local surface water attenuation only • Night time working may be necessary for certain works • Multi construction phasing to maximise number of stands in use at all times • Enhanced operational flexibility due to provision of Dual Code E taxilane Cost assumptions: • Relocation of stakeholder costs included • Demolition of existing buildings included • Airfield ramp around Pier 5 • Contingency is calculated at 15% of the TDC plus Design & Management costs Cost Exclusions: (refer to general cost exclusions) • Apron refurbishment Program assumptions: **4 Principal phases of construction achievable** • Phase 1 – Pier 5 site clearance and Southern stands - • Phase 2 – Pier 5 stands and Southern PBZ • Phase 3 – Taxi lanes constructed, Sothern stands completed • Phase 4 – Completion	
Opex Impact	• N/A	
Project Output	• Dual code E taxilanes • Increased quantum of stands in South Apron (34NBE) • Relocated PBZ serving 9 new NBE stands • Increased operational flexibility • Additional area of GSE parking • Weather protected walkways to PBZ	
Asset Life	• 25 years	

CIP.20.03.031
South Apron Expansion (Remote Stands, Taxiway & Apron)

Project Delivery Key Milestones	
Feasibility/outline design complete	Q4 2018
Planning complete	Q1 2020
Design complete	Q3 2019
Procurement complete	Q2 2020
Construction commence	Q1 2021
Construction complete	Q1 2023
Project handover	Q1 2023

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€11,580,000
Construction Costs	64%	€57,880,000
Escalation, Contingency & Design Variability	23%	€20,290,000
Total Installed Cost (TIC)	**100%**	**€89,750,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Buildings	
Airfield	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.033A
Enablement of Pier 3 for Precleared US bound passengers

Project Summary

- **Dublin airport proposes the development of Pier 3, to accommodate precleared US bound passengers, a shuttle bus lobby from Pier 4**

As a result of increased number and frequency of new long-haul routes, and in particular transatlantic routes to the US; it is anticipated that there will, over the course of the forthcoming CIP period, be continued growth in demand for enabled Wide Body stands, with the capacity to accommodate Precleared US bound passengers.

This demand is driven by Ireland's strategic position as a connecting node between USA and Europe, and further leverages Dublin's position of being the only European capital with US preclearance. This is reflective of the National Aviation Strategy's policy position of developing Dublin Airport as a secondary hub European airport.

As part of the wider South Apron Development, Pier 5 addresses this demand through the provision of 4 additional wide body contact stands. However, the rate of wide body stand demand may exceed the southern apron's capacity, thus requiring further wide body capacity elsewhere. Pier 3, given its location with respect to the US Preclearance facility, also has wide body capacity and could address this capacity shortfall, by facilitating departures for US bound flights. It also has the capacity at some future date to be made enabled as a satellite for US Preclearance activities.

Pier 3 will be retrofitted to accommodate both non-US and US bound operations by provision of the following:

- **A shuttle bus operation of US precleared passengers from Pier 4 to Pier 3. This requires the fit out of a bussing lounge in Pier 4 close to the CBP facility and minor works to the Pier 3 injection point to ensure passenger segregation**

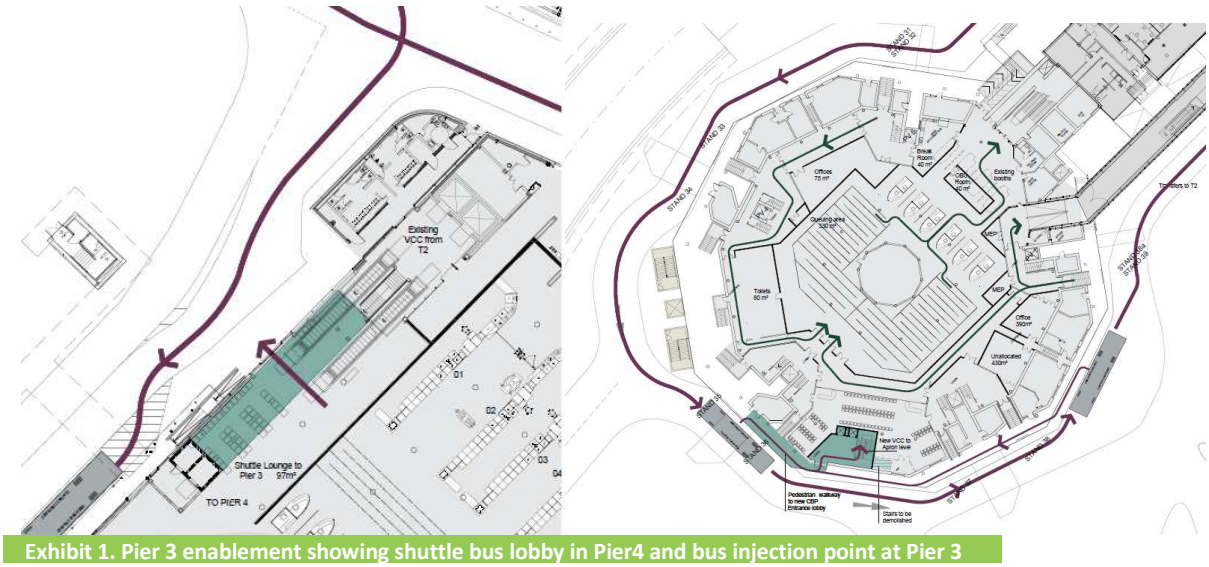

Exhibit 1. Pier 3 enablement showing shuttle bus lobby in Pier4 and bus injection point at Pier 3

CIP.20.03.033A
Enablement of Pier 3 for Precleared US bound passengers

- **Pier 3 reconfiguration at departures level to enable simultaneous precleared and non-precleared operations by providing new flexible gates. The designs would include new individual toilet blocks to accommodate the swing operation. This proposal of swingable gates allows size and operational flexibility on the pier. This phase would continue to be served by buses from Piers 4 or 5.**

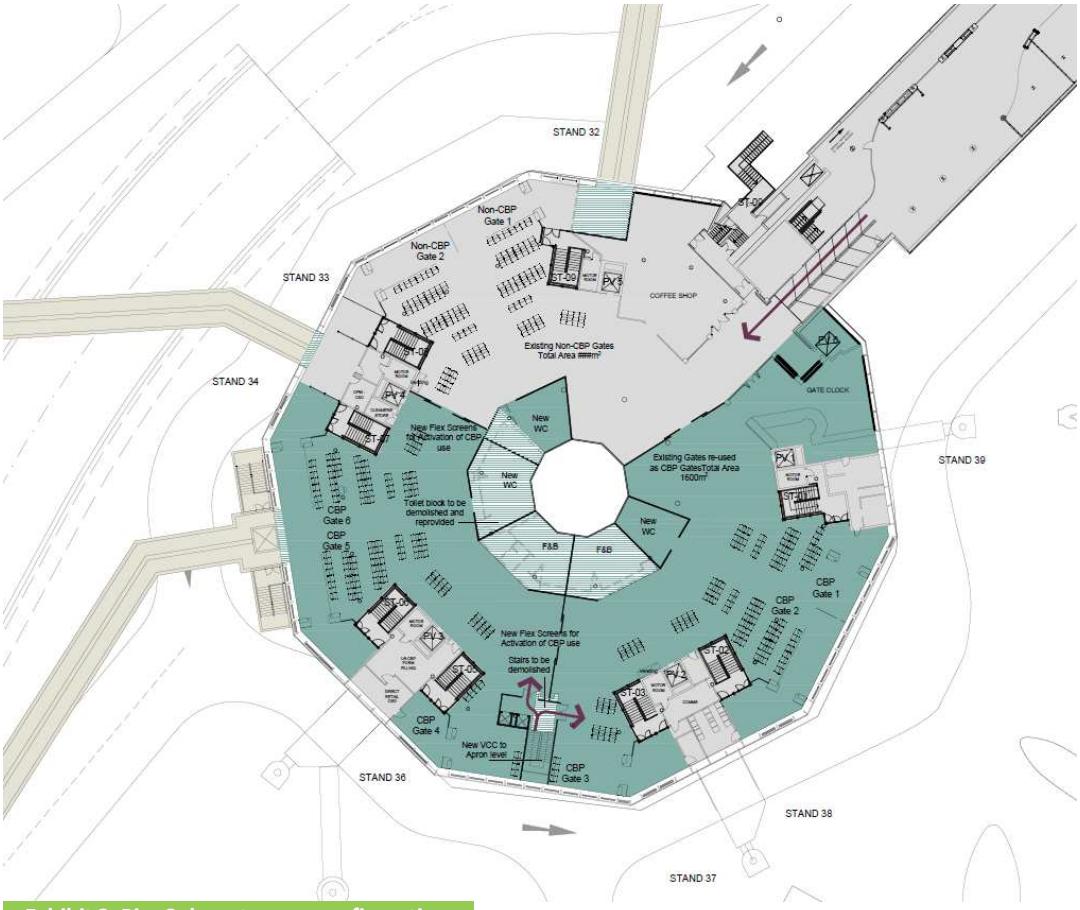

Exhibit 2. Pier 3 departures reconfiguration

With current US preclearance infrastructure requirements, the pier cannot, without extensive rebuild, accommodate an 'in-pier' satellite preclearance processing facility. However, with emerging technologies pre-clearance from this pier may be possible, with the subsequent reduction of demand on the Pier 4 facility.

CIP.20.03.033A
Enablement of Pier 3 for Precleared US bound passengers

Project Details Summary		
Category: Capacity Development		
Primary Driver Business Volume Growth	**Secondary Driver** Capacity	**Total Capex requirement** € 8.5m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • No pavement works required • Night time working may be necessary for certain works Cost assumptions: • Assumes developed with other pier 3 projects • Contingency is calculated at 15% of the TDC plus Design & Management costs Cost Exclusions: (refer to general cost exclusions)	
Opex Impact	• N/A	
Project Output	• Increased quantum of stands in South Apron • Increased operational flexibility • Bus Lounge on Pier 4 and segregated gates on Pier 3	
Asset Life	• 15 years	

CIP.20.03.033A
Enablement of Pier 3 for Precleared US bound passengers

Project Delivery Key Milestones	
Feasibility/outline design complete	Q4 2018
Planning complete	Q1 2020
Design complete	Q3 2019
Procurement complete	Q2 2020
Construction commence	Q1 2021
Construction complete	Q1 2023
Project handover	Q1 2023

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€1,070,000
Construction Costs	63%	€5,330,000
Escalation, Contingency & Design Variability	25%	€2,100,000
Total Installed Cost (TIC)	**100%**	**€8,500,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Pier 4 Works	
Pier 3 Alterations	
Airfiels Works	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.034
Pier 3 Immigration (Upgrade & Expansion)

Project Summary

- **Dublin Airport proposes to reconfigure Pier 3 Immigration by providing more passport control booths, improving passenger routes and circulation spaces.**

The project purpose is to serve operations' stakeholder needs in a short-term plan by providing a stepped approach to increase capacity from Summer 2018 of approx. 31mppa up to 2024. The main project driver is that the area is not fit for purpose given the type of traffic now on the pier.

Pier 3 arrivals area is experiencing capacity issues as a result of insufficient queueing space to cope with increased passenger numbers and non-EU profiles. Currently, larger widebody aircraft are moving onto Pier 3, significantly increasing the non-EU immigration queue times in excess of 35 minutes. Additionally, the overall product and passenger experience is unsatisfactory, particularly in terms of approach to the processing booths, visual aesthetics and passenger perception. This project requires investment commensurate with the lifecycle of the pier.

The short-term stepped plan proposed through this project should address the following requirements:

- **Provision of additional queueing space above current provision by reducing the central core space, as required.**
- **Improve route for passengers continuing to T2 (passengers walk through each gate arrival node, requiring management by CSAs).**
- **Provision for additional booths and e-gates.**
- **Additional facilities required (currently no washrooms exist in Pier 3 arrivals facility)**
- **Provision of bypass corridor for transferring passengers.**
- **Re-design of nodes and current circulation to improve passenger flow.**

This project proposes a reconfiguration of the Pier 3 immigration hall. The objective is twofold, on the one hand it will provide an increase in capacity of passenger processing and on the other it will improve circulation and queueing areas.

The project will provide 6 no. relocated booths, a net increase of 2 booths compared to the existing situation, to cope with peak demands of arriving passengers at Pier 3. The booths will be relocated in to the hall as their current location on the neck of the pier constrains growth.

Offices surrounding the centre of the Pier will be removed providing new space for a queueing. Circulation corridors will be reconfigured to allow an orderly flow of passengers into the queueing areas. These interventions allow for a better management of arriving passengers freeing space around the hall and providing an overall better passenger experience at this Pier.

CIP.20.03.034
Pier 3 Immigration (Upgrade & Expansion)

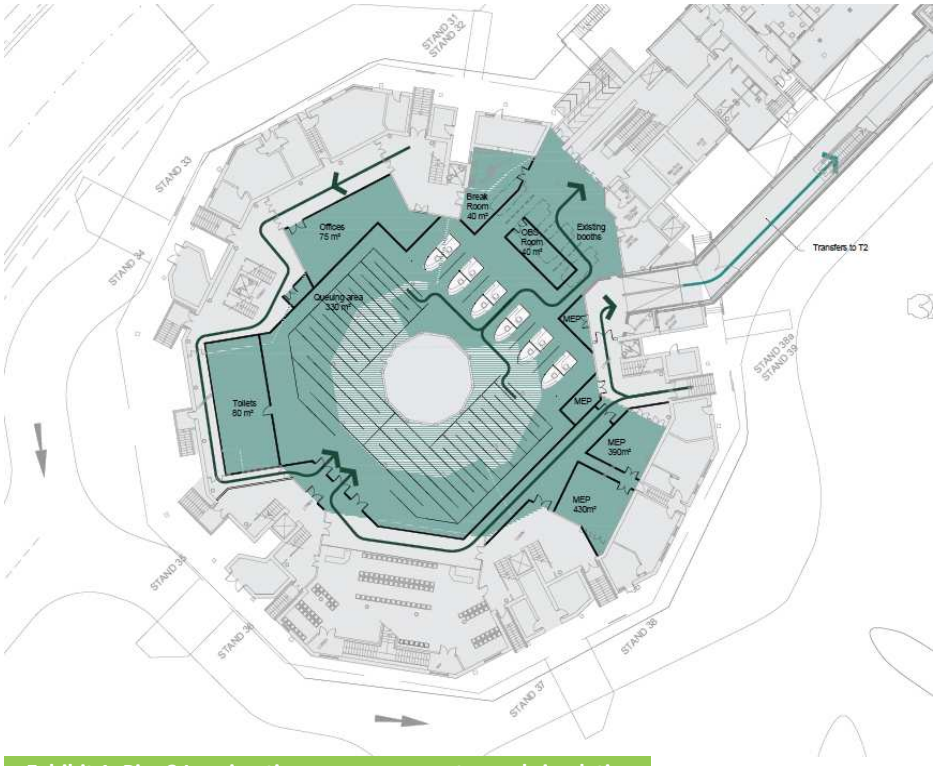

Exhibit 1. Pier 3 Immigration; passenger routes and circulation

Exhibit 2. Current queue space and line of sight to immigration

CIP.20.03.034
Pier 3 Immigration (Upgrade & Expansion)

Project Details Summary		
Category: Capacity Development		
Primary Driver Capacity Constraints & Passenger Processing	**Secondary Driver** Customer & stakeholder requirements, Passenger facilitation, Level of service	**Total Capex requirement** € 5.7m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • Optimises use of critical infrastructure. Supports airline growth and efficiency. • Minimum requirement to Operational requirements and ensures continued use of Pier 3 up to 40mppa. • Meets user requirements and improve passenger experience. • Long non-EU queues on daily basis, in excess of 35 minutes • Operational management • Availability of central core to expand queue space Cost assumptions: • Contingency is calculated at 15% of the TDC plus Design & Management costs • Developed with other Pier 3 projects Cost Exclusions: (refer to general cost exclusions)	
Opex Impact	• Opex increase of €0.4m p.a. for additional Customer Service Assistants	
Project Output	• 2 no. new passport control booths. • Improvement to queueing area in Pier3 arrivals. • Address operational issues and transfer issues. • Reduce amount of operations • Supports non-EU flights relocation to Pier 3.	
Asset Life	• 6 years	
Project Delivery Key Milestones		
Feasibility / requirements / pilot complete:	**Q4 2018**	
Planning complete:	**Q1 2020**	
Design complete:	**Q3 2020**	
Procurement complete:	**Q3 2019**	
Construction commence	**Q2 2020**	
Construction complete	**Q2 2021**	
Project handover	**Q2 2021**	

CIP.20.03.034
Pier 3 Immigration (Upgrade & Expansion)

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	23%	€1,340,000
Construction Costs	52%	€2,990,000
Escalation, Contingency & Design Variability	24%	€1,400,000
Total Installed Cost (TIC)	**100%**	**€5,730,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Refurbishment & Building Works	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.036
North Apron Development – Pier 1 Extension (Module 1) & Apron 5H PBZ

Project Summary

- **Dublin Airport proposes to further develop the North Apron Area by constructing the new East Pier 1 (Module 1) and a Pre-Boarding Zone (PBZ) building (5H).**

The North Apron (Aprons to the north of Pier 1 and 2) accommodates approximately 58% of the short-haul point to point flights operating from Dublin Airport today. In line with the masterplan and customers expressed preference the next logical step for the North Apron is the continued development of this stand capacity through the conversion of remote north Apron stands to walk in walk out contact stands.

The proposed project falls within the North Apron Development and is driven by the following:

- **increase in the number of Pier and PBZ walk-out contact stands**
- **delivery of the Masterplan's objective of Pier 1 eastern Phase 1 development**
- **to continually maintain the levels of service provided at the airport and enhance the passenger experience**

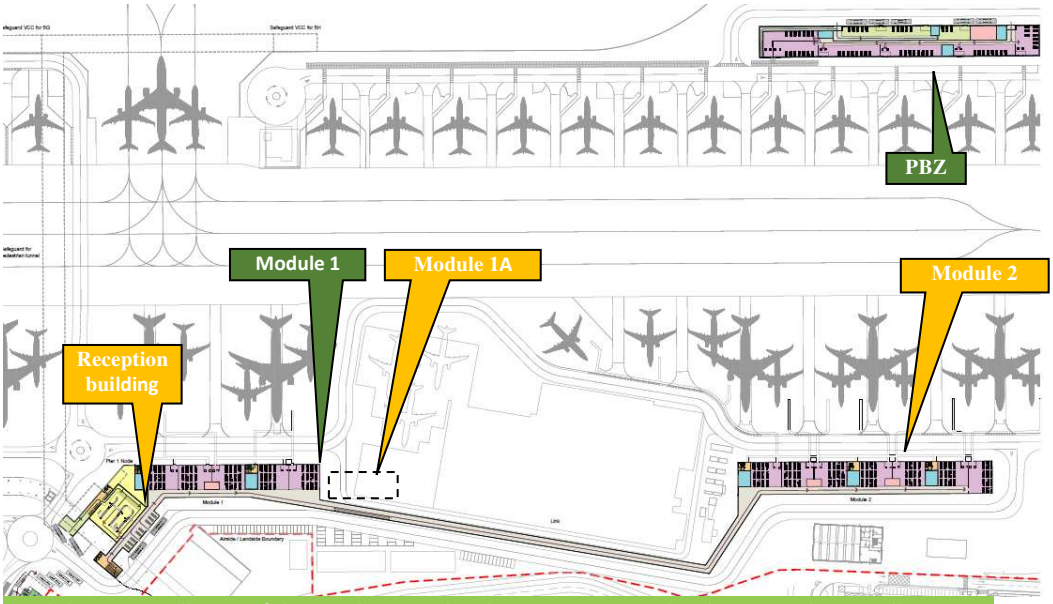

Exhibit 1. Overall view of the North apron development, 10 year development plan in yellow

CIP.20.03.036
North Apron Development – Pier 1 Extension (Module 1) & Apron 5H PBZ

Eastern Extension of Pier 1 – Module 1

The Eastern Pier 1 extension will be built in phases to accommodate existing buildings under use. It is proposed the first element of the existing Pier 1 extension be module 1, with module 2 then developed at the most easterly end with the central pier component subsequently being infilled in another CIP period.

Module 1 itself, a two-storey building, is a simple, functional design, focused on the provision of walk- out contact stands for short haul operations. Departures are located on apron level, with 5 no. double height Code C gates for 4 no. new narrow body aircraft walk-out contact and remote stands. The building is linked directly to the skybridge via a departure's corridor and vertical circulation cores. The first floor consists of an arrival's corridor with vertical circulation cores which connect to the stands. In time Module 1 can be extended eastwards by 2 gate hold rooms (Module 1A).

The reception building or node, that connects module 1 with the sky bridge, is a flexible space, which can accommodate a transfer facility. This transfer facility would be used to process transfer passengers coming from Pier 1 prior to them being bussed to the injection points across the airport. An associated shuttle and bus kerb also forms part of this facility.

While it is proposed to develop Module 1 in its entirety during this regulatory period, Module 1A, the Reception building (Node) and Module 2 will be progressed through design and planning stages during this regulatory period.

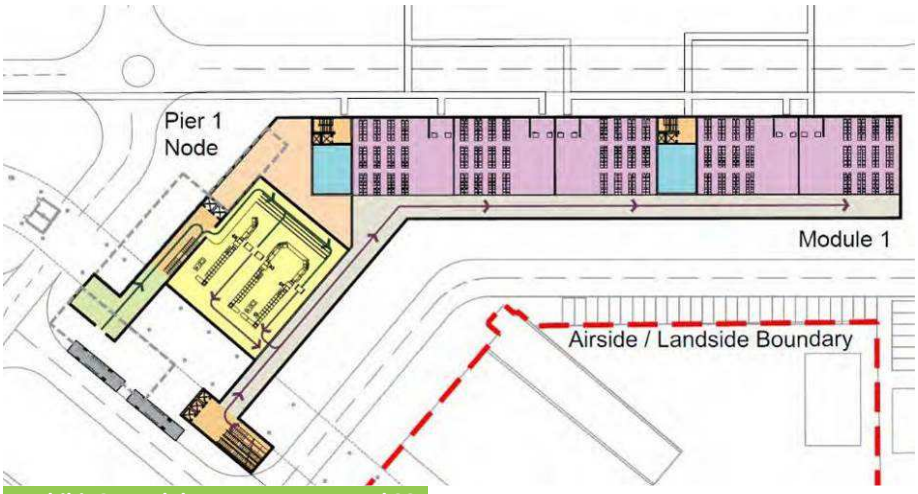

Exhibit 2. Module 1 Departures Level 00

The development of this first phase of the eastern build out of Pier 1 provides for redevelopment of the associated stands and infrastructure.

The development also includes for demolition of existing structures (North terminal etc.) and development of the apron to the east of 5H to allow for future potential development of displaced hangar space (by others).

CIP.20.03.036
North Apron Development – Pier 1 Extension (Module 1) & Apron 5H PBZ

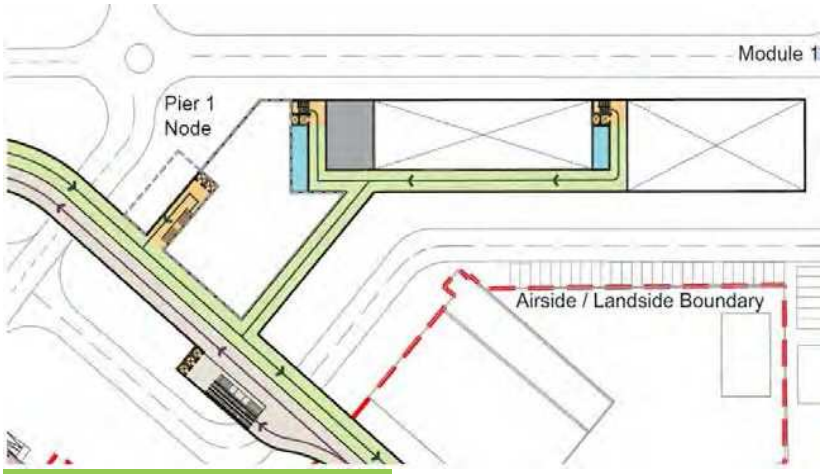

Exhibit 3. Module 1 Arrivals Level 10

5H Pre-boarding Zone

A remote Pre-Boarding Zone building located on the northern side of the Apron 5H will further increase the number of walk-out contact stands (12 no.) provided in the northern airfield. The facility is designed for both arrivals and departures mode, with passengers bussed with a shuttle service to and from the existing OCTB. This single-storey building, similar in design to the existing PBZ on the south apron, will provide 9 no. passenger holding areas, toilet provisions for the forecast passenger capacity and additional limited space for F&B/Retail opportunities. To maximise the number of contact stands serviced from the PBZ, a weather protected walkway will be constructed to the west. The area will be equipped with jet blast protection deflectors to protect passenger operations from taxiing aircraft utilising the Northern Runway. The project also includes for the construction of an inner road all around the PBZ, with bus turnouts to the back feeding into a shuttle lounge.

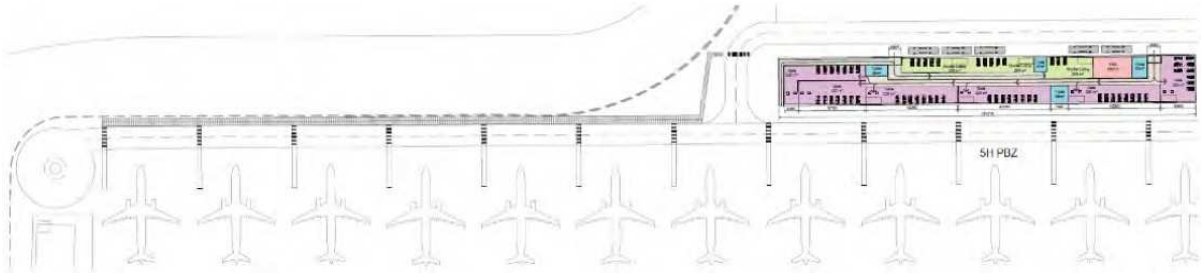

Exhibit 4. Plan view of PBZ ground floor and protected walkway along apron 5H

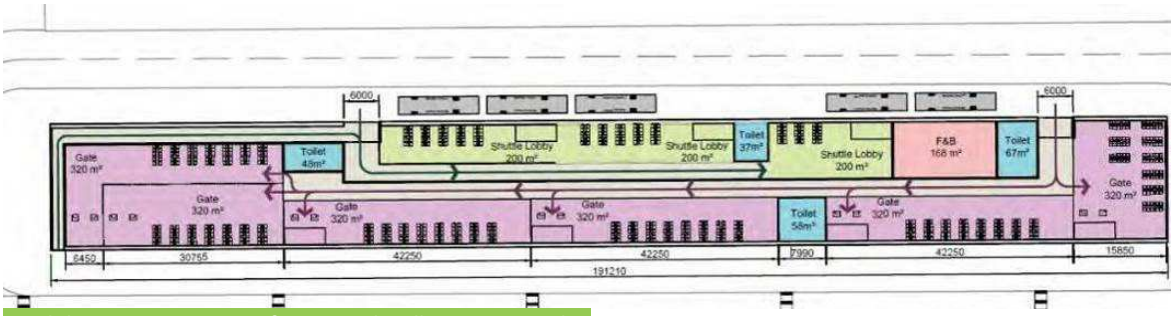

Exhibit 5: Cross-section of protected walkways to stands

CIP.20.03.036
North Apron Development – Pier 1 Extension (Module 1) & Apron 5H PBZ

Project Details Summary		
Category: Capacity Development		
Primary Driver Business Volume Growth	**Secondary Driver** User Requirements	**Total Capex requirement** €175.3m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • Walk out stand requirement on North Apron • Segregated Arrivals and Departures • Safeguarding for future transfers need Cost assumptions: • Traditional construction method (not modular) • Reception building, Module 1A and Module 2 design and planning only • Contingency is calculated at 15% of the TDC plus Design & Management costs Cost Exclusions: (refer to general cost exclusions) • Refurbishment of existing apron Program assumptions: • Module 1: Assumes landside construction • Landside construction not viable for 5H.	
Opex Impact	• Opex increase of €5.1m p.a. for: • Cleaning, Customer Service Assistants, Repairs & Maintenance, Insurance, Rates, Bussing and Energy costs.	
Revenue Impact	• Loss of €1.2m p.a. in revenue due to demolishment of Hangar 1.	
Project Output	• Pier 1 extension east (Module 1) • New PBZ building serving 5H	
Asset Life	• 25 years	
Project Delivery Key Milestones		
Feasibility / Outline Design complete:	**Q4 2018**	
Planning complete:	**Q2 2020**	
Design complete:	**Q3 2020**	
Procurement complete:	**Q1 2021**	
Construction commence	**Q3 2022**	
Construction complete	**Q4 2024**	
Project handover	**Q4 2024**	

CIP.20.03.036
North Apron Development – Pier 1 Extension (Module 1) & Apron 5H PBZ

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	9%	€15,820,000
Construction Costs	67%	€116,930,000
Escalation, Contingency & Design Variability	24%	€42,560,000
Total Installed Cost (TIC)	**100%**	**€175,310,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
North Apron - Module 1	
North Apron - PBZ 5H	
North Apron - Airfield Works	
North Apron - North Apron Relocations	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.043A
Terminal 1 Piers – New Airbridges (6NBE/3WB)

Project Summary

- **Dublin Airport proposes as an option the retrofitting of fixed links and airbridges to Terminal 1 piers.**

The growth in Dublin airport's widebody long-haul operations has been such that Piers 3 & 4 are now at capacity with scheduled widebody operations every morning. Consequently, narrow body & wide body operators with airbridge preference, are overflowing to other piers.

With the anticipated growth in U.S. bound wide body flights absorbing almost fully the capacity of Pier 4 and 5 (CIP.20.03.029). The development of Pier 3 (CIP.20.03.033A) is proposed but there remains a balance of non-US bound wide body aircraft which may require accommodation on the airfield.

To address this requirement, it is proposed to develop additional wide body stands on Terminal 1 piers 2 and 1. It is proposed that this will be undertaken on a phased basis. Initially developing WB capacity on stand 201 and subsequently develop further WB airbridge connected stands on Piers 2 (from the atrium) or Pier 1.

This project falls within the North Apron Development and is driven by:

- **The need to deploy and increased number of Wide Body enabled stands around the airfield**

Exhibit 1. Computer generated image of proposed

The complete development of pier 2 can accommodate 3 airbridge served wide body aircraft or 10 narrow body aircraft. This is achieved through the retrofitting of fixed links and airbridges for single docking capability for widebody aircraft, to the MARS configured stands on Pier 2, namely stands;

- **201 L/C/R**
- **202 L/C/R**
- **203 L/C/R**

The stands 201-203 have capacity for all aircraft types, up to and including the largest 'full code E' aircraft,

CIP.20.03.043A
Terminal 1 Piers – New Airbridges (6NBE/3WB)

such as B777-300ER and A350. The project offers low passenger travel distance from central search to gate, sufficient hold gate capacity and concentration of wide body aircrafts on Piers 2-5.

As part of the Asset Care works ref CIP 20.01.002, the apron in this area is proposed to be upgraded as it is at end of life and will be designed to support code E aircraft.

Some limited modification works within the pier will be required to ensure that the pier can facilitate three code E gates. In consideration of the expected originating wide body aircraft no additional facility over and above existing provisions is planned for transfer passengers.

In consideration of 16/34 continued operations as a runway/taxiway into the medium-term future the minimum asset life on investments on Pier 2 is expected to be at minimum 15+ years.

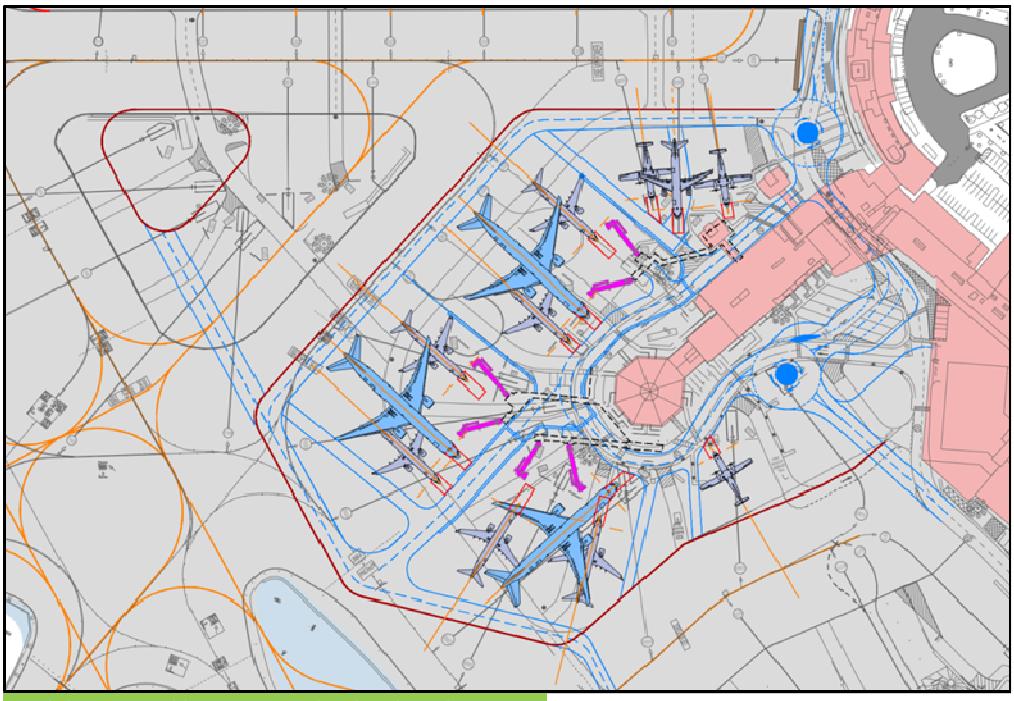

Exhibit 2. Stand layout around redeveloped Pier 2

CIP.20.03.043A
Terminal 1 Piers – New Airbridges (6NBE/3WB)

Project Details Summary		
Category: Capacity Development		
Primary Driver Business Volume Growth	**Secondary Driver** Capacity	**Total Capex requirement** €33.9m
Underpinning Assumptions and Cost Benchmarks	Cost assumptions: (refer to general cost assumptions) • Contingency is calculated at 15% of the TDC plus Design & Management costs • Includes for limited refurbishment of Pier 2 Cost Exclusions: (refer to general cost exclusions) • Pavement upgrades or refurbishment	
Opex Impacts	• N/A	
Project Output	• Wide body enablement of 3 No. Stands	
Asset Life	• 20 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q2 2019**	
Planning complete	**Q2 2020**	
Detailed design complete	**Q2 2020**	
Procurement complete	**Q4 2020**	
Construction commence	**Q1 2021**	
Construction complete	**Q2 2022**	
Project handover	**Q3 2022**	

CIP.20.03.043A
Terminal 1 Piers – New Airbridges (6NBE/3WB)

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€4,250,000
Construction Costs	63%	€21,270,000
Escalation, Contingency & Design Variability	25%	€8,380,000
Total Installed Cost (TIC)	**100%**	**€33,900,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Demolitions & Alterations	
Works to Existing Piers	
New Fixed links and Airbridges	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.049
De-icing Pad at Runway 10R

Project Summary

- **Dublin Airport proposes to construct a de-icing pad to enhance the airport's operations during severe cold weather event**

Following de-icing, aircraft have a limited 'hold-over time' before needing to be de-iced again. The departure queue at times can be in excess of the hold-over time, currently resulting in aircraft having to return to stand to de-ice again. This can be exacerbated when departure queues are increased due to reduction in runway capacity because of deteriorating or poor weather conditions. Many examples of this were encountered during the cold weather event of 2018 and resulted in many stakeholders calling for a remote de-icing pad for Runway 10. De-iced aircraft encountered issues with re-icing while taxing to the end of runway 10 and locating a remote de-icing pad in that area would remove the requirement for aircraft to return to stand to de-ice again. In addition, it also allows stand capacity to be released should de-icing delays on the apron occur, by allowing aircraft to push-back without de- icing on stand and de-ice remotely prior to take-off. This project seeks to deliver a solution for the existing Runway 10 (future runway 10R), which becomes the primary departure runway in parallel runway Westerly operations.

It is proposed to build a purpose built de-icing facility as an enhancement to the previously approved PACE Runway 10 Line Up Points project. The mentioned project will deliver an additional Runway line-up point, bypass taxiway and associated infrastructure.

The de-icing pad is located next to the southern runway's 10 Threshold. This pad will allow the de- icing of a single code E or code C aircraft. The optimised layout of the pad allows for full circulation of de-icing trucks around the aircraft. The design includes a reserved area for de-icing trucks and ancillary equipment.

Exhibit 1. Plan view of de-Icing pad at 10R

CIP.20.03.049
De-icing Pad at Runway 10R

Project Details Summary		
Category: Capacity Development		
Primary Driver Operational need	**Secondary Driver** Capacity	**Total Capex requirement** €5m
Underpinning Assumptions and Cost Benchmarks	Cost assumptions: (refer to general cost assumptions) • Contingency is calculated at 15% of the TDC plus Design & Management costs • PACE project development Cost Exclusions: (refer to general cost exclusions) • Drainage connectivity to western campus	
Opex Impacts	• N/A	
Project Output	• Single De-icing Diamond • De-icing facilities including parking	
Asset Life	• 20 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q2 2019**	
Planning complete	**Q2 2020**	
Detailed design complete	**Q2 2020**	
Procurement complete	**Q4 2020**	
Construction commence	**Q1 2021**	
Construction complete	**Q2 2022**	
Project handover	**Q3 2022**	

CIP.20.03.049
De-icing Pad at Runway 10R

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	12%	€620,000
Construction Costs	63%	€3,140,000
Escalation, Contingency & Design Variability	25%	€1,240,000
Total Installed Cost (TIC)	**100%**	**€5,000,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Site Clearance	
Airfield	
Cabin	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.051B
West Apron Vehicle Underpass – Pier 3

Project Summary

- **This project proposes the construction of a vehicle underpass below runway 16/34 linking Pier 3 to the Western campus.**

The current Masterplan envisages an expansion of the airport to the West campus, keeping the crosswind runway 16/34 operational. In order to meet the capacity uplift forecasted in the upcoming CIP period, full use of the West apron and additional aircraft stands are required. To enable passenger operations on the West apron, the connectivity between the West campus and the East campus needs to be resolved. Capacity studies suggest that in future operations, there will be in excess of 3.500 vehicles/day accessing this area. The types of vehicles required to access the west apron include buses, tugs, loaders and bowsers.

In the absence of access to the West, the capacity of the airport will be restricted to the stand capacity in the Eastern campus.

This project proposes the construction of an underpass below runway 16/34 to provide direct vehicular access between the West and East campus. A bidirectional two-lane single-cell underpass will be constructed using cut-and-cover techniques.

Exhibit 1. Plan view of proposed central alignment to the vehicular underpass

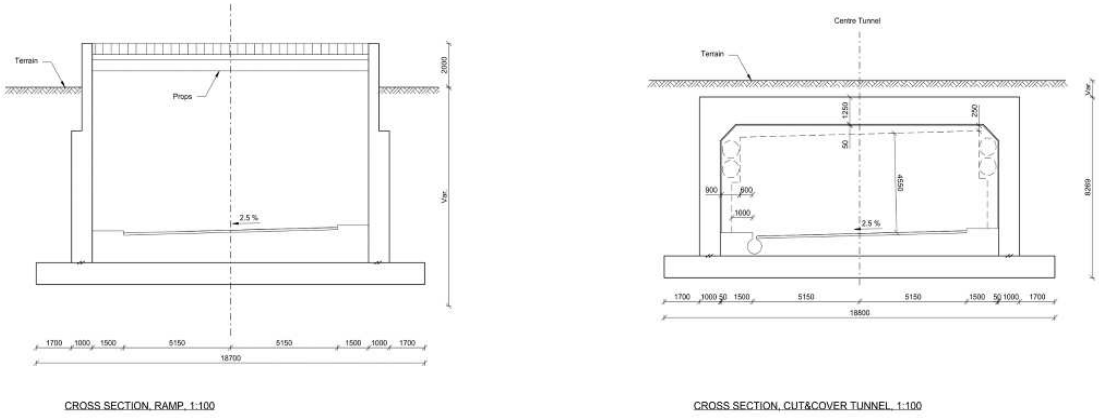

Exhibit 2. Typical cross-section of vehicular underpass

CIP.20.03.051B
West Apron Vehicle Underpass – Pier 3

The underpass alignment will be at the centre of the airfield linking Pier 3 to the Western campus directly. This alignment optimises the functionality of the underpass by locating it a central area of the campus, with ease of access via the internal road network from the north and south apron. This option is also the most reliable with predictable crossing times as it minimises operational disruptions by avoiding crossings with airfield taxiways and pedestrian crossings for walk-in walk-out stands.

A ramp 210m long will provide access to the underpass from the northern side of Pier 3. The underpass will run below the existing Taxiway 4 and F2 before reaching the Runway 16/34, will then continue under taxiways H2 and M2 and will then ramp up another 140m to surface level at the West Apron beside the envisaged future west satellite. The overall dimensions to the underpass will be 4.55 m headroom by 5 m lane width with maintenance sidewalks either side.

This underpass alignment results in the need for a reconfiguration of aircraft stands and access roads in Pier 3. The enabling project of Pier 3 requires the realignment of stands 311 to 314 with a net gain of +1 narrow body stand. The installation of 3 no. fixed links with elevated walkways that cross over the new underpass ramp will be required to access some of the new reconfigured stands.

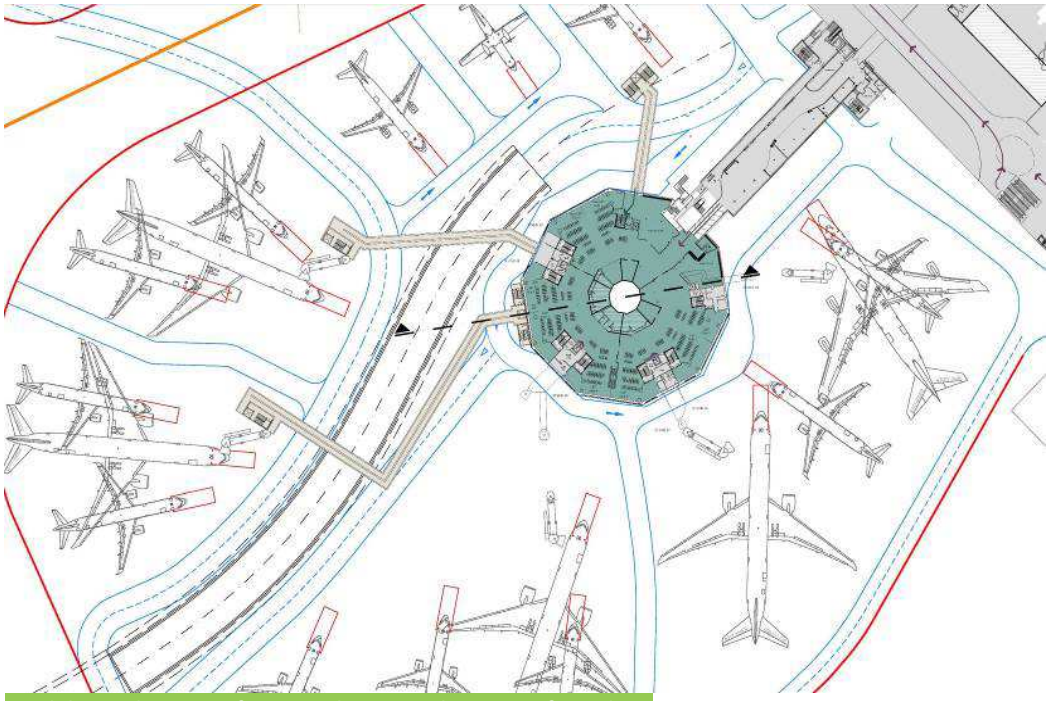

Exhibit 3. Plan view of proposed Pier 3 realignment of stands

This alignment has been designed to safeguard for a possible extension of Pier 3 in the future.

CIP.20.03.051B
West Apron Vehicle Underpass – Pier 3

Project Details Summary		
Category: Capacity Development		
Primary Driver Business Volume Growth	**Secondary Driver** West Campus Connectivity	**Total Capex requirement** €171.0m
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • A build-only ("traditional") contract for construction. • Underpass design is to TII "Design of Road Tunnels" based on 40 mppa projected traffic volumes. • All excavated material assumed to be inert. Max distance to tip 20kms • Backfill material to be imported. • Programme and costs based on open-cut excavation and no piling. • Price based on continuous construction. 2 shifts, 8 hours per shift, 7 days a week. • Operational impact not assessed. Allowance for construction / temporary works uplift included. • Assumed all works will be constructed within an airside environment. • Costs presented assumed inflation to be at 6 % each year to take to Q2 2021. • Unobstructed access assumed for the construction due to other ongoing construction projects • Ideal land take for construction works – longer taxiing routes may be necessary for arriving and departing aircraft. • Priority given to construction traffic to enable works to be completed within closure periods. • Works are constructed as one continuous project. (i.e. no additional excavation and backfilling) • Estimate class – Class IV (-30 / +50) – base estimate presented. • Development with other Pier 3 projects	
Opex Impact	• Opex increase of €0.2m p.a. for additional technology costs.	
Project Output	• Road vehicle underpass improving connectivity between Terminal 1 and 2 and Western Campus • Access ramps from apron road network to underpass • Access roads on west apron • Ventilation equipment associated with underpass	
Asset Life	• 50 years	

CIP.20.03.051B
West Apron Vehicle Underpass – Pier 3

Project Delivery Key Milestones	
Feasibility / Outline Design complete:	Q4 2021
Planning complete:	Q1 2022
Detail Design complete: (sufficient for build-only contract)	Q3 2022
Procurement complete: (12 months total including PQ)	Q3 2022
Construction Commence: (incl. enabling works)	Q4 2022
Construction Completed:	Q3 2024
Project Handover:	Q3 2024

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	12%	€20,660,000
Construction Costs	60%	€103,300,000
Escalation, Contingency & Design Variability	28%	€47,110,000
Total Installed Cost (TIC)	**100%**	**€171,000,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Main Underpass Section	
East Ramp	
West Ramp	
Plant Rooms	
Works to Pier 3	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.052
Surface Water Environmental Compliance

Project Summary

- **Management and treatment of surface water run-off at airports, especially for the surface water loaded with de-icing contaminants, is an increasingly challenging and costly problem for airport authorities and needs to be addressed in line with regulations.**

Storage and On-site Treatment
Management and treatment of surface water runoff, especially for the de-icing agents infused surface water, is a challenging and costly problem for airport authorities. Statutory regulators and water utilities agencies are enforcing stricter restrictions; therefore, the airport authorities must develop and implement effective surface water run-off management strategies.

The existing surface water infrastructure at Dublin Airport does not meet best practice. It is likely that in the near future stricter licences conditions on discharge flows and loads into the receiving surface water streams will come into place. As the anticipated passenger growth continues, additional pressure will further overload the inadequate water infrastructure.

This project proposes to upgrade the existing surface water collection network, divert the existing Cuckoo stream through the airfield and to provide additional storage and treatment facilities for polluted runoff. This project will ultimately improve the water quality in local waterways in line with Fingal County Council River Basin Management Plan. This will be achieved through the separation of clean water from polluted run-off and the provision of a more controlled pollution management system which will reduce the risk of insufficient storage being available to cater for pollution events. It should be noted that storage requirements are sensitive to the concentration limits for discharges to sewer imposed by Irish Water and the limits imposed by Fingal County Council on the capacity of local waterways to accept polluted flows. This proposal assumes surface attenuation tanks with associated control measures to mitigate risk from bird strikes (below ground storage estimated to incurs an additional estimated €38m capital cost).

It is anticipated that the proposed infrastructure will be implemented over three CIP phases.
Only Phase 1 of the overall project is proposed in this CIP period. This includes the construction of a downstream centralised storage and treatment facility for polluted run-off and associated pumping stations as well as network reconfiguration works, a diversion of the Cuckoo stream and construction of a roof water interceptor sewer. The proposed Phase 1 pipeline works are shown in full lines on the graphic below. Future phased pipeline works are shown in dashed lines.

CIP.20.03.052
Surface Water Environmental Compliance

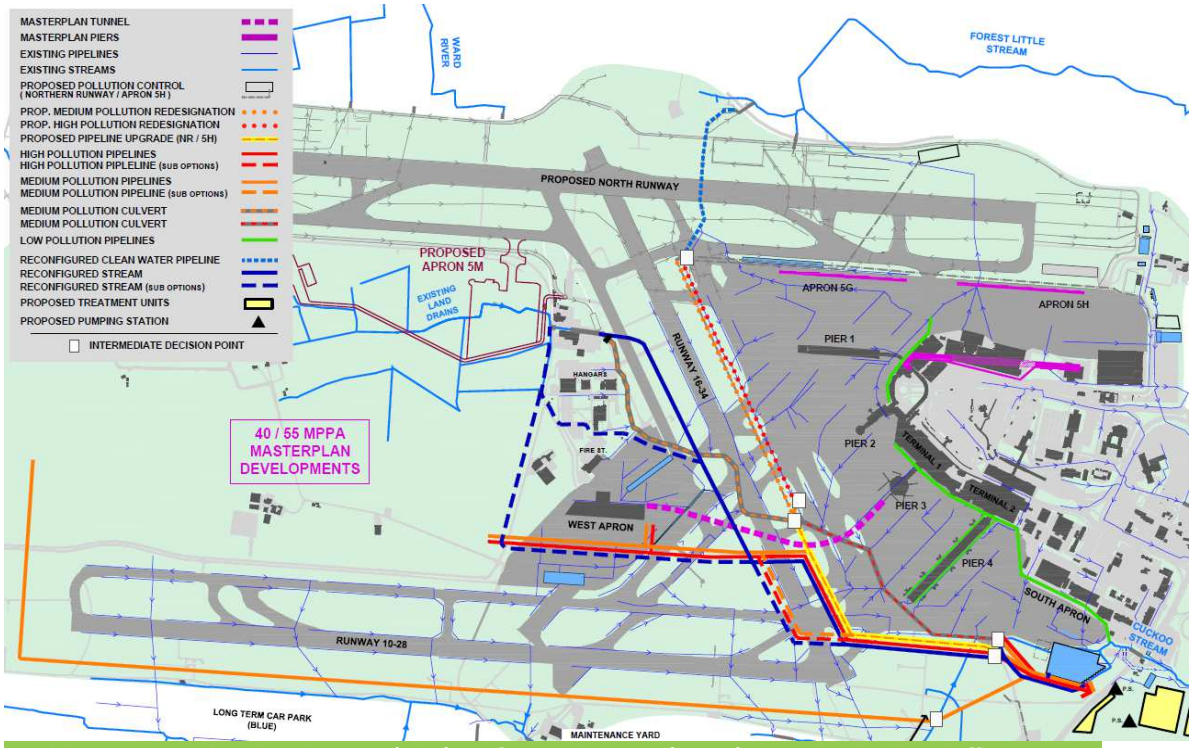

Exhibit 1. Proposed Cuckoo diversion (Blue), roof water diversion (Green), centralised polluted effluent collection (Yellow, red and orange)

CIP.20.03.052
Surface Water Environmental Compliance

Project Details Summary		
Category: Capacity Development		
Primary Driver Replacement	**Secondary Driver** Regulatory	**Total Capex requirement** €51m
Underpinning Assumptions and Cost Benchmarks	Design assumptions: • Night time working included for the roof water interceptor sewer. • Multi construction phasing to minimise disruption to airport operations. • Trenchless construction techniques to be used underneath taxiways etc. to minimise route interruptions for taxiing aircraft. • It is assumed that works proposed for future CIP phases progress as planned. • Cost based on surface pond attenuation • Network cost includes a deduction for the upgrade of the proposed North Runway sewer as this sewer is to be partly funded by the North Runway project. • Existing 20,000m3 clean run-off attenuation is retained. • 11,000m3 of the polluted run-off attenuation to be funded as part of Airfield works. • North Runway and Apron 5H developments, including associated drainage works, to proceed. • Pipeline sizing has been carried out under the assumption that the proposed 55mpaa developments to the west of the airfield will proceed later. • Clean and local contaminated surface water attenuation to be provided under Airfield WPC Projects.	
Opex Impact	• No material Opex impact. • There will be an Opex impact associated with the provision of additional storage and treatment, but this will be offset by a reduction in the volume of run-off currently being discharged to public sewer.	

CIP.20.03.052
Surface Water Environmental Compliance

Project Output	• Construction of downstream centralised storage and treatment facilities for polluted run-off and associated pumping stations. • Construction of Cuckoo stream diversion using a combination of open channel construction and box culvert construction. • Construction of pipelines for the collection of polluted run-off and reconfiguration of existing network. • Installation of monitoring and decision points for determining the level of pollution of run-off. • Roof water interceptor sewer for terminal buildings, piers, south apron and connection of all roof drainage pipework. • Ancillary Civil and MEICA infrastructure associated with the above works.
Asset Life	• 20 years

Project Delivery Key Milestones	
Feasibility / requirements / pilot complete:	**Q2 2019**
Planning complete:	**Q2 2020**
Design complete:	**Q3 2020**
Procurement complete:	**Q1 2021**
Construction Commence:	**Q3 2021**
Construction Completed:	**Q3 2023**
Project Handover:	**Q4 2023**

CIP.20.03.052
Surface Water Environmental Compliance

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€6,680,000
Construction Costs	65%	€33,390,000
Escalation, Contingency & Design Variability	22%	€11,540,000
Total Installed Cost (TIC)	**100%**	**€51,000,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Storage & Treatment Plant	
Cuckoo Stream Diversion Works	
Roof & Surface Water Diversion Works	
Pollution Control	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.054
New Remote Apron 5M – 17 NBEs

Project Summary

- **Dublin airport proposes to construct a new aircraft stand (5M Apron) to allow a remote stand and to safeguard future westward expansion.**

In order to meet the capacity uplift forecasted in the upcoming CIP period, full use of the West apron and delivery of an additional 17 NBE aircraft stands are required.

West Apron operations have steadily increased over the last five years to facilitate growth in the East. This proposed apron in the West of the Campus will facilitate the relocation of all non-passenger terminal related operations (cargo, towing operations, GA, Standby aircraft etc.), provide a release valve to facilitate the temporary closure of existing infrastructure required to deliver multiple construction projects, and ultimately facilitate future growth in all areas.

Additionally, this development further safeguards for cost effective, scalable Master Plan compliant development of remote stands in-line with future demand. This development will require the realignment of the R108.

This option safeguards for relatively simple and cost effective future expansion, without multiple road diversions. The apron will be connected to Parallel Taxiway Mike (M) via link taxiways. The project will allow for the following:

- **17 no. NBE of MARS configured stands, for multiple users, such as Cargo, General Aviation, towing operations, standby aircraft and contingency.**
- **Blast screen along southern edge**
- **88,500m2 Apron (incl. connecting taxiway)**
- **Realignment of the R108 public road (Alignment also brings other lands airside to accommodate other potential facilities including Code E – Engine test facility)**
- **Potential future apron expansion in line with the airport Masterplan**

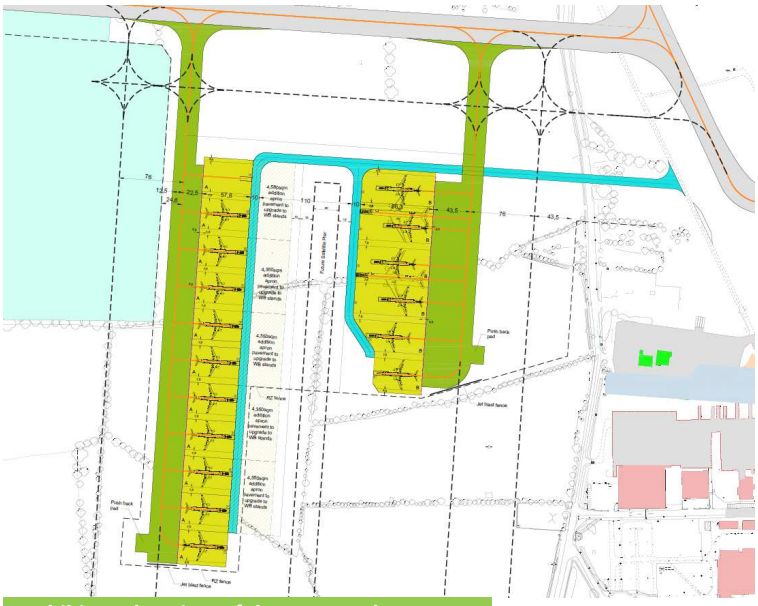

Exhibit 1. Plan view of the proposed apron 5M

CIP.20.03.054
New Remote Apron 5M – 17 NBEs

Project Details Summary		
Category: Capacity Development		
Primary Driver Capacity	**Secondary Driver** Business Development	**Total Capex requirement** €72.1m
Underpinning Assumptions and Cost Benchmarks	Design assumptions: • Runway 10L-28R OLS constraints Cost assumptions: • 5M Apron can be constructed landside • 5M Apron will developed with the northern hub to reduce costs, security delays and overall construction time scale • 5M will only require floodlighting Cost Exclusions: (refer to general cost exclusions) • 5M will be safeguarded but not provide for AVDGS ad FEGP	
Opex Impact	• Opex increase of €1.4m p.a. for additional staff and rates costs.	
Project Output	• New apron construction comprising 17 NBE West of RWY 16-34 • EASA compliant design • Master Plan compliant solution • All associated AGL, signage & required lighting (HML) • Realignment of R108 & perimeter road • Safeguard for future Master Plan aligned expansion (additional apron)	
Asset Life	• 30 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q4 2018**	
Planning complete	**Q1 2021**	
Detailed design complete	**Q2 2021**	
Procurement complete	**Q4 2022**	
Construction commence	**Q1 2023**	
Construction complete	**Q4 2024**	
Project handover	**Q4 2024**	

CIP.20.03.054
New Remote Apron 5M – 17 NBEs

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€9,046,000
Construction Costs	63%	€45,225,000
Escalation, Contingency & Design Variability	25%	€17,814,000
Total Installed Cost (TIC)	**100%**	**€72,085,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Facilitation & Demolition Works	
Airfield	
Roads Paths & Pavings	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.057
Airside GSE Charging Facilities (Ground Handlers)

Project Summary

- **Dublin Airport proposes the installation of Ground Support Equipment electrical charging locations around the airfield.**

With the abundance of accessible wind and ocean energy, Ireland is well suited to become an early adopter of electric vehicle technology. Within the aviation industry it is anticipated that there will be a systematic conversion of all ground support equipment to be electric in the upcoming years. In this manner the airport is required to keep up to pace with delivering the infrastructure required to enable this change.

This trend falls in line with Dublin airports sustainability strategy and the European directives for the reduction of gas emissions and will make a significant difference to the airport's carbon footprint. The project will also see a significant reduction in fuel costs as it will trigger the conversion of the whole GSE fleet in the airport to utilizing electrical vehicles. The drivers to this project are:

- **To provide the required infrastructure to keep up with trends in emerging technology around GSE vehicles**
- **To work towards a more sustainable and greener environment around the airport**

The exact details of this project are not know at this point. The allowance requested in the CIP is intended to promote and aid the move towards all-electric GSE fleets for all users campus-wide, in-line with Dublin Airport's sustainability strategy, the national decarbonisation strategy (National policy framework alternative fuels infrastructure directive for transport in Ireland 2017-2030), and 2014-94-EU; Alternative fuels infrastructure directive. In addition to the aforementioned national strategies and EU directive, a transition to electric vehicles (specifically GSE in this case) aligns with the airports desired move toward carbon neutrality and the ACI Airport Carbon Accreditation programme.

Should this allowance be approved by the regulator as part of CIP 2020, consultation will be required with all stakeholders operating GSE airside as the project progresses through feasibility and design. These consultations will determine the exact quantum of requirements, preferred locations, metering & charging etc. The roll-out of such infrastructure also needs to align with stakeholders own sustainability and GSE fleet renewal strategies.

Exhibit 1. Example of outdoor GSE fast charging equipment

CIP.20.03.057
Airside GSE Charging Facilities (Ground Handlers)

Project Details Summary		
Category: Capacity Development		
Primary Driver Sustainability	**Secondary Driver** Operational Efficiency	**Total Capex requirement** €5.0m
Underpinning Assumptions and Cost Benchmarks	Cost assumptions: (refer to general cost assumptions) • Contingency is calculated at 15% of the TDC plus Design & Management costs • Escalation is included to mid-point of construction and is based on a rate of 6% per annum Cost Exclusions: (refer to general cost exclusions)	
Opex Impact	• No material Opex impact. • There are potential savings in reduced use of fuel around the airport however, there will be an increase in the overall power demand. Both changes are expected to marginally change Opex costs.	
Project Output	• Outdoor fast charging units	
Asset Life	• 10 years	
Project Delivery Key Milestones		
Feasibility/outline design complete	**Q4 2018**	
Planning complete	**Q2 2021**	
Detailed design complete	**Q3 2021**	
Procurement complete	**Q4 2021**	
Construction commence	**Q4 2021**	
Construction complete	**Q4 2022**	
Project handover	**Q4 2022**	

CIP.20.03.057
Airside GSE Charging Facilities (Ground Handlers)

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	**13%**	**€630,000**
Construction Costs	**63%**	**€3,150,000**
Escalation, Contingency & Design Variability	**25%**	**€1,240,000**
Total Installed Cost (TIC)	**100%**	**€5,000,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Facilitation & Demolition Works	
GSE Charging facilities incl. Electrical	
Civil Works	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.03.071
Hydrant Enablement – Pier 2 & 3

Project Summary

- **Dublin Airport proposes the installation of a fuel hydrant system to service aircraft parked on Pier 2 and Pier 3.**

The provision of fuel hydrants in place of the existing tanker arrangement at the existing piers 2 & 3 is considered as an optimal fuelling method since it provides an environmentally friendly, fast and reliable refuelling method with overall positive impact on safety and efficiency of everyday airport operations. This proposed Pier 2 & 3 Fuel Hydrant System consists of a network of underground piping that transports fuel from tanks in the fuel farm to aircraft while managing fuel intake.

Currently Dublin Airport is carrying out a fuel pipeline project to provide this service throughout Pier 1, Pier 4 and a single stand on Pier 3 (316). Since the installation of air bridges on Pier 3 to serve wide-body aircraft, many long-haul carriers have been allocated to this pier. This has increased the amount and complexity of turnaround operations in a very congested area. The installation of fuel hydrants around this pier would improve its operational performance noticeably not only by reducing the traffic congestion and freeing up space but also from a Safety point of view.

Underpinned by the same principles, the installation of fuel hydrants in Pier 2 will improve operational performance and improve the level of service of the existing Pier. This project proposes to expand the fuel hydrant system to further stands in Pier 3. The project will provide the following:

- **Fuel pipeline and hydrant pits at stands:**
- **Pier 2: 200-207**
- **Pier 3: 311C, 312, 313C, 314, 315C, 317 and 318L, 318C, 318R**

Exhibit 1. Left to right: Plan view of proposed fuel extension around Pier 2 & 3 and photo of fuel

CIP.20.03.071
Hydrant Enablement – Pier 2 & 3

Project Details Summary		
Category: Capacity Development		
Primary Driver Operational Efficiency	**Secondary Driver** Safety	**Total Capex requirement** €23.7
Underpinning Assumptions and Cost Benchmarks	Design assumptions; • Similar fuel provision and scope as required for Pier 1. Cost assumptions: (refer to general cost assumptions) • Contingency is calculated at 15% of the TDC plus Design & Management costs • Additional pumping/operating/control facilities not required	
Opex Impact	• Potential benefits in OPEX using fuel hydrants at stands.	
Project Output	• Fuel pipeline around Pier 3 • Fuel hydrants at the following stands; • 200L-C-R, 201, 202, 203L-C-R, 205L-T-R, 206T, 207T • 311C, 312, 313C, 314, 315C, 317 and 318L, 318C, 318R	
Asset Life	• 20 years	
Project Delivery Key Milestones		
Construction phase	**Q1 2020 – Q3 2020**	

CIP.20.03.071
Hydrant Enablement – Pier 2 & 3

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	13%	€2,970,000
Total Direct Cost	63%	€14,860,000
Escalation, Contingency & Design Variability	25%	€5,850,000
Total Installed Cost (TIC)	**100%**	**€23,680,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Phase 1	
Phase 2	
Fuel Main, connections, valves, etc	
West Apron	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

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D COMMERCIAL

Appendix D
Commercial

Appendix D - Commercial			
CIP Number	**Project Title**	**Cost €m**	**Pg. No.**
CIP.20.04.001	Car Parking Management System (Maintenance & upgrade)	€3.1	D2
CIP.20.04.002	Car Hire Consolidation Centre	€14.0	D5
CIP.20.04.003	New Food & Beverage Fit-out (T1X)	€2.1	D9
CIP.20.04.004	Digital Advertising Infrastructure	€2.2	D13
CIP.20.04.005	Long Term Car Parking - Eastland's (2000 spaces)	€5.9	D16
CIP.20.04.006	Terminal 1 Multi-Storey Car Park Block B (480 spaces)	€18.8	D20
CIP.20.04.007	Terminal 2 Multi-Storey Car Park (680 spaces)	€15.1	D24
CIP.20.04.009	Staff Car Park	€6.0	D28
CIP.20.04.016	Platinum Services Upgrade Works	€2.1	D31
CIP.20.04.017	Airline Lounges - Expansion, Upgrade & New	€11.4	D35
CIP.20.04.018	Fast Track Improvements	€1.7	D39
CIP.20.04.021	West Apron - Accommodation & Welfare Facilities	€4.5	D43
CIP.20.04.023	Food & Beverage Provision & Fit-out – Post CBP	€3.2	D47
CIP.20.04.025	Commercial Property Refurbishment	€8.0	D51
CIP.20.04.030	New Kitchen in Terminal 2	€3.0	D54
CIP.20.07.010	Office Consolidation & Refurbishment (primarily Level 4 & 5, Terminal 1)	€15.0	D58
CIP.20.08.001	Retail Refurbishments, Upgrades and New Developments	€8.0	D61
CIP.20.08.002	Retail Marketing & Media Installation	€1.5	D65
TOTAL		**€125.6**	

CIP.20.04.001
Car Parking Management System (Maintenance and Upgrade)

Project Summary

- **This project identifies the upgrade requirements for the existing car park management system at DublinAirport.**

The existing car park management system (installed in 2006), allows efficient and effective management of front-end customer operations. This equipment enables delivery of service as well as collection of revenue. To continue the running of car parks and upgrade our capability, the asset will need to be replaced, as the existing car park management system at Dublin Airport is now end of life (existing system has a 10-year asset life).

The software is now dated and has limited functionality in an ever more connected world. The new software will allow us to technologically connect our passenger and our service, increasing convenience and insight. Additional, the new software will not only allow us to be smarter at time of implementation, it will include a series of roadmap developments to stay on top of passengers demands to protect the revenue stream.

This project consists of replacing the following equipment across the 4 short term car parks and the 3 long term car parks:

- **24 entry terminals**
- **16 exit terminals**
- **21 pay stations**
- **34 barriers**
- **34 CCTV cameras**
- **34 ANPR (Auto Number Plate Recognition) cameras**
- **Provision of new sensor technology hardware (focus on specific sections of short term car parks for premium paying customers).**

CIP.20.04.001
Car Parking Management System (Maintenance and Upgrade)

Project Details Summary		
Category: Car Parks		
Primary Driver Customer Experience / Stakeholder Requirements	**Secondary Driver** End of Life	**Total Capex requirement** €3.1m
Underpinning Assumptions and Cost Benchmarks	• High level costs assumed based on work with existing suppliers and other major suppliers in the market.	
Opex Impact	• <€0.1m p.a. for energy, maintenance and IT costs	
Revenue Impact	• N/A	
Project Output	• New Carpark management system, with capacity for smart interfaces, identification and future payment technology capabilities	
Asset Life	• 10 years	
IRR	• N/A	
Payback Period	• N/A	
NPV	• N/A	
Project Delivery Key Milestones		
Feasibility / Outline Design complete:	**Q2 2020**	
Detail Design complete:	**Q1 2021**	
Procurement complete:	**Q4 2021**	
Construction Commence:	**Q4 2021**	
Project Handover:	**Q1 2022**	

CIP.20.04.001
Car Parking Management System (Maintenance and Upgrade)

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	6%	€187,500
Construction Costs	81%	€2,500,000
Escalation, Contingency & Design Variability	13%	€416,563
Total		**€3,104,063**

LEVEL 2 - Cost Analysis				
Design and Management Costs	Redacted Cost Information			
General Design & Management				
Total-to summary				
Construction Costs				
Fittings / Furnishings & Equipment				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

CIP.20.04.002
Car Hire Consolidation Centre

Project Summary

- **This project identifies the need to expand the existing car hire facility at Dublin Airport to include 3000 additional car rental spaces and increased service / maintenance areas**

Car Hire is one of Dublin Airport's largest concessionaire business. Current car rental facilities include:

- **Customer service desks in each terminal**
- **Premium rental spaces in the MSCPs (Multi-Storey Car Parks)**
- **Vehicle storage**
- **Compounds in Eastlands consisting of:**
  - **Customer service counters**
  - **Ready& returnspaces**
  - **Service / maintenance areas.**

The last major investment in car rental facilities was in 2006. Since that time, car rental has seen a period of significant growth outpacing passenger growth at Dublin Airport for the last 7 years. The existing car hire facilities are now capacity constrained, resulting in additional operating costs for car operators to manage operations. Existing facilities were insufficient to accommodate 2017 demand at an acceptable level of service across most parts of the facility. Customers have expressed discontent with the queue wait times at all three car hire facilities locations (T1, T2 and Eastlands). Car rental operators indicate standards, ranging from 10 minutes to over an hour.

CIP.20.04.002
Car Hire Consolidation Centre

The growth in car rental transactions over the last 5 years has imposed significant operational pressure, particularly in high season, impacting on customer experience and increasingly requiring the use of additional public car parking spaces and offsite facilities to meet demand. It is envisaged by 2022, demand will exceed capacity across all functions of the facility, leading to poor levels of customer service, increased operational costs for car hire and the potential for growth to be constrained. To facilitate future growth and to provide a positive customer experience, it is essential to invest in our car hire facilities at Dublin Airport.

This project proposes the following:

- **3000 additional car rental spaces:**
  Current total provision of car rental spaces across Dublin Airport is approximately 3500. These spaces are used by car rental for ready to rent, return spaces, stacking and staging and short-term vehicle storage. Capacity in 2017 was exceeded by approximately 1000-1500 spaces in peak season requiring operators to find additional facilities offsite. During this time, it is not possible to accommodate car rental in public car parks as the public car parks are at 100% capacity. Future forecasts (based on modest passenger growth rates) indicate a requirement for an additional 3000 spaces by 2024 bringing total requirements for 6,500 spaces.

- **Additional Maintenance and Service Facilities including:**
  - **Fuel Pumps**
  - **Maintenance Bays**
  - **Wash Bays**
  - **Customer counters**
  - **Employee and administrative offices**

The new facilities have been designed to:

- **Complement the existing car hire facilities at Dublin**
- **Protect commercial revenues**
- **Allowing for future growth as the 2018 facilities are at capacity**
- **Improve customer experience (way finding, etc.) and reduced congestion**
- **Increase efficiencies to reduce costs for car rental operators**

CIP.20.04.002
Car Hire Consolidation Centre

Project Details Summary		
Category: Concessions		
Primary Driver Capacity / Constraints	**Secondary Driver** Customer Experience / Revenue Opportunity	**Total Capex requirement** €14.0m
Underpinning Assumptions and Cost Benchmarks **Opex Impact**	• Benchmarked against previous car park works carried out at Dublin Airport. High level costs assumed based on work with existing suppliers and other major suppliers in the market. • N/A	
Revenue Impact	• €2.0m p.a.	
Project Output	• Expanded care hire facility to allow for future growth	
Asset Life	• 20 years	
IRR	• 14%	
Payback period	• 8.5 years	
NPV	• €17.7m	
Project Delivery Key Milestones		
Feasibility / Outline Design complete:	**Q2 2019**	
Planning complete:	**Q3 2020**	
Detail Design complete:	**Q3 2020**	
Procurement complete:	**Q3 2020**	
Construction Commence:	**Q4 2020**	
Construction complete	**Q2 2022**	
Project Handover:	**Q2 2022**	

CIP.20.04.002
Car Hire Consolidation Centre

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	95%	€13,344,000
Escalation, Contingency & Design Variability	5%	€667,200
Total		**€14,011,200**

LEVEL2 - Cost Analysis				
Design and Management Costs	Redacted Cost Information			
General Design & Management (deemed included below)				
Total-to summary				
Construction Costs				
Car Park Spaces				
Maintenance Bays + Fuelling Point				
Wash bays				
Counter Fit-out & Office Area				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

CIP.20.04.003
New Food & Beverage Fit-out (T1X)

Project Summary

- **This project identifies the benefits of converting 500sqm of existing retail space & 200sqm of passenger seating space at Terminal 1 (T1x) into food and beverage space.**

Today there are 40 food and beverage (F&B) units across Terminal 1 and Terminal 2 at Dublin, operated by 13 concessionaires. Despite increased passenger numbers in recent years F&B passenger average spend (PAS) has flatlined since 2015 as F&B facilities have become capacity constrained. Current estimates suggest that the International Departures Lounge (IDL) facilities at Terminal 1 currently under catered for F&B by approximately80%.

Thisprojectproposesthefollowing:

- **The development of a new flagship 700sqm F&B space at T1X. This unit will include a 300sqm kitchen (producing fresh food) and deliver a quality F&B experience for passengers.**

CIP.20.04.003
New Food & Beverage Fit-out (T1X)

Location of new F&B unit at T1x, airside:

CIP.20.04.003
New Food & Beverage Fit-out (T1X)

Project Details Summary		
Category: Food and Beverage (F&B)		
Primary Driver Capacity / Constraints	**Secondary Driver** Revenue Opportunity	**Total Capex requirement** €2.1m
Underpinning Assumptions and Cost Benchmarks	• Interior fit out by F&B concessionaire	
Opex Impact	• N/A	
Revenue Impact	• €0.4m p.a.	
Project Output	• New shell & core space with services, suitable for 700sq.m. F&B unit at T1X • Consolidated staff welfare facilities • New storage facilities	
Asset Life	• 20 years	
IRR	• 21%	
Payback period	• 8 years	
NPV	• €5.4m	
Project Delivery Key Milestones		
Feasibility / Outline Design complete:	**Q1 2020**	
Planning complete:	**Q2 2021**	
Detail Design complete:	**Q3 2021**	
Procurement complete:	**Q3 2021**	
Construction Commence:	**Q3 2021**	
Project Handover:	**Q1 2022**	

CIP.20.04.004
Digital Advertising Infrastructure

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	6%	€123,375
Construction Costs	77%	€1,645,000
Escalation, Contingency & Design Variability	17%	€366,938
Total		**€2,135,313**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Fittings / Furnishings & Equipment	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.04.004
Digital Advertising Infrastructure

Project Summary

- **This project identifies the benefits to updating, expanding and future proofing the digital advertising infrastructure at Dublin Airport.**

This expansion in digital advertising will see Dublin Airport lead the way in the Irish and international digital advertising arena with the proposed installation of large LED 'statement' digital formats in both T1 & T2. Together with the existing digital Aer Pod network, these new formats will provide Dublin Airport with the single largest digital advertising footprint in the market.

Currently digital advertising footprint accounts for only circa 15% of our total advertising inventory yet contributes 20+% of total revenue. This is set to increase over the coming years with all forecasts (domestic and international) pointing to DOOH (Digital Out Of Home) as the only segment set to grow. With this investment the total advertising inventory ratio would improve to circa 25% Digital and account for approx. 40% of growing total revenue, enabling Dublin Airport to capitalise on the only area forecast to show growth over next 5+ years, off-setting the expected decline in static advertising.

In terms of technical format specifics, the main driver of this growth will be delivered via larger digital displays & formats as they are more ergonomically advantageous for the advertisers (with lower production costs Vs. vinyl printing), enable more flexible creative opportunities with immediate and responsive copy changes and generate higher levels of customer engagement and personalization especially if programmatically optimized.

This project proposes the following:

- **T2 retail concourse (airside) – install one / two large key statement formats**
- **Upgrade of at least three existing key advertising static sites to digital LED formats in T2**
- **Upgrade of at least two existing key advertising static sites to digital LED formats in T1**
- **Upgrade and expansion of existing digital Aer Pods network**

CIP.20.04.004
Digital Advertising Infrastructure

Project Details Summary		
Category: Commercial Advertising		
Primary Driver Revenue Opportunity	**Secondary Driver** Customer Experience	**Total Capex requirement** €2.2m
Underpinning Assumptions and Cost Benchmarks	• Costs based on providing fully designed and operational digital inventory network, connected to existing network • Costs based on estimates provided by supplier on similar projects • Costs based on current market rates re. latest available digital LED technologies • Commercial forecasts based on current Irish and international advertising market conditions and forecast trends	
Opex Impact	• <€0.05m p.a. – minimal software maintenance costs	
Revenue Impact	• €0.5m p.a.	
Project Output	• T2 retail concourse (airside) – one/two large key statement formats installed • Upgrade of at least three existing key advertising static sites to digital LED formats in T2 • Upgrade of at least two existing key advertising static sites to digital LED formats in T1 • Upgrade and expansion of existing digital AerPods network	
Asset Life	• 5 years	
IRR	• 14%	
Payback period	• 3.5 Years	
NPV	• €0.4m	
Project Delivery Key Milestones		
Feasibility / Outline Design complete:	**Q1 2020**	
Planning complete:	**Q1 2020**	
Detail Design complete:	**Q3 2020**	
Procurement complete:	**Q4 2020**	
Construction Commence:	**Q4 2020**	
Project Handover:	**Q3 2021**	

CIP.20.04.004
Digital Advertising Infrastructure

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	4%	€89,450
Construction Costs	82%	€1,789,000
Escalation, Contingency & Design Variability	13%	€291,160
Total		**€2,169,610**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Large LED Digital - T1	
Large LED Digital - T2	
Upgrade existing AerPods	
Expansion of AerPods	
Upgrade existing key static site - T1	
Upgrade existing key static site - T2	
Power, Cabling & Trays	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.04.005
Long Term Car Parking – Eastlands (2,000 spaces)

Project Summary

- **This project identifies the benefits of providing increased flexible long-term car parking in the Eastlands**

Long Termcar parking is a key passenger requirement at Dublin Airport. It is our missions to provide a quality and reliable product, at yield managed prices. Customers value has proven successful in generating repeat custom and growing revenue. 2018 occupancy rates for our long term red car park product is expected for 90% for the full year and was 100% during peak summer months where demand was substantially stronger than supply in the total market.

Proposed Location – Express Red Carpark:

This project proposes to add 2000 new spaces to the existing Express Red Car Park, our highest quality long-term car park. Following the resurfacing upgrade project in 2015, the carpark became popular with business and leisure consumers and is now at full capacity. The 2015 refurbishment allowed us to change the product proposition by delivering a higher quality product and yielding increased revenue from each space. The Express Red Car Park is seen as preferable over other budget products such as Holiday Blue, as it more popular with customers (bigger demand all year round as its closer to terminals and has a shorter bus journey), offers a greater return and the associated carpark has permanent planning permission as opposed to a weaker product with temporary planning permission (long term blue).

CIP.20.04.005
Long Term Car Parking – Eastlands (2,000 spaces)

Spaces – Build & Specification:

The new spaces will be built on a green field site and deliver a porous permeable paving solution, with adequate lighting, kerbing and signage (aligned with existing standard in Express Red Car Park).This carpark is situated immediately parallel to the existing red car park resulting in efficient use of bussing and existing entry/egress infrastructure.

Flexible Use for Maximum Utilisation (Public Car Parking & Car Rental)

Flexibility:

Dublin Airport has a deficit for parking facilities for both long term car park customers and car hire storage facilities. The aim of this investment is to increase overall parking capacity, which can be used flexibly to meet the seasonal needs of long term parking and car hire storage, ensuring maximum usage and occupancy of both businesses. It will allow a flexible solution with car hire through use of a moveable mesh harris fence which can be changed with minimum effort and opex.

The two businesses have an inverse relationship with leisure travel. i.e. peak long-term (LT) carpark requirements take place over the summer months and key leisure periods. At these times, car hire has a high percentage of their fleet rented out and so require low storage facilities. Similarly, the inverse is also true with low carpark demand occasions mean that car hire requires higher car storage facilities. These spaces facilitate public car parking when demand is at its highest over the summer months and car hire vehicle storage in the shoulder seasons during in-fleeting / de-fleeting when rental accumulations at the airport are at their highest.

Note – this project reduces the capital requirement of the Car Hire Development project which would need a higher allowance to accommodate storage demands in the event this project did not proceed.

CIP.20.04.005
Long Term Car Parking – Eastlands (2,000 spaces)

Project Details Summary		
Category: Car Parks		
Primary Driver Capacity / Constraints	**Secondary Driver** Revenue Opportunity	**Total Capex requirement** €5.9m
Underpinning Assumptions and Cost Benchmarks	• Costs based similar projects completed in the past.	
Opex Impact	• Operating costs estimated at €400k p.a. This is for increased costs for rates, cleaning, maintenance, security and transaction costs.	
Revenue Impact	• €1.9m p.a.	
Project Output	• 2000 'flexible' car parking spaces in Eastlands with connectivity to current Express Red car park. Same quality of finish (surface, access, signage etc.) to be maintained. Flexibility to all spaces to be used for car hire or car parking (connecting to existing entrances / exits).	
Asset Life	• 20 years	
IRR	• 25%	
Payback period	• 4 years	
NPV	• €19.6m	
Project Delivery Key Milestones		
Feasibility / Outline Design complete:	**Q3 2019**	
Planning complete:	**Q4 2020**	
Detail Design complete:	**Q4 2020**	
Procurement complete:	**Q1 2021**	
Construction Commence:	**Q1 2021**	
Project Handover:	**Q1 2022**	

CIP.20.04.005
Long Term Car Parking – Eastlands (2,000 spaces)

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	10%	€570,938
Construction Costs	77%	€4,567,500
Escalation, Contingency & Design Variability	13%	€796,458
Total		**€5,934,895**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Car Park Spaces	
Main Contractor Prelims	
Other Development Costs	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.04.006
Terminal 1 Multi-Storey Car Park Block B (600 spaces)

Project Summary

- **This project identifies the benefits of providing increased short-term car parking spaces at the existing Terminal 1 (Block B) Multi-Storey Car Park.**

Short Term carparking is a key passenger requirement at Dublin Airport. It is our missions to provide a quality and reliable product, at yield managed prices. Customers value has proven successful in generating repeat custom and growing revenue. Short Term car parks are the most convenient way for Irish based vehicle owners to travel to / from the airport as it offers parking within close proximity of the terminal for convenient arrivals / departures and account for c.50% of car parking revenue.

Short term occupancy rates are expected to be 88% for the full year in 2018 with peak months reaching high 95%+. Growth is flat-lining since 2016 due to a lack of available spaces/capacity and elasticity of price points which customers are willing to pay. Pricing higher than elasticity points at large demand periods erodes the value-for-money proposition and results in customers seeking alternative methods of transport, putting future short-term (ST) business at risk. We have enforced strong yield management to manage demand levels which has resulted in increased revenue however, a reduction in transactions.

This project proposes the following:

- **Provide four new floors at the existing T1 ST Block B car park (c. 600 spaces).**
  The increased capacity will be built on top of Block B car park (4 levels - to match the height of Block C). These spaces will be connected to the existing (neighbouring) infrastructure within Block C, eliminating the need to build ramps between levels or additional entry/ exit points.
  The existing lift shafts will need to be extended whilst the lift carts etc will need to be replaced

CIP.20.04.006
Terminal 1 Multi-Storey Car Park Block B (600 spaces)

Addingcapacitywillallowus to:

- **Grow revenue and translate increasing passengers to transactions to avoid customers transferring to alternative modes of transport**
- **Continue to sell parking at rates customers believe to be good value**

Terminal 1 Multi-Storey Car Park Block B

CIP.20.04.006
Terminal 1 Multi-Storey Car Park Block B (600 spaces)

Project Details Summary		
Category: Car Parks		
Primary Driver Capacity / Constraints	**Secondary Driver** Revenue Opportunity	**Total Capex requirement** €18.8m
Underpinning Assumptions and Cost Benchmarks	• Feasibility based on basic structural report (originally undertaken in 2002, revised in 2018 E. Kelly) • Additional ramps between levels or additional entry/ exit points not required.	
Opex Impact	• Operating costs estimated at c.€0.35m p.a. This includes costs for rates, maintenance, cleaning and transaction costs.	
Revenue Impact	• €2.1m p.a.	
Project Output **Asset Life**	• Four new floors on top of MSCP Block B car park, connected into existing asset with similar quality product as currently exists • 25 years	
IRR	• 8%	
Payback period	• 13 years	
NPV	• €7.4m	
Project Delivery Key Milestones		
Feasibility / Outline Design complete:	**Q2 2020**	
Planning complete:	**Q3 2021**	
Detail Design complete:	**Q4 2021**	
Procurement complete:	**Q1 2022**	
Construction Commence:	**Q2 2022**	
Project Handover:	**Q3 2023 phased handover**	

CIP.20.04.006
Terminal 1 Multi-Storey Car Park Block B (600 spaces)

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	11%	€2,128,145
Construction Costs	75%	€14,187,636
Escalation, Contingency & Design Variability	13%	€2,528,946
Total		**€18,844,727**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Facilitation & Demolition Works	
Substructure	
Superstructure - Frame	
Superstructure - Others	
Internal Finishes	
Fitting /Furnishings & Equipment	
Services	
External Works	
Main Contractors Preliminaries	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.04.007
Terminal 2 Multi-Storey Car Park (680 spaces)

Project Summary

- **This project identifies the benefits of providing increased short-term car parking spaces at the existing Terminal 2 Multi-Storey Car Park.**

Short Term carparking is a key passenger requirement at Dublin Airport. It is our missions to provide a quality and reliable product, at yield managed prices. Providing value to customers has proven successful in generating repeat custom and growing revenue. Short Term car parks are the most convenient way for Irish based vehicle owners to travel to / from the airport as it offers parking within close proximity of the terminal for convenient arrivals / departures and account for c.50% of car parking revenue.

Short term occupancy rates are expected to be 88% for the full year in 2018 with peak months reaching high 95%+. Growth is flat-lining since 2016 due to a lack of available spaces/capacity and elasticity of price points which customers are willing to pay. Pricing higher than elasticity points at large demand periods erodes the value-for-money proposition and results in customers seeking alternative methods of transport, putting future short-term (ST) business at risk. We have enforced strong yield management to manage demand levels which has resulted in increased revenue however, a reduction in transactions.

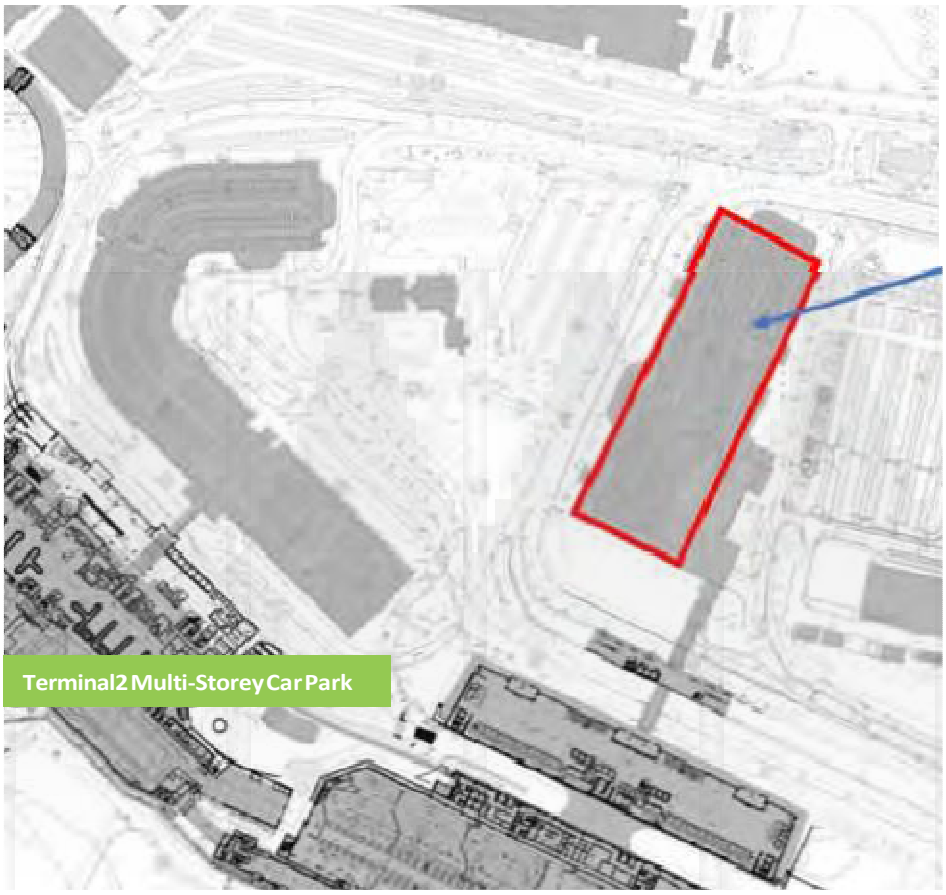
This project proposes the following:

- **Provide 2 new floors at the existing T2 ST (c. 680 spaces)**
- **The added capacity will be built on top of the T2 Multi-Storey Car Park (2 levels). This allows a direct connection to existing infrastructure thus eliminating the need to build additional entry/ exit points. The existing lift shafts will need to be extended to reach the two new floors**

CIP.20.04.007
Terminal 2 Multi-Storey Car Park (680 spaces)

Addingcapacitywillallowus to:

- **Grow revenue and translate increasing passengers to transactions to avoid customers transferring to alternative modes of transport**
- **Continue to sell parking at rates customers believe to be good value**



7 levels (existing + two new levels)

CIP.20.04.007
Terminal 2 Multi-Storey Car Park (680 spaces)

Project Details Summary		
Category: Car parks		
Primary Driver Revenue opportunity	**Secondary Driver** Capacity / Constraints	**Total Capex requirement** €15.1m
Underpinning Assumptions and Cost Benchmarks **Opex Impact** **Revenue Impact**	• Based on similar works completed on other Multi Storey Car Parks (Structural Report - E. Kelly) • Additional ramps between levels or additional entry / exit points not required. • Operating costs estimated at c.€0.4m p.a. This includes costs for rates, maintenance, cleaning and transaction costs. • €2.2m p.a.	
Project Output	• Two new floors on top of the T2 Multi Storey Car Park, connected into existing asset with similar quality product as currently exists	
Asset Life	• 25 years	
IRR	• 11%	
Payback period	• 9 years	
NPV	• €13.8m	
Project Delivery Key Milestones		
Feasibility / Outline Design complete:	**Q2 2020**	
Planning complete:	**Q3 2021**	
Detail Design complete:	**Q3 2021**	
Procurement complete:	**Q1 2022**	
Construction Commence:	**Q1 2022**	
Project Handover:	**Q1 2024 phased handover**	

CIP.20.04.007
Terminal 2 Multi-Storey Car Park (680 spaces)

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	11%	€1,703,370
Construction Costs	75%	€11,355,798
Escalation, Contingency & Design Variability	13%	€2,024,171
Total		**€15,083,339**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Major Demolition Works	
Superstructure - Frame	
Superstructure - Floor, Roof, Walls	
Internal Finishes	
Fitting /Furnishings & Equipment	
Services	
External Works	
Main Contractors Preliminaries	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.04.009
Staff Car Park

Project Summary

- **This project entails the consolidation of staff car parking at Dublin Airport.**

Staff car parks are currently full to capacity and fragmented around the campus. Over the period of the next CIP, Dublin Airport (DAP) and DAC developments will replace staff car parks inside the central campus (c1000 spaces). These need to be replaced as well as allow for growth in demand due to increased staff numbers.

Current Status:
Staff car parks marked in purple

Future Status:
Additional staff parking (LT Green car park)
Additional Public Parking in Eastland's (2000)

To replace the existing staff parking and also facilitate the growth in staff DAP will need increased staff parking capacity. This can be achieved by dedicating the existing Public LT Green car park to staff car parking.

The green car park is a purpose-built car park. This well positioned location (from staff perspective) coupled with a high frequency bus connectivity to terminals 1 & 2 will allow DAP to consolidate most staff car parking to one location (existing Public LT Green) and transport staff to desired location in a timely manner. It should be noted that the unfulfilled demand for parking will be required to change modal split (potential limiting for all companies) or be accommodated within a public car park during off peak.

The public parking displaced by repurposing the existing Public LT Green will be replaced and linked into existing red car park. This will not require additional entry/exits and minimal additional bussing resulting in an efficient use of space. The new space in the existing LT red car park will be built to a similar specification

CIP.20.04.009
Staff Car Park

of the express red car park (porous surface, lighting, signage etc.).
This investment will not deliver a return but should be considered in the context of capacity development.
Adding capacity of similar quality to express red car park will allow DAP to:

- Facilitate airport expansion
- Offer a consistent product and service to the majority of airport users Improve the employee experience

Project Details Summary		
Category: Other		
Primary Driver Capacity	**Secondary Driver** Employee wellbeing	**Total Capex requirement** €6.0m
Underpinning Assumptions and Cost Benchmarks	• High level costs assumed • Planning costs and rates need to be verified	
Opex Impacts	• Operating costs estimated at €0.3m p.a. This is for increased costs for rates, cleaning, maintenance, security and transaction costs.	
Revenue Impact	• €1.5m p.a.	
Project Output	• 2000 spaces of similar standard to express red car park, complete with real time bus information, entry/exit equipment. • Upgrade LT green car park for staff and build out more public capacity to replace in Eastland's (2400 spaces).	
Asset Life	• 20 Years	
IRR	• 20.5%	
Paybackperiod	• €14.7m	
NPV	• 5 years	
Project Delivery Key Milestones		
Planning complete:	**Q4 2019**	
Detail Design complete:	**Q4 2019**	
Procurement complete:	**Q1 2020**	
Construction Commence:	**Q2 2020**	
Project Handover:	**Q2 2021**	

CIP.20.04.009
Staff Car Park

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	10%	€577,201
Construction Costs	77%	€4,617,605
Escalation, Contingency & Design Variability	13%	€805,195
Total		**€6,000,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Construction Costs	
Car Park Spaces	
Main Contractor Prelims	
Other Development Costs	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.04.016
Platinum Services Upgrade Works

Project Summary

- **This project identifies the benefits of upgrading the existing Platinum Services product at Dublin Airport.**

Platinum Services is a 24-hour private terminal at Dublin Airport, open 7 days a week, with on-demand services to meet individual client needs whether departing, arriving or simply in need of a place to conduct business on theairportcampus.

This project provides several significant improvements to passengers using the Platinum Services facilities. This project can be broken down into the following three sections:

1. **Platinum Upgrades**
2. **Platinum Capacity**

CIP.20.04.016
Platinum Services Upgrade Works

1. Platinum Upgrades:

Platinum Service suites require continuous improvement and investment to meet customer expectations (both B2B & B2C). With increasing passenger numbers, the maintenance of the suites has become more critical. This platinum upgrade works will provide:

- **New soft furnishings**
- **Fixtures**
- **Lighting**
- **Design features**
- **Kitchen Upgrade (replacing existing back-of house kitchen)**

2. Platinum Capacity:

Suite Capacity:
Currently Platinum Services operates 7 suites, one of which is a designated meeting room facility. During busy periods, there are 70+ movements on peak days. Suite availability becomes a capacity constraint. This product has the potential to add more capacity by splitting / dividing Suite 3 into 2 suites when required (flexible design) and provide a refurbishment of the back-reception area to allow for an overflow area when all suites are occupied.

General Aviation (GA) Porch:
GA is integral to the revenue of Platinum Services at Dublin Airport equating to 48% of movements in 2017. This project plans to introduce a communal area for GA passengers in the airside porch which would free up valuable landside suites for an overall more efficient operation. The provision of a GA porch reduces the peak capacity constraints in PS and subsequently allows for increased availability for commercial clientele. By providing a communal facility, Platinum Services has the flexibility to accommodate late bookings which will not impact on suite capacity allocations and will increase.

The Platinum capacity project will provide:

- **Increase suite capacity**
- **New general aviation Porch**
- **Overflow area**

CIP.20.04.016
Platinum Services Upgrade Works

Project Details Summary		
Category: Dublin Airport Travel Services		
Primary Driver Revenue Opportunity	**Secondary Driver** Capacity / Constraints	**Total Capex requirement** €2.1m
Underpinning Assumptions and Cost Benchmarks	• Based on similar works completed on other upgrade projects • Works to be completed without disruption to 24/7 Platinum services Note: Business case results are based on €1m investment on GA porch and additional suite capacity. No business case included for upgrades and security segregation.	
Opex Impact	• Minor Opex increase – cleaning services and food & beverage stocking <€0.05m p.a.	
Revenue Impact	• €0.25m p.a.	
Project Output	• New arrival corridor • Reduction in size of Suite 6 • Fully compliant with dept/arriving SOP's • Ability to convert suite 3 into two separate suites. • Back reception area to comfortably accommodate overflow clients • Maintain alternative access and egress through back porch area • New fit for purpose waiting/dwell area for meet & greet services in Platinum • Fully private area with direct connection to the main Platinum facility	
Asset Life	• 10 years	
IRR	• 29%	
Payback Period	• 4 years	
NPV	• €2.2m	
Project Delivery Key Milestones		
Procurement complete:	**Q4 2021**	
Construction Commence:	**Q1 2022**	
Project Handover:	**Q3 2023**	

CIP.20.04.016
Platinum Services Upgrade Works

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	7%	€146,771
Construction Costs	93%	€1,956,942
Escalation, Contingency & Design Variability	0%	€0
Total		**€2,103,712**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Fit-Out: Porch	
Fit-Out: Press Suite	
Fit-Out: Other	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability (Deemed included above)	
Total-to summary	

CIP.20.04.017
Airline Lounges – Expansion, Upgrade & New

Project Summary

- **This project identifies the benefits of upgrading and increasing the existing Airline Lounges offering at Dublin Airport**

Our lounges offer a tranquil setting, comfortable, air-conditioned lounges with a range of lounge offerings (complimentary drinks, snacks, newspapers etc.) Dublin Airport currently operates the following lounges:

- **Terminal 1 Lounge**
- **Terminal 2 Lounge**
- **51st & Green Lounge**

This project proposes several improvements to existing lounge offering at Dublin Airport. This project can be broken down into the following two sections:

1. **Lounge Upgrades**
2. **Increase Lounge Capacity**

CIP.20.04.017
Airline Lounges – Expansion, Upgrade & New

1. Lounge Upgrades:

Lounge products need continuous improvement and investment to meet customer expectations (both B2B& B2C). With increasing passenger numbers, the maintenance of Lounges has become more challenging. An ongoing Lounge upgrades programme is required to maintain the required standard. Upgrade works to be completed over the 2020-2024 CIP period include:

- **Supply and installation of all kitchen equipment**
- **Internal fitout and decoration**
- **Varying seating types**
- **Charging points/ plug sockets**
- **Spa like shower facilities**
- **Improved servery to display variety of food (chill well, additional fridges etc.)**
- **New look and feel – furnishings, lighting, etc.**

The existing lounges will require the following works:

- **T2 Lounge Upgrade - Upgrade**
- **51st & Green Upgrade - Full interior upgrade**

The T1 lounge is not proposed for upgrade as it will be relocated to facilitate security moving to the Mezzanine level of Terminal 1.

2. Increase Lounge Capacity:

Significant growth in passenger levels over the current regulatory period (2014 – 2019) has pushed lounges to capacity at peak hours. Capacity in the shoulder periods of the day (differs between products i.e. T1, T2 and CBP lounge) but peak hours operate a max capacity. The lounges are mainly utilised by wholesale (airline) passengers, but as new airlines and current airlines add capacity on Dublin Airport routes, the airlines passenger base using our lounges continues to increase. More recently, the addition of new long haul Asian routes has seen longer lounge dwell time by new passengers resulting in pinch points at certain times throughout the day, impacting our customer experience.

This project proposes the following potential lounge capacity increasing projects:

- **Pier 1 Lounge**
- **Mezz level in T2 Lounge**
- **Terminal 2 Arrivals Lounge**

The T1 lounge is not proposed for capacity expansion as it will be relocated to facilitate security moving to the Mezzanine level of Terminal 1.

CIP.20.04.017
Airline Lounges – Expansion, Upgrade and New

Project Details Summary		
Category: Commercial (Dublin Airport Travel Services)		
Primary Driver Capacity / Constraints	**Secondary Driver** Revenue Opportunity / Customer Experience	**Total Capex requirement** €11.4m
Underpinning Assumptions and Cost Benchmarks	• Cost based on current Lounge fit-out costs: • Costs based on preliminary site inspection indicative cost • Works to be completed without disruption to surrounding operational areas. Note: Business case results based on €8.4m investment for increased capacity and new lounges. No business case included for upgrades.	
Opex Impact	• Increase in operating costs per annum of €1.0m for lounge costs and consumables	
Revenue Impact	• €2.2m p.a.	
Project Output	• New fit for purpose area to facilitate extra capacity • Build alternative Lounge offerings for passengers who we do not capture with current products • Provide an appropriate arrivals product for our long-haul customers	
Asset Life	• 12 years	
IRR	• 17%	
Payback Period	• 7 years	
NPV	• €9.2m	
Project Delivery Key Milestones		
Airline Lounges	**Q4 2019 – Q4 2024**	

CIP.20.04.017
Airline Lounges – Expansion, Upgrade and New

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	5%	€615,000
Construction Costs	72%	€8,200,000
Escalation, Contingency & Design Variability	23%	€2,575,214
Total		**€11,390,214**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Lounge upgrade	
Lounge Expansion	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.04.018
Fast Track Improvements

Project Summary

- **This project identifies improvements required at existing Fast Track facilities and the benefits of providing a new Fast Track Arrivals product at Dublin Airport.**

Fast Track welcomes 760k users per year at Dublin Airport. Fast Track minimises any waiting time and gets passengers through Security in less than 10 minutes, with average queue times today less than three minutes.

This project seeks to improve the existing Fast-Track product while also proposing a new Arrival Fast Track product. This project can be broken into the following two categories:

1. **Fast Track – Upgrades to existing facilities**
2. **Fast Track – Arrival**

CIP.20.04.018
Fast Track Improvements

1. Fast Track – Upgrades to existing facilities:

Conventional security processing (via Central Search Areas) at Dublin Airport has adapted to new technology in recent years to improve overall processing time. The introduction of ATRS (in Terminal 1) and other technological advancements have made the conventional product much quicker and puts at risk the unique selling point of 'speed' for Fast Track users. To remain as the preferred processing product Fast Track needs to seek product improvements which work towards the aim of delighting customers.

- **Barista Bar: Provision of beverage offerings at the end of the security lane (automatic selection pre-screening)**
- **Access Control: Provision of improved access control to Fast Track. Existing visual inspection by Airport Search Unit (ASU) officer is timely and alternative technology to be considered (fingerprint, phone or eye retina scanning)**
- **Visual improvements: Improvement required to existing lane – making it look & feel different from central search**
- **Modern security equipment: Seamless security equipment to be considered**

2. Fast Track Arrivals:

This project proposes a dedicated 'queue skip' channel through passport control and immigration process. This service is available in many other international airports. Several of Dublin Airports newest 4 & 5 star airlines have requested an Arrival Fast Track type product with the intention to use it for their first class, business class and frequent flyer customers.

The proposal is to contract directly with airlines, charging them a fixed fee per passenger. This would then be extended to our online sales channel (Dublinairport.com) and permit sale on self-service kiosks if capacity is available. This product would be introduced in both Terminals.

CIP.20.04.018
Fast Track Improvements

Project Details Summary		
Category: Commercial (Dublin Airport Travel Services)		
Primary Driver Revenue Opportunity	**Secondary Driver** Customer Experience	**Total Capex requirement** €1.7m
Underpinning Assumptions and Cost Benchmarks	• Cost based on current Fast Track capex project (T2 entrance)	
Opex Impact	• Operating cost impact c.€0.3m p.a. for payroll costs and IT booking costs	
Revenue Impact	• €0.8m p.a.	
Project Output	• Two arrivals queue jumps in both terminals • Increased commercial revenues • Contract agreements with airlines on arrivals product • Improved service offering in our Fast Track channel • Ability to increase prices gradually with product improvements • Increase customer numbers	
Asset Life	• 7 years	
IRR	• 26%	
Payback Period	• 4 years	
NPV	• €2.4m	
Project Delivery Key Milestones		
Projects Complete:	**Q1 2020 – Q4 2024**	

CIP.20.04.018
Fast Track Improvements

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	89%	€1,500,000
Escalation, Contingency & Design Variability	11%	€185,400
Total		**€1,685,400**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Fast track arrivals channel	
Fast track product improvements	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.04.021
West Apron-Accommodation & Welfare Facilities

Project Summary

- **This project identifies the need for accommodation and welfare facilities on the West Apron.**

Dublin Airport's aim is to ease apron congestion by relocating dedicated cargo flights to the west apron along with the third country transition flights. Several cargo aircraft now operate from the West Apron but there exists a shortfall in accommodation and / or welfare facilities in that location. The lack of facilities is one of the key reasons operators/handlers/line maintenance companies are reluctant to operate from the West Apron.

Increased Activity on the West Apron

There is now an additional urgency for Cargo, Line Maintenance, MRO and Transit Aircraft Services administration and storage accommodation in the area, as plans are already in place to move additional cargo airlines such as, TNT, UPS, BlueBird, BDA and Carousel to the West Apron by Q12019. This relocation will bring with it the associated handlers and line maintenance companies.

Furthermore, it is also foreseen that the West Apron will facilitate increased parking and overflow parking for homebased carriers "standby aircraft" and General Aviation respectively (Surface Crossing being progressed from PACE). Proposals in the CIP (additional narrow-bodied stands West of RWY16/34 and RWY16/34 underpass) will increase overall activity in the West Apron. Collectively, this drives the requirement for the development of office and storage accommodation to service the significantly increased Line Maintenance, Ground Handling, Cargo Handlers, General Aviation and airline activity in the area.

Proposed Location: 1,666 sqm site on West Apron

CIP.20.04.021
West Apron-Accommodation & Welfare Facilities

Thisprojectproposesthefollowing:

- **DevelopmentofWestApronaccommodation(asindicatedinthedrawingonpreviouspage)**
- **Phased development: 50% shell and core and 50% fully developed. Facility can be further developmentinlinewithincreasedactivityontheWestApron**

It is not expected that the West Apron Services Accommodation will go into full occupancy immediately, however its development will allow more aircraft to be positioned in the area which in turn will drive demand for accommodation. Expected breakdown of the property is estimated to be 40% storage accommodation, 60% office accommodation, allowing 300sq.m. for common areas. The site area for development is approx.
1,666sq.m.

CIP.20.04.021
West Apron-Accommodation & Welfare Facilities

Project Details Summary		
Category: Property		
Primary Driver Revenue Opportunity	**Secondary Driver** Capacity / Constraints	**Total Capex requirement** €4.5m
Underpinning Assumptions and Cost Benchmarks	• Cost based on similar airside projects	
Opex Impact	• N/A	
Revenue Impact	• €0.5m p.a.	
Project Output	• Development of urgently required accommodation in the west apron to cater for existing and future operators of dedicated cargo, Line Maintenance, MRO and Transit Aircraft Services administration. • Reduce congestion on both the north and south aprons • Increase in commercial property revenue	
Asset Life	• 25 years	
IRR	• 10%	
Payback Period	• 9 years	
NPV	• €2.0m	
Project Delivery Key Milestones		
Feasibility / Outline Design complete:	**Q2 2020**	
Planning complete:	**Q3 2021**	
Detail Design complete:	**Q3 2021**	
Procurement complete:	**Q4 2021**	
Construction Commence:	**Q4 2021**	
Project Handover:	**Q2 2023 (phased)**	

CIP.20.04.021
West Apron - Accommodation & Welfare Facilities

LEVEL1-Cost Analysis	Represents	Total
Design and Management Costs	10%	€455,590
Construction Costs	79%	€3,531,920
Escalation, Contingency & Design Variability	11%	€492,856
Total		**€4,480,366**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
General Allowance for Construction	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total–to summary	

CIP.20.04.023
Food & Beverage Provision and Fit-out – Post CBP

Project Summary

- **This project identifies the need for increased Food & Beverage offerings for Post CBP passengers.**

The US Preclearance (US CBP) facility at Terminal 2 is a purpose-built facility that allows US bound passengers to undertake all US immigration, customs and agriculture inspections at Dublin Airport prior to departure. Since its introduction, Dublin Airport has witnessed a steady growth in transatlantic passenger and use of the CBP facility. This in turn has put increased pressure on the small F&B offering currently in the area.

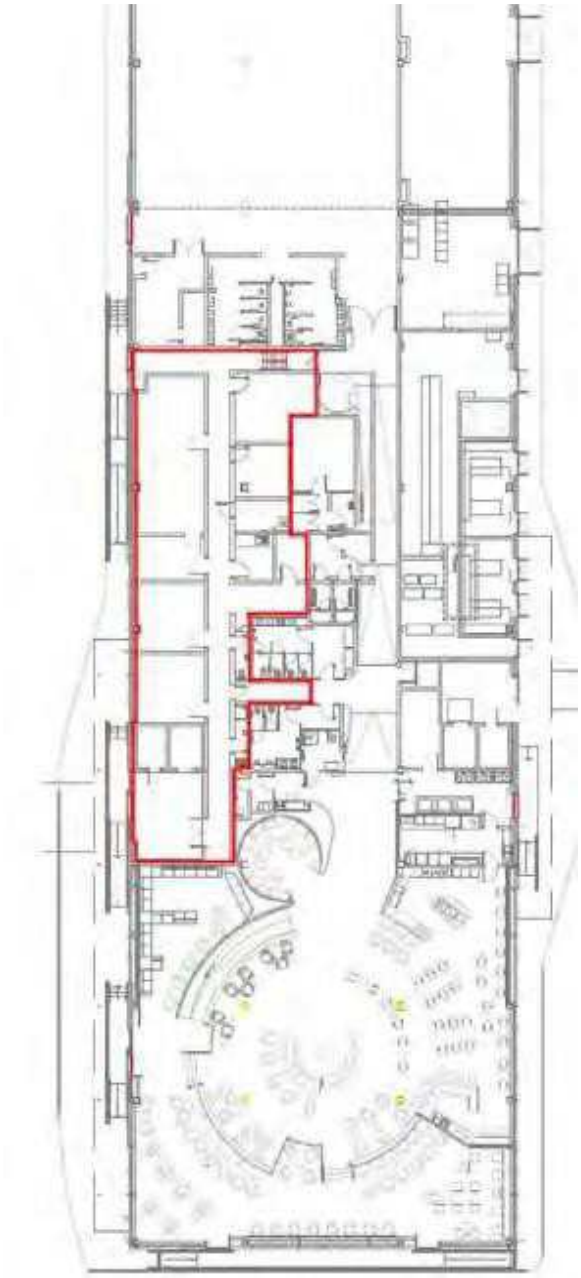
The overall F&B passenger experience is considered poor due to the constrained environment. The small range and overcrowding compounds this issue. Currently there are no kitchen or storage facilities. Today there is 168sq.m. of F&B space. This is considered 63% below industry benchmarks, yet by 2024, there will be a requirement for 700 sqm. These capacity constraints have led to penetration drops over the summer months which directly impacts the Average Transaction Value (ATV). ATV in this area is approx. €6 and this cannot be increased due to the limited offering. An opportunity exists to;

- Improve passenger experience through provision of better F&B offering post CBP
- Increase sales and ATV

CIP.20.04.023
Food & Beverage Provision and Fit-out – Post CBP

Thisprojectproposesthefollowing:

- **Construct new F&B space adjacent to 51st&Green: This space is currently underutilised ramp accommodation (see image below)**
- **MaximiseCommercialRevenueopportunitiesforPostCBPpassengerdwelltime**



CIP.20.04.023
Food & Beverage Provision & Fit-out – Post CBP

Project Details Summary		
Category: Food and Beverage		
Primary Driver Capacity / Constraints & Customer Experience	**Secondary Driver** Revenue Opportunity	**Total Capex requirement** €3.2m
Underpinning Assumptions and Cost Benchmarks	• Construction of new unit is to shell & core standard. • Fitout by concessionaire.	
Opex Impact	• N/A	
Revenue Impact	• €0.4m p.a.	
Project Output	• New F&B space in US CBP	
Asset Life	• 20 years	
IRR	• 21%	
Payback Period	• 8 years	
NPV	• €6.5m	
Project Delivery Key Milestones		
Procurement complete:	**Q1 2022**	
Construction Commence:	**Q1 2022**	
Project Handover:	**Q4 2022**	

CIP.20.04.023
Food & Beverage Provision & Fit-out – Post CBP

LEVEL1-Cost Analysis	Represents	Total
Design and Management Costs	6%	€185,850
Construction Costs	77%	€2,478,000
Escalation, Contingency & Design Variability	17%	€552,749
Total		**€3,216,599**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Gen. Fittings Furnishings and Equipment	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total–to summary	

CIP.20.04.025
Commercial Property Refurbishment

Project Summary

- **This project identifies the need for ongoing Commercial Property Refurbishment at Dublin Airport**

Commercial properties across campus and terminals at Dublin Airport is circa 50 years old and requires significant ongoing refurbishment to bring it to a fit for purpose standard expected for existing and potential commercial occupants. Accommodation is considered sub-standard in several areas across the terminals and piers (ramp accommodation) and requires refurbishment works in advance of occupation by licence fee paying customers.

Investment typically includes fitting out of offices, furniture minor mechanical and electrical services, minor life safety systems and IT (Mech & Elec and LSS typically only second fix). Property accommodation includes but is not limited to Cargo terminal buildings and warehouse facilities, Collinstown House as well as terminal/ramp accommodation. These projects are typically undertaken at short notice when a potential customer has requested specific areas and commercial terms are agreed.

An allowance in the 2015 – 2019 CIP of €10.6m was granted for commercial property refurbishments. This aided the refurbishment of Skybridge House and several smaller refurbishments (Cargo 3/4, terminal office space, etc.). A similar allowance for the forthcoming period is required to maintain building standards, protect the current revenue stream and seek potential revenue opportunities.

CIP.20.04.025
Commercial Property Refurbishment

Project Details Summary		
Category: Property		
Primary Driver Revenue Opportunity	**Secondary Driver** End of Life	**Total Capex requirement** €8m
Underpinning Assumptions and Cost Benchmarks	• 500-1,500sqm to be refurbished annually at a cost of €2,000 per sqm. NOTE: No financial business case included as capex required to maintain revenues and tenant property specifications over the term.	
Opex Impact	• N/A	
Revenue Impact	• Projects will be assessed on a case by case basis. Some projects will be required to maintain existing revenue levels.	
Project Output	• Quality, fit for purpose tenant accommodation • Refurbishment or altered office space • Quality fit-for-purpose ramp accommodation	
Asset Life	• 7 years	
Project Delivery Key Milestones		
Commercial Property Refurbishment (Campus)	**Q1 2020 – Q4 2024**	

CIP.20.04.025
Commercial Property Refurbishment

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	6%	€450,000
Construction Costs	75%	€6,000,000
Escalation, Contingency & Design Variability	19%	€1,521,942
Total		**€7,971,942**

LEVEL2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total-to summary	
Construction Costs	
Gen. Fittings Furnishings and Equipment	
Total-to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total-to summary	

CIP.20.04.030
New Kitchen in Terminal 2

Project Summary

- This project identifies the benefit of maximising food & beverage kitchen facilities on T2 Level 3.

Details on the project:

- The T2 IDL was originally designed with no food and beverage kitchen facilities on level 3.
- The Slaney Bar / Chocolate Lounge is the prominent F&B offer in the T2 IDL and as a result, a kitchen was retrofitted at the Slaney bar.
- The facilities currently in operation are not fit for purpose as they lack correct level of services (extraction, gas and M&E) and as a result it delivers a poor F&B experience to passengers.
- The lack of space and services in the kitchen also creates a challenging environment for staff to operate in. The images below highlight the constrained environment currently experienced in the kitchen.

Project Proposal:

- The Slaney/Chocolate Lounge is a key part of the F&B passenger journey. An opportunity exists to install additional kitchen facilities at the location.
- The installation of the correct level of services (extraction, gas, M&E etc) will enable the delivery of a high-quality F&B experience at the landmark location in the T2 IDL.
- To achieve this the current kitchen needs to be relocated to the area identified in the below drawing and the toilets adjacent to it stripped out to create additional kitchen space.
- The toilets adjacent to the unit will be stripped out and relocated to provide additional kitchen space
- The entire unit will be stripped back to shell and core.

CIP.20.04.030
New Kitchen in Terminal 2

- A new plant room will also be created to provide for the additional level of services required.
- The Unit and kitchen fitout will be completed by the concessionaire.

CIP.20.04.030
New Kitchen in Terminal 2

Project Details Summary		
Category: Other		
Primary Driver Revenue	**Secondary Driver** Passenger Experience	**Total Capex requirement** €3.0m
Underpinning Assumptions and Cost Benchmarks	• Installation of new Kitchen Services / Facilities at the Slaney Bar/Chocolate • Adjacent toilets will be stripped out • Unit stripped back to shell and core • Kitchen and unit fitout will be by concessionaire	
Opex Impact	• N./A.	
Revenue Impact	• €0.5m p.a.	
Project Output	• Fit for purpose kitchen at the Slaney Bar location, meeting all food safety and health & safety requirements.	
Asset Life	• 20 years	
IRR	• 26%	
Payback period	• 6.5 years	
NPV	• €8.7m	
Project Delivery Key Milestones		
Feasibility / Outline Design Complete:	**Q1 2020**	
Planning Complete:	**Q2 2020**	
Detail Design Complete:	**Q2 2020**	
Procurement Complete:	**Q3 2020**	
Construction Commence:	**Q1 2021**	
Project Handover:	**Q2 2021**	

CIP.20.04.030
New Kitchen in Terminal 2

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	12%	€356,787
Construction Costs	66%	€1,982,152
Escalation, Contingency & Design Variability	23%	€683,298
Total	**100%**	**€3,022,237**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs (Deemed included below)	
Total - to summary	
Construction Costs	
Gen. Fittings Furnishings and Equipment	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability (Deemed included above)	
Total - to summary	

CIP.20.07.010
Office Consolidation & Refurbishment (primary Level 4 & 5, Terminal 1)

Project Summary

- **This project proposes a refurbishment of Terminal 1 staff office space in order to; increase staff office space, increase commercial space to let and reduce annual running costs associated with various staff locations.**

Currently daa / Dublin Airport has a number of office / non-frontline staff located in a number of buildings (or part of) around the Dublin Airport Campus. A number of buildings such as Cargo 1 and the North Terminal require demolishment in the near term due to proposed masterplan capacity enhancing projects and will require a number of staff to be rehoused. Additionally, some of the office space occupied is aged and requires significant investment in the absence of this project. Thus, there is an opportunity to upgrade facilities and consolidate staff in order to; rehouse staff, increase commercial space and revenue at Dublin Airport and reduce annual opex running costs.

This project will fund the refurbishment of levels 4 and 5 located in Terminal 1. It will increase the capacity allowance for staff in that location by 100% which will allow daa to vacate staff from Cloghran House and Cargo 6 buildings and let to respective tenants. Additionally, operating costs incurred from these buildings will reduce as the costs will be passed onto tenants. Current annual running costs include; repairs and maintenance, light and heat, Fingal County Council property rates and rent payable to Dublin Airport Central.

This project proposes:

- **full strip out, repair and refurbishment of level4**
- **full strip out, repair and refurbishment of level5**
- **new light wells to introduce additional light to level4**
- **minor refurbishment works to Cargo 6 in advance of letting**

CIP.20.07.010
Office Consolidation & Refurbishment (primary Level 4 & 5, Terminal 1)

Project Details Summary		
Category: Other		
Primary Driver End of Life	**Secondary Driver** Revenue Opportunity (Opex Saving)	**Total Capex requirement** €15.0m
Underpinning Assumptions and Cost Benchmarks	• The following building considerations to be included are: Performance, sustainability, environmental, utilization of space and health & safety • Cost based on similar fit-out projects in recent years	
Opex Impact	Annual cost saving to €1.15m per annum due to: • lower repairs and maintenance; • light and heat; • property rates; and • rental charges to DAC.	
Revenue Impact	• Increased annual normalised revenue of €0.3mp.a.	
Project Output	• Fully refurbished staff office space in Terminal 1 • Increased office capacity for staff in areas that are required to support operational capacity increases e.g. Piers • Increased commercial revenue from Cargo 6 vacated space • Reduced opex costs due to consolidated areas	
Asset Life	• 25 Years	
NPV	• €3.3m	
IRR	• 8.0%	
Payback Period (years)	• 11.5 years	

Project Delivery Key Milestones	
Feasibility / requirements / pilot complete:	**Q4 2020**
Planning complete:	**Q1 2022**
Design complete:	**Q3 2021**
Procurement complete:	**Q2 2022**
Construction Complete	**Q1 2023**

CIP.20.07.010
Office Consolidation & Refurbishment (primary Level 4 & 5, Terminal 1)

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	11%	€1,620,308
Construction Costs	72%	€10,802,052
Escalation, Contingency & Design Variability	17%	€2,577,640
Total		**€15,000,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs	
Total - to summary	
Construction Costs	
Superstructure	
Internal Finishes	
Fittings/furnishing and equipment	
Services	
Prelims	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.08.001
Retail Refurbishments, Upgrades and New Developments

Project Summary

- **This project provides for refurbishment, upgrade and expansion of existing retail offerings at Dublin Airport across both terminals and associated piers.**

Retail is a critical contributor to both improving passenger experience and increasing commercial revenue at Dublin Airport. Investing in new customer focused retail opportunities can dramatically improve the customer experience and help increase overall passenger spends.

ARI have many secondary stores strategically located in T1 & T2 to provide passengers either a primary or secondary opportunity to shop. This project seeks to provide new store locations aligned with the DAP development strategy and refresh and expand existing locations, including the introduction of new Perfume and Cosmetic (P&C) vendors, and refresh performing P&C vendors under an existing 50/50 cost share agreement, to ensure we adapt to the changing passenger profile and maximise revenue operativities.

a) Pier 100 store expansion and redevelopment.

b) T2 Arrivals store upgrade.

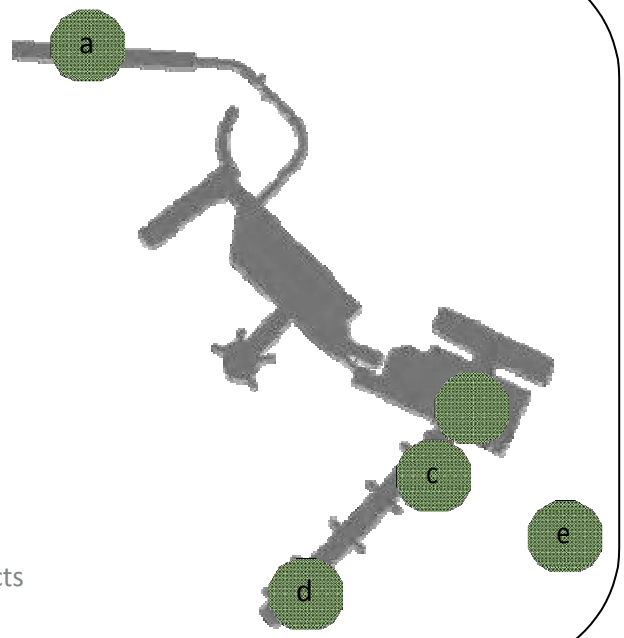
c) New Retail Store Pier 400 transfer route.

d) Pier 400 (CBP) store upgrade.

e) New retail store Southern gates.

f) New ARI Concept Stores (Terminals)

Note: T1 Redevelopment captured under T1 Capacity Projects



To support this objective, ARI ensure the appropriate logistics structure and equipment is in place, and an operational contingency budget available to react to unforeseen opportunities or rectify unforeseen issues. Therefore, included in this project budget is new logistics equipment and a yearly operational contingency figure.

CIP.20.08.001
Retail Refurbishments, Upgrades and New Developments

The following is considered within this project:

Location of Offerings:
A lot of passenger time is spent at departure gates with no core category representation or opportunity to purchase last minute gift and beauty purchases. Provision of purchases in these locations maximizes the experience for airport guests.

Space Constraints:
Most of the retail space in the pier shops and Arrivals is unable to maximise current potential due to space constraints for all categories – Retail space has not developed proportionally to passenger growth over recent years. Improve retail space would allow Liquor and Confectionery to vastly improve range and product selection, focus would be given to core categories, sub-categories [such as Whiskey and last-minute gifting opportunities.

ARI Penetration:
ARI seeks to increase its penetration, conversion and profitability by leveraging untapped potential of the sunglasses category in GTR & the unique relevance of the category for anyone on a journey
The primary benefit arises from improved profitability, as ARI moves to direct supply from varying existing models. Other key benefits include; improved customer experience, arising from retail theatre, technology and innovations in the category and a full array of brand availability.

The Passenger
ARI seek to continue to provide retailing opportunities for all passengers. Most passengers are captured within the T1 & T2 main store areas however, ARI acknowledge the requirement to ensure secondary opportunities are provided in Piers. These shops focus on the passenger demographic and present key items / best sellers specific to that location, informed through customer insights and behavioural analysis.

Strategy
ARI seek to maximise retailing opportunities and revenues to our shareholders by identifying all retailing locations fully aligned with the DAP expansion strategy. New stores are located to ensure that passengers that may not have had the opportunity to shop within the main Duty-Free stores in T1 or T2 have an opportunity to purchase close to their Gate.

IT
The IT infrastructure will be updated & reconfigured to meet the needs of the business and expand the customer experience.

CIP.20.08.001
Retail Refurbishments, Upgrades and New Developments

Project Details Summary		
Category: Retail		
Primary Driver Revenue Opportunity	**Secondary Driver** Customer Experience	**Total Capex requirement** €8.0m
Underpinning Assumptions and Cost Benchmarks	• Construction costs benchmarked on recently tendered Retail Redevelopment project in Terminal 2 – 2018 • Construction rates reviewed and validated by AMD. • Logistics equipment costs validated by known suppliers.	
Opex Impact	• Opex impact of €4.5m p.a. mainly driven by additional payroll/FTE's and other variable costs such as: logistics, credit card fees, retail bags etc.	
Revenue Impact	• €6.3m p.a.	
Project Output	• New retail store Southern gates • New Retail Store Pier 400 transfer route • Pier 100 store expansion and redevelopment • Pier 400 (CBP) store upgrade • T2 Arrivals store upgrade • 2 new logistics adjustable platforms • Electric pallet trucks & equip • Operational contingency • P&C 50/50 New and Refresh brands • New ARI concept stores	
Asset Life	• 5 years	
IRR	• 8.7%	
Payback period	• 4.5 years	
NPV	• €0.7m	
Project Delivery Key Milestones		
ARI Stores - Secondary Locations (Upgrades & Expansion):	**Q1 2020 – Q4 2024**	

CIP.20.08.001
Retail Refurbishments, Upgrades and New Developments

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	100%	€8,000,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€8,000,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs (Deemed included below)	
Total - to summary	
Construction Costs	
Pier 100	
T2 Arrivals Store	
Pier 400	
CBP	
South Gates	
Operational Contingency	
Logistic Infrastructure	
50/50 cost share vendor installations	
Concept Stores	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability (Deemed included above)	
Total - to summary	

CIP.20.08.002
Retail Marketing & Media installation

Project Summary

- **This project identifies Marketing and Media opportunities at Dublin Airport.**

ARI is developing new, innovative retail technology initiatives to improve the customer experience in our various shops across the globe. Emphasising ARI's core values and based on ARI's "Experience is everything" proposition. This value-based proposition is supported by three (3) strands to ARI's Brand Promise:

- To deliver the most outstanding shopping experiences
- To make shopping easier for our customers
- To find innovative ways of making things better for our customers

Media for in store brand promotions

A significant element of the designs that ARI develops for its various stores incorporates the supply and installation of various elements of retail technology and digital media.

The benefits of integration of retail technologies and digital rich media as part of retail store development are 3-fold:

- **Digital rich media has been proven to generate engagement, traffic and footfall into stores, to enhance brand attractiveness; and to encourage passengers to shop/buy inside the store zone. High quality content and communications can both engage and inform passengers as part of the passenger journey with right products, /services/information at the right time. Digital also works as part of the overall store design strategy to provide an enhanced store shopping experience.**
- **Offering additional instore digital touchpoints as part of promotional agreements with key**

CIP.20.08.002
Retail Marketing & Media installation

suppliers can enhance overall contract negotiations, margins & terms. This is now a major component of promotional negotiations and frequently requested by suppliers

- **Utilizing digital can offer more effective ways of managing collateral, in regards reducing the need for print and install of traditional POS**

Commercial

Marketing and media are designed through a customer first approach and there is a balance between informative communications, brand advertising & retail store communications. The potential return on investments can be identified both directly (through supplier revenues/ margin enhancements) and indirectly through engagement, increased penetration & additional dwell time spent in store, plus customer satisfaction tracking with our overall instore experience measures.

The Passenger

The use of strategically located media installations will add significantly to the passenger experience. New installations will inform, engage, delight and add a sense of theatre to the journey.

Strategy

The strategy is to engage passengers with the right message at the right time in an engaging way that compliments on the overall store experience and where appropriate link the on and off-line shopping experience.

Media for FIDs, LOOP & Cross Category messaging

CIP.20.08.002
Retail Marketing & Media installation

Project Details Summary		
Category: Retail		
Primary Driver Revenue Opportunity	**Secondary Driver** Customer Experience	**Total Capex requirement** €1.5m
Underpinning Assumptions and Cost Benchmarks	• All costs estimated from current DAP framework cost schedules, and from current T2 media installations.	
Opex Impact	• €0.1m p.a.	
Revenue Impact	• €0.5m p.a.	
Project Output	• New media installations delivering a new ARI media strategy	
Asset Life	• 5 years	
IRR	• 8.4%	
Payback period	• 4 years	
NPV	• €0.2m	
Project Delivery Key Milestones		
ARI – Marketing & Media	**Q1 2020 – Q4 2024**	

CIP.20.08.002
Retail Marketing & Media installation

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	100%	€1,500,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€1,500,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
Design & Management Costs (Deemed included below)	
Total - to summary	
Construction Costs	
Marketing & Media	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability (Deemed included above)	
Total - to summary	

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E INFORMATION TECHNOLOGY

Appendix E
Information Technology (IT)

Appendix E – Information Technology			
CIP Number	**Project Title**	**Cost €m**	**Pg. No.**
CIP.20.05.001	Airfield Optimization	€5.9	E2
CIP.20.05.002	Digital Passenger Experience	€1.8	E7
CIP.20.05.003	Integrations and Data	€5.1	E10
CIP.20.05.004	Baggage Systems	€1.3	E13
CIP.20.05.005	Business Efficiency	€6.2	E16
CIP.20.05.006	Commercial Systems	€2.3	E21
CIP.20.05.007	Reliability, Safety, Security & Compliance	€8.2	E24
CIP.20.05.008	Operational Devices (Support & Maintenance)	€1.8	E29
CIP.20.05.009	Network Components - Lifecycle & Growth	€6.9	E32
CIP.20.05.010	Passenger Processing (excl. Security Screening)	€11.0	E35
CIP.20.05.011	Security Technology Innovation (Biometrics & FOD Detection)	€5.0	E38
CIP.20.05.012	Servers and Storage - Lifecycle & Growth	€5.6	E42
CIP.20.05.014	User Devices (Desktops, Mobile, Telephone, Radio)	€3.7	E45
CIP.20.05.015	New Data Centre Hosting Location	€4.0	E48
CIP.20.05.016	Microsoft Enterprise	€6.0	E51
CIP.20.05.020	Innovation Fund	€4.0	E54
TOTAL:		**€78.6m**	

CIP.20.05.001
IT - Airfield Optimisation

Project Summary

- This project proposes that Dublin Airport participate in further SESAR (Single European Sky ATM Research) initiatives to drive additional efficiencies and release more capacity.

Dublin Airport (DAP) and its key stakeholders, IAA (Irish Aviation Authority), Eurocontrol, Airlines and handling agents have a common goal to continue to drive efficiencies across airfield operations, its key processes and supporting infrastructure while maintaining the highest standards of safety and compliance. DAP has several key IT systems in place that support this objective for the airfield operation. These include Airport Operations System (AOS), Airfield Visual Display (AVD), Advanced Docking Guidance system (A-VDGS), Integration Platform. These systems are widely used by all Stakeholders. DAP will be A-CDM (Airport Collaborative Decision Making) certified by the end of the current CIP period, supporting full data exchange between IAA, Eurocontrol, Airlines and Handlers.

SESAR:
SESAR is a European wide initiative, designed to completely overhaul European airspace and its air traffic management (ATM). DAP is one of 25 airports that is obliged (initially under the "Pilot Common Project" PCP Regulation) to deploy these solutions – many are in the remit of the ANSP (Air Navigation Service Provider) but there are a number that the airport is directly responsible for, in both the airport operations area and IT.

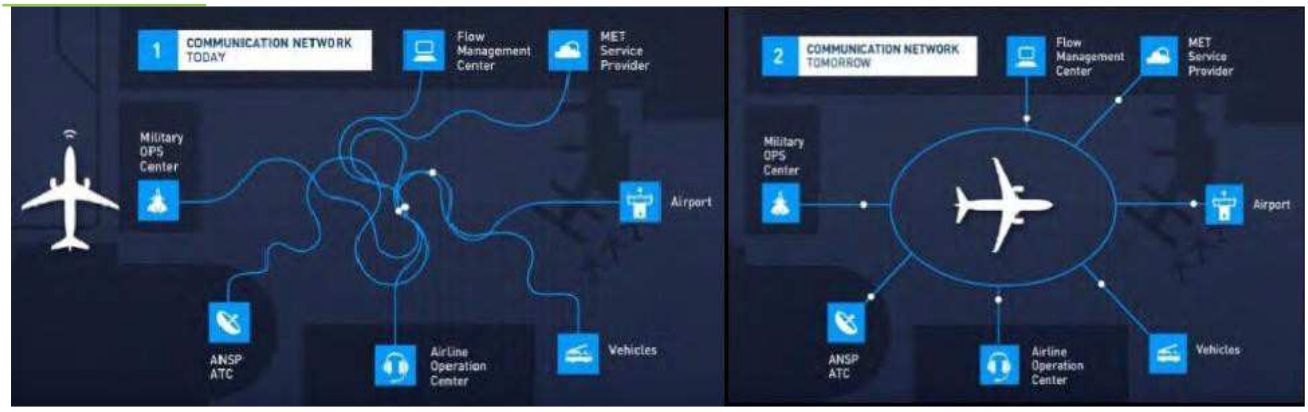
Targeting Efficiency & Safety Improvements:
The airport and its partners are constantly seeking new ways of delivering efficiencies and improving safety standards for all who operate on the airfield. As the number of aircraft movements increases over the 2020-2024 CIP period, there will be a greater reliance on IT systems and Data to deliver an increase in capacity in a safe and reliable manner. During the lifetime of 2020-2024 CIP DAP will be participating in further SESAR initiatives (as proposed in this project) to drive additional efficiencies and release more capacity. SESAR will grant up to 50% of the full cost of any approved project.

CIP.20.05.001
IT - Airfield Optimisation

The proposal can be split into the following groups:

1. Airport Operational Database (AODB) upgrade:
    - Upgrade of the existing operational systems to deliver a new centralised information system that monitors all events at the airport in real-time and allows immediate interaction with all systems.
2. IAOP / NOP delivered as part of European wide SESAR initiative:
    - The Initial Airport Operations Plan (IAOP) provides a single, common and collaboratively agreed rolling plan for an individual airport while the Network Operations Plan (NOP) provides a global plan for the network and aims to connect the AOP of all the airports on one single network. Dublin Airport is mandated by EU Regulation 716/2014 to implement the iAOP during the next CIP period.
    - The combination of AOP and NOP increases predictability across the network and at individual airports. For DAP this will ensure that DAP facilities are used in a better, more efficient, optimised way.
    - With up-to-the minute information sharing facilitated by the iAOP, every operational stakeholder at Dublin Airport can have access to changes in scheduling, operating conditions and circumstances, allowing better, proactive performance management by everyone. This ultimately makes operations run more smoothly and efficiently.
    - The full implementation of the AOP wills ee airports take on the role of ground co-ordinators with the network. The effect of this is that airports will see their facilities used in a better, more efficient and optimised way. There will be better predictability resulting in reduced delays, less unnecessary fuel burn by airlines, optimised resource utilisation and better service for passengers.
3. A-CDM Key Performance Indicators (KPIs): System enhancements required to support KPIs tracking of operations (e.g. TOBT – Target Off Block Time, TSAT – Target Start-up Approval Time, etc.)
4. System and data integrations across all key stakeholders (SWIM).
    - The aim of System Wide Information Management (SWIM) is to provide information users with relevant and commonly understandable information. It does not refer to a single solution or technology, but rather a global level of interoperability and standardisation that enables users and providers to exchange data without having to use different interfaces or protocols. For DAP this will result in increased cost efficiency, easily accessible information sharing and improved service operation.
    - The implementation of the SWIM concept will enable direct Air Traffic Management business benefits to be generated by assuring the provision of commonly understood quality information delivered to the right people at the right time.

CIP.20.05.001
IT - Airfield Optimisation



The role of SWIM (System Wide Information Management).

Note on Funding:
In the past, DAP availed of SESAR funding to partially fund efficiency improving initiatives. Approximately €10m SESAR funding has been secured to date (approx. 43% of the overall investment). Programs supported by SESAR to date include Airport Collaborative Decision Making (A-CDM), Advanced Visual Docking Guidance System (A-VDGS), Aerial View Display (AVD), Initial Airport Operations Plan (iAOP) and SWIM Integration Platform. Dublin Airport also plans to submit applications for further SESAR programs of work to be delivered within the lifetime of this 2020-2024 CIP (e.g., AOP/ NOP, additional SWIM initiatives, etc).

CIP.20.05.001
IT - Airfield Optimisation

Project Details Summary		
Category: Information Technology		
Primary Driver Operational Efficiency	**Secondary Driver** Stakeholder Requirements	**Total Capex requirement** €5.9m
Underpinning Assumptions and Cost Benchmarks	• A-CDM KPIs will continue to be tweaked and supporting systems and processes updated to deliver positive business outcomes for all stakeholders • Regulatory landscape will remain as is • New runway will come on line in 2022 bringing increase in aircraft movements • European wide initiatives will drive programs of improvement across all stakeholders • Data sharing across all stakeholders will continue to grow • SESAR funding will continue through CIP Life time and significant projects such as iAOP will proceed • The AOS platform will be upgraded rather than replaced • A new integration platform introduced in 2019 will support all system integrations	
Opex Impact	• Normalised incremental opex impact of c.€0.1m additional cost p.a. relating to systems support	
Project Output	• AODB and AVD upgrades to deliver the expected level of service and functionality • IAOP, NOP delivered as part of Europeanwide initiative • System enhancements to support A-CDM KPIs • System and data integrations across all key stakeholders (SWIM)	
Asset Life	• 5 years	
Project Delivery Key Milestones		
AODB, and AVD software upgrades and enhancements	**Ongoing**	
iAOP rolled out	**Q4 2023**	
SWIM initiatives	**Q4 2023**	
System and Data integration	**Q4 2022**	

CIP.20.05.001
IT - Airfield Optimisation

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€5,900,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€5,900,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Implementation Costs	
AODB, AVD, A-VDGS upgrades and enhancements	
Initial Airport Operation Plan (iAOP) rolled out	
SWIM initiatives	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.002
IT – Digital Passenger Experience

Project Summary

- **This project proposes investment in Dublin Airport Mobile and Web channels and supporting infrastructure to ensure passengers get the best possible digital experience throughout all airport touchpoints**

A key objective of the Dublin Airport (DAP) strategy is to delight our passengers. Digital technology plays a large part in people's daily lives, making everyday tasks simpler and providing relevant information to assist. Airports and travel can be a stressful experience for many people, but technology can significantly reduce this stress by putting the passenger in control with the right tools and information.

Passenger Expectations:
A recent survey of our web and mobile B2C offerings found DAP to be lagging its counterparts. DAP offerings were deemed not user friendly, not providing easy access to information and services and not supporting any level of personalization or contextual messaging to passengers or staff supporting those passengers. In the upcoming 2020-2024 CIP period DAP will target the following goals to improve the overall B2C offerings:

- **Invest in Mobile and Web channels and supporting infrastructure to ensure DAP passengers receive the best possible digital experience throughout all airport touchpoints.**
- **Provide passengers with accurate, contextual information at all stages of the passenger journey.**
- **Offer high quality products and services through digital channels through mobile.**
- **Use digital means to alleviate passenger distress when unexpected or non-standard events occur at the airport.**

This project proposes the following (to ensure DAP achieve the above-mentioned goals):

- **Web and Mobile development platform: The provision of a development platform will allow DAP build functionality in one place but deploy simultaneously to Web and Mobile assets. This will require a re-platform of the existing website and a move from Native to Hybrid Apps, making DAP digital B2C channels more cost efficient and agile.**
- **Updated Platforms: Platforms will be kept current and relevant through regular refreshes.**
- **Web and Mobile Channels: DAP will continue to enhance web and mobile channels based on analytics and passenger feedback.**
- **Digital signage and interactive screens: Digital Screens supporting passenger engagement to be provided in dwell and leisure areas to enhance the passenger experience (only IT element).**

CIP.20.05.002
IT – Digital Passenger Experience

Project Details Summary		
Category: Information Technology		
Primary Driver Customer Experience	**Secondary Driver** Operational Efficiency	**Total Capex requirement** €1.75m
Underpinning Assumptions and Cost Benchmarks	• Smartphones will continue to be the device of choice for passengers • Development will be "mobile first" • Younger demographic will expect all travel related information and services to be provided through digital channels	
Opex Impact	• Normalised opex impact of nil due to additional opex costs relating to solutions system support being offset by savings relating to reduced operational resource requirements	
Project Output	• Mobile development platform in place supporting Web and Mobile assets • Web and mobile channels kept current and in line with user expectations • Contextual and personalized services and products throughout the passenger journey • Single view of the passenger supporting personalized offers • Digital Screens supporting passenger engagement in dwell areas	
Asset Life	• 5 years	

Project Delivery Key Milestones		
Software enhancements to Mobile and Web platforms	**Ongoing**	
Web and Mobile Platform in place with current Web and App Assets migrated	**2020**	
Digital screens and interactive devices rolled out	**2023**	

CIP.20.05.002
IT – Digital Passenger Experience

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€1,750,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€1,750,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Implementation Costs	
Web & Mobile Platform	
Digital Passenger Engagement	
Retail Digital Engagement	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.003
IT - Integrations and Data

Project Summary

- **This project identifies the technology required to support the increasing volumes and demand for data and business insights across Dublin Airport and its stakeholders.**

Digital transformation of the airport operating environment will continue to accelerate with more and more physical assets and business processes becoming digitised, producing more data that will be required to measure and optimise performance,

This will require more sophisticated data capabilities to manage the increase in volume, the compute power to process this data and, more sophisticated tools to derive actionable insights utilising artificial intelligence and machine learning. The growth in data, driven by digital technology over the last 2-3 years has been exponential and this trend will continue.

The backend data platforms that house this data are currently powered by Oracle and Microsoft products and this will likely continue. This project identifies the technology projects required to support the increasing volumes and demand for data and business insights across Dublin Airport and its stakeholders. This project captures the following requirements:

- **Databases, Oracle, SQL Server upgrades**
- **Modern Data Platform implementation**
- **Delivery of Business Intelligence solutions to all stakeholders**
- **Creation of Data Science Predictive Models (Machine Learning & AI) driving optimized processes and deeper business insights**
- **Final phase of delivery of Integration platform to connect systems and data across stakeholders**

CIP.20.05.003
IT - Integrations and Data

Project Details Summary		
Category: Information Technology		
Primary Driver Operational Efficiency	**Secondary Driver** Customer Experience	**Total Capex requirement** €5.1m
Underpinning Assumptions and Cost Benchmarks	• Digital transformation of the operating environment driving increase in data • Greater business reliance on real-time data and analytics • Business demand for data and data driven insights will continue to grow • Introduction of integration and data platforms will lay the foundations to harness data and deliver that data and meaningful business insights to aviation stakeholders • IT Development costs will remain relatively static	
Opex Impact	• Normalised opex impact of c.€0.1m saving p.a. associated with additional databases, integration and data platforms costs being offset by savings through analyticoptimisation	
Project Output	• Lifecycle upgrades to existing database infrastructure • Modern enterprise data platform including a Data Science lab • Data management capabilities enabling real-time integration between applications and IOT devices. • Enhancements to enterprise analytics to optimise passenger flows, airfield management, asset	
Asset Life	• 5 years	

Project Delivery Key Milestones	
Modern Data Platform Completed	**Q1 - 2024**
Enhancements to enterprise analytics	**Ongoing**
Data management capabilities	**Ongoing**
Lifecycle database upgrades	**Ongoing**

CIP.20.05.003
IT - Integrations and Data

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€5,050,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€5,050,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Implementation Costs	
Databases Oracle, SQL Server, new data platform upgrades	
Integration Platform Upgrade	
Modern Data Platform (Final phase of delivery)	
BI Platform & Development	
Data Science Predictive Models (Machine Learning & AI)	
Data Integration Services	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.004
IT - Baggage Systems

Project Summary

- **This project identifies the investment required in the IT component of Baggage System at Dublin Airport.**

Baggage handling is a critical service provided by Dublin Airport (DAP) to its airline customers and passengers. Baggage handling is supported by complex Electro Mechanical systems that are largely controlled by IT systems. This investment will ensure those IT systems can meet operational demands and cater for growth in baggage while keeping current with any regulatory changes. The following two projects have been identified as requirements during the next 2020-2024 CIP period:

1. Baggage Image Location System (BILS) Replacement
BILS provides baggage imaging, weighing and location services for USCBP to pre-clear US flight operations. BILS also provides Baggage Reconciliation System (BRS) services for all T2 airlines. It is likely that T1 Airlines will also adopt the airport BRS in the future. The BRS platform will be an integral part of any IATA 753 solutions being provided by DAP. Note: There have been issues with the current platform which have had an adverse impact on airline baggage operations. DAP plan to replace the platform and potentially the associated hardware during the 2020-2024 CIP period

2. Baggage Management Software
Baggage Handling System (BHS) is a conveyor system transporting checked luggage to and from aircraft. Both the T1 and T2 BHS have IT components that are key to their operation, these include:

- **SAC: Sort Allocation Computer services manage both the Sortation and Tracking of bags.**
- **SCADA: Supervisory control and data acquisition (SCADA) services provides visualization of the status of the Baggage Handling system.**

The SAC and SCADA for T2 will be replaced by end 2018 and the T1 components will be replaced as part of the Standard 3 /HBS project (2020-22)

Project:
This project covers any future upgrades or enhancements to these services. DAP will continue to invest in the reliability of the IT baggage services to ensure regulatory compliance and vendor support on both hardware and software elements.

CIP.20.05.004
IT - Baggage Systems

Project Details Summary		
Category: Information Technology		
Primary Driver Regulation	**Secondary Driver** End of Life	**Total Capex requirement** €1.3m
Underpinning Assumptions and Cost Benchmarks	• Regulatory compliance of baggage screening standards and US customs achieved • Lifecycle Management to keep on supported platforms, hardware & software • Replacement of hardware peripherals in line with recommended life expectation • The technology platforms to support our security & compliance services will be upgraded/refreshed inline with technology advances.	
Opex Impact	• Normalised incremental opex impact of c.€0.1m p.a. relating to expanded service requirements	
Project Output	• Compliant Hardware & Software on all our IT baggage services	
Asset Life	• 5 years	
Project Delivery Key Milestones		
Baggage Image Location System (BILS) replacement	**2022**	
Baggage Management Software upgrade and enhancements	**2021, 2023**	

CIP.20.05.004
IT - Baggage Systems

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€1,300,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€1,300,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Implementation Costs	
Baggage Image Location System (BILS)	
Baggage Management Software	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.005
IT - Business Efficiency

Project Summary

- **This project identifies the need to invest in our Business Systems through enhancements and additions to the existing IT estate.**

One of the Dublin Airport (DAP) strategic goals is to "build for our future". To enable business to transform and grow, DAP needs reliable, flexible and efficient business systems. It is critically important to continue to capitalize on previous IT investments by ensuring those systems remain current and adapt to changing business needs. DAP has invested in some strategic business applications such as Oracle ERP, Kronos Time and Attendance, IBM Maximo for Asset Maintenance and Baggage Management solutions.

Technology also plays a major part in delivering optimized processes for all airport stakeholders. Technology solutions can enhance our customer and passenger experience, reduce FTE and associated costs and in some cases negate the need for major infrastructure capex projects. The following section describes important IT Business Efficiency projects required at DAP.
The key Business Efficiency Projects identified are as follows:

1. **Application Enhancements**
2. **ERP Investment**
3. **IT Asset Management Tool**
4. **Airport Community App**
5. **Situational Awareness Tool**
6. **Building Information Modelling System**
7. **Small Building Request**

1. Application enhancements
IT continues to drive value from the existing business systems by taking advantage of enhancements to those solutions to meet the constantly changing business needs of DAP and its customers. During the lifetime of this CIP, we expect to continue to develop applications such as

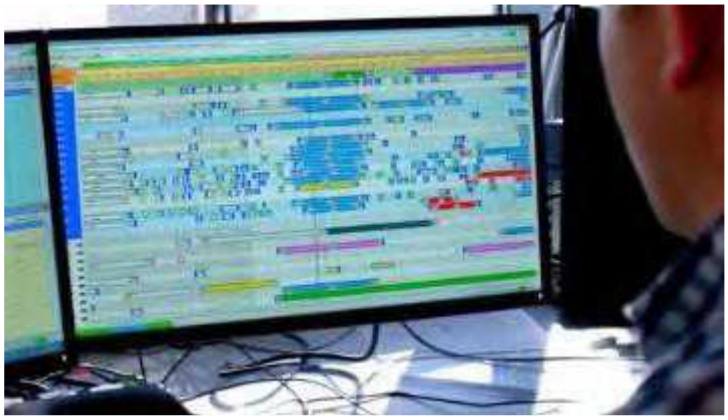
- **Enterprise Asset Management platform (e.g. sensor deployment & IOT gateway)**
- **Rostering Systems**
- **Time and Attendance systems**
- **Energy Management systems**
- **Billing solution**

2. ERP (Enterprise Resource Planning) Investment
ERP is a business process management software (currently provided by Oracle at DAP) that allows DAP to use a system of integrated applications to manage the business and automate many back- office functions related to technology, services and human resources. Up to date ERP is critical for the organisation as it can improve productivity, increase efficiencies, decrease costs and streamline processes. In 2018 / 2019 DAP will review the strategic direction of current ERP systems. This review will result in moving to the next generation of Oracle ERP in the cloud or possibly a selection of an alternative platform to support core business.

CIP.20.05.005
IT - Business Efficiency

Note on DAP System: The current HR platform is inefficient and does not support mobility, self- service, single source of truth for employees, there is a need to move to a modern, reliable platform to drive business efficiency

3. **IT Asset Management tool**
ITIL (IT Information Library) is a framework of best practicesfor delivering IT services. DAP requires the implementation of ITIL Service Asset and Configuration Management system to maintain information about Configuration Items (Software, Hardware, Services, Licences) required to deliver an effective IT service at the Airport. IT are currently managing a large estate of IT assets on a paper-based system.



This project proposed the implementation of an IT Asset management tool which will support the rollout of best in class ITIL processes for DAP Asset management. The tool will track IT components (e.g. Hardware, Software and Licences) in use across the entire DAP campus ensuring assets are properly controlled, and that accurate and reliable information about those assets is available when and where it is needed. This information includes details of how the assets have been configured and the relationships between assets.

4. Airport Community App
This project proposes the implementation of a DAP Community App. The Community App will give staff working in and around the airport, even those who do not work directly for DAP, easier access to information about airport matters, such as flights, passenger density, local weather and transport status. It is proposed that consultation will take place with stakeholders on features for the Comm App. Dublin Airport would be keen to adopt the Gatwick of stakeholder engagement.
Note:
Gatwick currently have a Community App which is known to drive greater collaboration, transparency and efficiency amongst airport stakeholders.

5. Situational Awareness Tool
Due to increased capacity constraints, airports worldwide are moving towards an end to end view (using visualisation tools for airport activity) of their operations to realise more efficient operations through sharing of information. A situational awareness tool recognises the dependencies between stakeholders and provides alerts and triggers to those stakeholders to take necessary actions in the event of any issue occurring in the Passenger, Baggage or Airfield pipelines.

CIP.20.05.005
IT - Business Efficiency

A situational awareness tool will provide Dublin Airport Operations with an end to end view of all key passenger, baggage and airfield processes. The tool will use integrated data feeds from key Airport systems (AODB – Airport Operational Database, GPS Tracking etc.) to populate dash boards that will support real-time decision making across the operation. Note: A Business rules engine will be incorporated into the tool allowing us to configure the appropriate actions based on set of data or events.

6. Building Information Modelling System

Building Information Modelling (BIM) is a digital representation of the complete physical and functional characteristics of a built asset. A single BIM model of an asset can contain information on design, construction, logistics, operation, maintenance, budgets and schedules critical to the completion of that asset. Effective BIM implementation can result in the following:

- **Reduced project management**
- **Foster communication and co-ordination**
- **Identify errors early**
- **Reduce rework**
- **Reduce costs**
- **Improve quality.**

DAP proposed to implement BIM technology and establish processes to ensure the BIM records become the single source of truth for all capital works on our infrastructure. Given that DAP is proposing significant investment in infrastructure in the 2020-2024 CIP period it is critical that the correct technology is implemented to maximise project efficiency.

7. Small Business requests

IT will spend approximately €200k per annum on Small Business requests delivering a program of incremental changes to the business each year.

Typically, these are small development projects delivered by internal IT resources that add incremental value to the business. Past examples include the rollout of online forums on mobile devices (allowing staff capture and review data on a real-time basis), small infrastructure projects such as Office set ups and Moves (e.g. onboarding new handling agent).

CIP.20.05.005
IT - Business Efficiency

Project Details Summary		
Category: Information Technology		
Primary Driver Operational Efficiency	**Secondary Driver** Future Proofing	**Total Capex requirement** €6.2m
Underpinning Assumptions and Cost Benchmarks	• Regulatory standards & Compliance achieved on all software. • Lifecycle Management to keep on vendor supported platforms, hardware & software • Replacement of software and/or hardware peripherals in line with recommended life expectation, e.g. software versions. • Investment in new applications & software when business benefits are obvious. • R&D in emerging disruptive technologies such as Blockchain and wearables.	
Opex Impact	• Normalised opex impact of nil due to additional support costs due to new and expanded solution support being offset by operational efficiencies	
Project Output	• Compliant Hardware & Software on all business systems. • Continued improvement in our business processes executed through technology • New disruptive technology to provide opportunities for transformation and growth	
Asset Life	• 5 years	

Project Delivery Key Milestones		
Application upgrades and enhancements	**Ongoing**	
ERP Investment (HR, Finance, Procurement, AMD, Inventory)	**2021, 2024**	
IT Asset Management	**2021**	
Airport Community App	**2020**	
Situational Awareness Tool	**2022**	
Building Information Modelling	**2022**	
Small Business Requests, Internal Build	**Ongoing**	

CIP.20.05.005
IT - Business Efficiency

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€6,200,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€6,200,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Implementation Costs	
Small Business Requests	
Application Enhancement & Small Business Requests	
Situational Awareness Tool	
ERP Investment	
Airport Community App	
Building Information Modelling System	
Enterprise Asset Management	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.006
IT - Commercial Systems

Project Summary

- **This project identifies key IT projects required to grow and improve Commercial offerings at DublinAirport.**

Dublin Airport will continue to invest in systems and technology to grow and improve Commercial offerings to passengers and customers alike. This investment will support a best in class passenger experience at the airport, helping to make Dublin Airport of choice for passengers and airline customers.

DAP commercial IT services include:

- **Car Parks systems including Booking Websites, Apps, Booking Engine, Car park entry and exit systems and payment processing at all touch points**
- **Retail systems, including ERP, Websites and Mobile Apps**
- **Dublin Airport Travel Services –Websites, Apps and Booking engine**
- **Platinum Services – Websites, Apps and Booking Engine.**

Dublin Airport will also continue to invest in the reliability and security of these services to ensure vendor support on hardware and software elements. Dublin Airport will also invest in future initiatives to further grow business. The B2C digital customer channels will be supported by a new consolidated E-commerce platform to enhance the user experience and reduce associated support costs. The three key components of this project are as follows:

Car Parks Hardware & Software - The Car Park Management system (CPMS) manages all long term and short-term car parking. The system comprises of central software which controls entry/exit of the car parks. The CPMS is integrated with Web and Mobile channels. It is also integrated with Airline websites to provide easy car park booking for passengers

This project proposes lifecycle funding for all IT software and hardware components of the car park management system.
Important: The physical equipment (Barriers, Pay stations etc) are not included in this provision (see CIP.20.04.001).

Retail ERP
Microsoft Navision is the ERP used by Dublin Airport Retail. It provides financial and inventory control for the Dublin airport shops. To comply with vendor support agreements and to deliver enhancements to the Retail business, the Navision platform is upgraded every 4 to 5 years.

E - Commerce Platform
Dublin Airport will consolidate its services including Car Parking, Fast track, Lounges, Platinum Services onto one E-commerce platform delivering a seamless user experience to passengers who wish to avail of Airport services. This new platform will provide cost efficient and agile delivery of new and enhanced products to the airport, its passengers and airline customers. This consolidation will also reduce Opex costs associated with running multiple platforms

CIP.20.05.006
IT - Commercial Systems

Project Details Summary		
Category: Information Technology		
Primary Driver Operational Efficiency / Regulation	**Secondary Driver** Customer Experience	**Total Capex requirement** €2.3m
Underpinning Assumptions and Cost Benchmarks	• Regulatory standards & Compliance achieved e.g. GDPR, Cybersecurity • Lifecycle Management to keep on vendor supported platforms, hardware & software • Replacement of hardware peripherals in line with recommended life expectation, e.g. Car Parks readers. • Passenger expectations and use of digital technology, in particular the use of mobile, will continue to grow.	
Opex Impact	• Normalised incremental opex impact of €0.1m p.a. relating to platform support	
Project Output	• Compliant Hardware & Software • Applications remain current and supported • Enhance & Grow commercial opportunities through digital channels • New Consolidated E-Commerce Platform supporting Dublin Airport B2C Digital channels	
Asset Life	• 5 years	

Project Delivery Key Milestones	
Car Park systems hardware upgrades	**Ongoing as components need replacement**
Retail ERP upgrades	**2021, 2024**
Implementation and enhancement of Consolidated E-Commerce platform to support B2C Digital channels	**2020 implementation Ongoing enhancements**

CIP.20.05.006
IT - Commercial Systems

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€2,300,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€2,300,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Implementation Costs	
Car Parks Hardware & Software	
Retail ERP	
E-Commerce Platforms	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.007
IT - Reliability, Safety, Security & Compliance

Project Summary

- **This project identifies the need to invest in Safety, Security and ComplianceSystems at DublinAirport.**

Dublin Airport (DAP) has a responsibility to ensure it provides safe, secure & reliable infrastructure and services to all users of the airport from Passengers, Staff, Airlines, other 3rd parties and the public. To provide consistent safe, secure & reliable experience, there are many IT services in place in DAP, these include CCTV, Access Control Systems, Queue Management systems and Auto Pass Boarding Scanning services and Docking Guidance systems. DAP will continue to invest in the reliability and compliance of these systems ensuring to get the required level of vendor support on our hardware and software elements by keeping these assets current.

DAP will invest also in technology to enhance the safety of all employees on the DAP campus. This includes airlines, tenants, retail operators and handlers. Some examples of new investment are Training platforms to ensure people remain safe and compliant, Airside Speed controls to prevent accidents etc. These initiatives will benefit every employee working at the airport. The nine sub-projects identified are as follows:

1. **CCTV**
2. **Access Control**
3. **ATRS T1 Upgrade**
4. **Queue Management System (QMS)**
5. **Autopass (T1 Upgrade)**
6. **X Ray Storage & Servers**
7. **Airport Training Platform**
8. **Cyber Security**
9. **Speed Controls**

1.CCTV (Campus Wide)

CCTV is a business-critical security monitoring system that is integrated with multiple T1 and T2 building systems. CCTV is also an operational tool (in ACC) that significantly reduced DAP staff cost.

Today there are approximately 1600 CCTV cameras deployed across the campus with numbers increasing as the airport and the business requirement expands. Approximately one third of these cameras are fully integrated IP devices. The remainder are analogue cameras that are limited in terms of data and control. This request also captures the needs of Apron wide CCTV (Stands, taxi break points & apron roads). As part of PACE a total of 86 Apron wide CCTV cameras address the operational needs around Pier 1, 2,3 & 4. This request addresses the outstanding apron location 5G.

Cameras have an average lifespan of 7 years and a replacement program is in place to guarantee levels of service.

CIP.20.05.007
IT - Reliability, Safety, Security & Compliance

Older analogue devices are replaced by IP devices when broken or reaching end of life. This project covers the following:

- **Lifecycle upgrades of the CCTV camera estate**
- **Upgrade of the CCTV backend platform**
- **Apron CCTV**

2. Access Control (Campus wide)
Access control is the selective restriction of access to a place, building, room, resource or installation. To gain access to a restricted location an individual generally needs to have authorisation or to be given permission to enter by someone that already has authorisation. At DAP Access Control manages access across the airport (airside boundary, external and internal doors) and is integrated with alarms, CCTV and fire systems to ensure rapid response to incidents. Access Controls assists with the regulatory mandate to adequately secure the airport (includes IAA, ICAO & ECAC regulations). This project proposes the following:

- **Upgrade (hardware and software) of the current Access Control system. This will be required at least twice during the 2020-2024 CIP period to ensure regulatorycompliance.**

3. ATRS (T1 upgrade)
Automatic Tray Return System (ATRS) is a security screening conveyor system designed to allow for increased throughput and reduction in staff tray handling. Today ATRS is installed in Terminal 1. The ATRS system also incorporates a remote screening operation (screening from dedicated screening facility elsewhere in the terminal) which further improves throughput ability. This project proposes the following:

- **Upgrade of the ATRS software operating inT1 (deployed in 2017)**

4. Queue Management System (QMS)
QMS measures the length of key queues around the airport such as security search and USCBP for example by capturing the movements of passengers' electronic devices through BlueFi (Bluetooth & Wifi). The system allows DAP to better understand queue metrics at the airport (critical to meet Commission for Aviation Regulation queue time regulations) & provides notifications to inform appropriate mobilisation of staff to manage queues (if required). This project proposes:

- **Software upgrades to existing QMS system**
- **Deployment of technology (potentially expand existing QMS system) in other areas where queues need to be monitored (e.g. Immigration).**

5. AutoPass (T1 upgrade)
The Autopass system (installed in T1) provides a self-service access to the central search area by scanning PAX boarding cards (paper or mobile). Today, the software that captures and authenticates passenger boarding card data for use by DAP security / operations management is known as SeMS (Security Management System). This system will be 10+ years in service during the 2020-2024 CIP. This project proposes the following:

- **Upgrades and integrations of AutoPass systems**

CIP.20.05.007
IT - Reliability, Safety, Security & Compliance

6. X-Ray Servers & Storage

X-Ray Image processing, storage and retention is a key compliance requirement at DAP (Image retention period may change according to Regulatory and GDPR requirements). This project proposes:

- **Hardware for X-Ray Image processing, storage and retention**

7. Airport Training Platform

DAP provide and store all training records for staff working airside. The training records interface into access control to ensure compliance on refresher training (e.g. airside ramp driving). Much of the training statuses are captured on paper records. This project proposes the following:

- **DAP to invest in an online training platform to allow all airport staff easy access to training at their convenience.**

The platform will be tightly integrated with systems such as Access Control and E-HR to ensure only certified personnel can carry out duties in restricted areas. The platform will remove all the paper records currently in use across DAP and provide centralized, digitized training records which can be shared with 3rd party stakeholders such as Airlines and Handling agents. The platform will be integrated with Core HR to have training records centralized and associated with individual Dublin Airport staff. The solution will ensure that all staff operating at the airport including 3rd parties have appropriate training to maintain a safe working environment for all.

8. Cyber Security

Cybersecurity is the body of technologies, processes and practices designed to protect networks, computers, programs and data from attack, damage or unauthorized access. In this context, security includes both cybersecurity and physical security. As we adopt more technology and generate more data, the requirement for better preventative and remediation cybersecurity solutions will grow. This is an ongoing battle as technologies evolve creating both new opportunities for the business but also for those who seek to harm it. This project proposes:

- **Ongoing investment in tools to monitor and detect any activity that may pose a threat to the security of the Airport's IT systems that could result in adverse impacts on the operation and passenger experience.**

Without ongoing investment in tooling and monitoring, the risk to key Operational systems at DAP would increase with the potential to bring about major operation disruption. DAP will invest in tools to quickly react to any threat detected to provide the necessary protection. As airport dependence on IT systems and Data increases, so does the need to have the tooling and processes in place to protect those assets

9. Speed Controls

There have been several incidents at DAP which have resulted in personal injury and damage to equipment both in the baggage hall and airside resulting from vehicles being driven at excessive speed. This project proposes the following:

- **Introduce technology to monitor airside vehicle speeds. Up to 12 high tech CCTV cameras will be deployed in strategic airside locations.**
- **Provision of 42 fixed CCTV cameras around the Apron Roads to monitor road traffic activities. Note: Road Traffic Collision incidents have increased due to increased ground handler activity.**

This project will make all airside locations a safer environment in which to operate.

CIP.20.05.007
IT - Reliability, Safety, Security & Compliance

Project Details Summary		
Category: Information Technology		
Primary Driver Safety	**Secondary Driver** Regulation	**Total Capex requirement** €8.23m
Underpinning Assumptions and Cost Benchmarks	• Regulatory & Compliance (IAA, ICAO, ECAC, CAR) • Any future audit findings addressed • Lifecycle Management to keep on vendor supported platforms, hardware & software • Replacement of hardware peripherals in line with recommended life expectation, e.g. CCTV Cameras, QMS Blip Nodes, Access Control MIPS etc • The technology platforms to support our security & compliance services will be upgraded/refreshed inline with technology advances.	
Opex Impact	• Normalised incremental opex impact of c.€0.3m p.a. relating to Cyber Security systems support	
Project Output	• Reliable, Compliant hardware & software on all security services	
Asset Life	• 5 years	

Project Delivery Key Milestones	
CCTV - Growth, IP switchover, upgrades to support innovation	**Ongoing**
CCTV – Backend System	**Q4 2022**
Access Control Hardware & Software	**2021, 2023**
ATRS T1 upgrades	**2022**
QMS upgrades – Hardware & Software	**2021, 2023**
AutoPass (SEMS) T1 upgrades	**2021, 2023**
Smiths X-Ray Servers & Storage increase	**2023**
Airport Training Platforms	**Q4 2020**
Cyber Security Initiatives	**Ongoing**
Airside Speed Controls	**2021**

CIP.20.05.007
IT - Reliability, Safety, Security & Compliance

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€8,230,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€8,230,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Implementation Costs	
CCTV - IP switchover	
CCTV – Backend System, Apron CCTV & minor upgrade	
Access Control Hardware & Software	
ATRS Hardware & Software	
QMS – Hardware & Software	
AutoPass (SEMS) Hardware & Software	
Smiths X-Ray Servers & Storage	
Airport Training Platforms	
Cyber Security Initiatives	
Speed Controls	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.008
IT - Operational Devices (Support & Maintenance)

Project Summary

- **This project identifies the refresh requirements for all IT devices supporting operations at Dublin Airport.**

There are various technologies and multiple devices that are required to support the Operation at the Dublin Airport. In general, these types of devices have a life expectancy of 4 to 5 years. This project will ensure that all are fully functioning and reliable to support business and regulatory requirements. This project covers:

1. **Retail and Payment Devices**
2. **FIDS Hardware**
3. **Digital Pods**

1. Retail and Payment Devices

There are more than 60 POS (point of sale) terminals in Retail areas across the DAP campus. In support of the POS terminals there are also handheld credit card devices that operate as resilience to POS and as a mechanism to deploy during busy times to ensure queue times at tills is kept to a minimum. This project proposes the following for retail and payment devices:

- **Lifecycle upgrades every 4 to 5 years on each POS & handheld device.**

Note: Regulatory changes such as PCI (Payment Card Industry) compliance requirements may also drive the need to replace this hardware.

2. Flight Information Display System (FIDS) Hardware

DAP have over 800 FIDS throughout the campus. These screens serve multiple purposes, including – Departure Check in Areas, Queue Times, Departure Gate Times, Gate Numbers and Flight Information, Arrival Information, Baggage Belt Information, Way Finding for Transfer Passengers, etc.

FID screens also enable a smooth operation at DAP back of house operations, such as Baggage areas where display information is utilised by DAP, airlines and handlers. This project proposes:

- **Lifecycle replacements are typically 5 years per device, equating to replacement of 20% annually.**

3. Digital Pods

Dublin Airport launched digital advertising screens located along all parts of the customer journey in 2015 (62 in total across T1 & T2). The display system chosen was a 70" screen (24-hour display) known as Aerpods™. This project proposes the following;

- **Lifecycle upgrades for Aerpods in 2021/2022**

CIP.20.05.008
IT - Operational Devices (Support & Maintenance)

Project Details Summary		
Category: Information Technology		
Primary Driver Operational Efficiency / Capacity	**Secondary Driver** Customer Experience	**Total Capex requirement** €1.75m
Underpinning Assumptions and Cost Benchmarks	• Operational Devices need to have high level of reliability and availability • Regulatory & Compliance achieved e.g. PCI compliance • Lifecycle Management to keep on vendor supported platforms, hardware & software • Replacement of hardware peripherals in line with recommended life expectation • All screens will be replaced at least once in a 5-year period, including FIDS, Digital Pods • Passenger facing screens will provide rich, contextual content, alleviating stress and delivering an excellent passenger experience • Retail devices will be replaced on a 5-year lifecycle program • Costs of devices will increase by 10% over the previous CIP period	
Opex Impact	• N/A	
Project Output	• Passengers will be provided with engaging, rich, contextual content on screens to enhance their airport experience • Dublin Airport Retail supported by fully functioning equipment delivering quality service to passengers and staff • Screens will be energy efficient supporting the Dublin Airport carbon neutral goal	
Asset Life	• 5 years	

Project Delivery Key Milestones	
Retail Hardware	**2021, 2024**
FIDS Hardware	**Ongoing as per lifecycle policy**
Digital Pods	**Ongoing as devices become unserviceable**

CIP.20.05.008
IT - Operational Devices (Support & Maintenance)

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€1,750,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€1,750,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Implementation Costs	
Retail Hardware	
FIDs Hardware	
Digital PODs	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

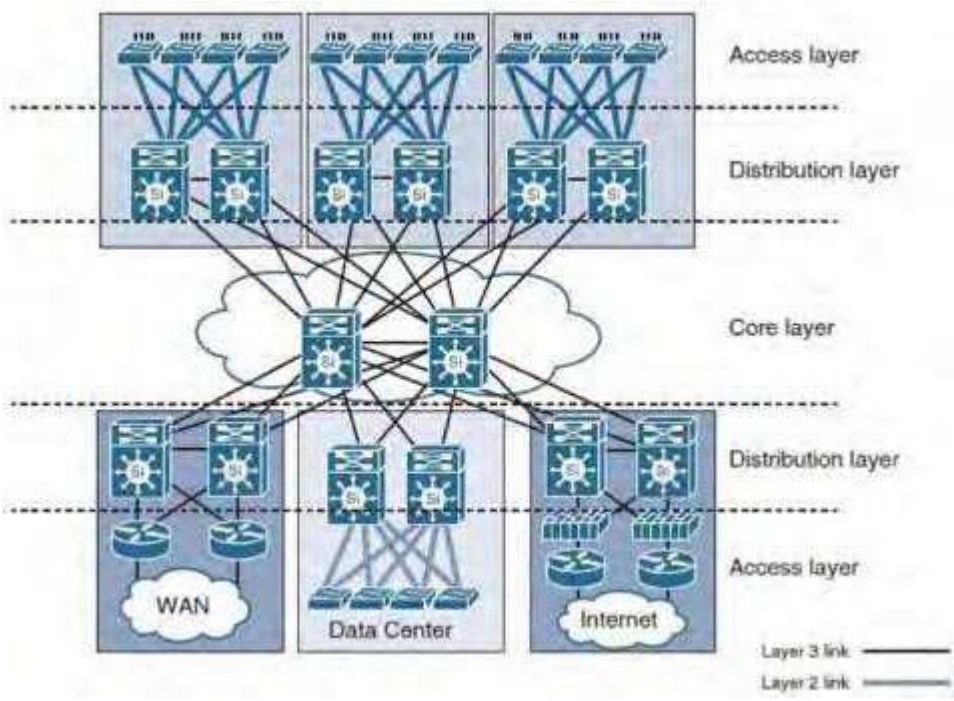
CIP.20.05.009
IT Network Components - Lifecycle & Growth

Project Summary

- **This project identifies the need to replace IT network components as they reach the end of their useful life as well as the importance of catering for growing requirements through the addition of increased capacity.**

The Dublin Airport (DAP) IT Network covers the entire campus and comprises over 600 access layer switches, 10 physical edge switches and a complex and fully resilient core and data centre network. DAP also owns and manages all physical fibre and copper cable and associated ducting within the campus.

These network products reach the end of their useful life for various reasons. These reasons may be due to technology innovation and development driving changes in the product, or the products simply mature over time and are replaced by functionally richer technology. Independently of this the risk of component failure increase significantly as the product age goes beyond 7 years.



Typical Modular Enterprise Campus Architecture

Up to date and supported network hardware and software are essential to the delivery of campus wide services and to the efficient and effective management of network services to the airport. Continuing changes in technology require that we have a systematic plan for upgrading and replacing technology to ensure that we have supported network services. The following replacement works are identified in this project:

- **Replace Network Access Switches**
- **Replace Core and Physical Edge (PE) Switches**
- **Replace Firewalls, WAN Routers and Load Balancers**
- **Replace WiFi (Access Points, Controllers and backend solution)**
- **Cabling and cable infrastructure replacements & growth.**

CIP.20.05.009
IT Network Components - Lifecycle & Growth

Project Details Summary		
Category: Information Technology		
Primary Driver End of Life	**Secondary Driver** Capacity	**Total Capex requirement** €6.9m
Underpinning Assumptions and Cost Benchmarks	• All Wired Network components will be replaced on a 7- year lifecycle and costs based on costs from current projects. WiFi is on a 3-year lifecycle.	
Opex Impact	• No material impact on opex costs.	
Project Output	• Fully supportable Network environment with no devices over 7 years old, all software on manufacturers supported versions and additional capacity and speeds delivered.	
Asset Life	• 5 Years	

Project Delivery Key Milestones		
Replace Network Access Switches	**Ongoing**	
Replace Core and Physical Edge (PE) Switches	**Ongoing**	
Replace Firewalls, WAN Routers and Load Balancers	**Ongoing**	
Replace WiFi (Access Points, Switches & Controllers)	**Ongoing**	
Cabling and cable infrastructure replacements & growth.	**Ongoing**	

CIP.20.05.009
IT Network Components - Lifecycle & Growth

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€6,875,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€6,875,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Implementation Costs	
Replace Network Access Switches	
Cabling & Cable Infrastructure (includes telephony and trunk radio)	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.010
IT - Passenger Processing (excl. Security Screening)

Project Summary

- **This project identifies necessary IT upgrades to existing passenger processes as well as making provision for future self-service passenger processes.**

There are several key passenger processes supported by technology at Dublin Airport (DAP). These include Check-In, Bag Drop and Boarding and they are supported by both Common Use Passenger Processing (CUPPS) and Common Use Self Service (CUSS) platforms. The following projects are identified for improved passenger processing:

1. **CUPPS and CUSS Hardware and Software**
2. **Self Service Boarding (25 gates)**

1. CUPPS and CUSS Hardware and Software – (refresh + CUSS extension in T1 & T2)
CUPPS at DAP comprises a hardware estate of €800k covering 500+ PCs and associated monitors, printers and scanners (e.g. Boarding Pass printers) and Bag Tag printers which are all connected to a backend software platform that is in turn connected to the Airline DCS (Departure Control System).

DAP also invested heavily in CUSS SSKs and Bag Drops to support increased passenger growth in constrained check in areas while delivering the best possible passenger experience. By end of 2019, approximately €6.5m will have been invested in self-service technology across both terminals.

This proposed investment will ensure that the CUPPS and CUSS technology continues to deliver the expected level of service to DAP airlines, handlers and passengers through hardware and software refreshes, additional hardware to support growth, provision of enhancing peripherals e.g. Cameras, payment devices etc.

2. Self Service Boarding Gates
There is an ever-increasing demand from our Airline Customers to deliver more passenger self-service solutions. In addition to extending the Check in, Bag Tag, and Bag drop processing solutions currently in use, Dublin Airport also plan to rollout. Self Service boarding gates as standard at all gates across the airport. Currently we have 104 gates, but by circa 2024, there will be 129 gates in total. Those gates will serve a mix of wide and narrow bodied aircraft and so any automated boarding solution deployed needs to handle the higher passenger volumes of wide bodied aircraft.
The Boarding gates will automatically open once a passenger has provided a valid boarding pass or has had their biometric validated at the gate. Dublin Airport are introducing facial biometrics at all key passenger touch points. This is covered under CIP 20.05.011 (Security Innovation). Gates can be configured for 2-3 lane access to the aircraft, including a lane for Passengers with Reduced Mobility (PRMs) The costs assume a mix of 2 and 3 lane Self Service boarding gates across the airport depending on the needs of airlines operating at those gates.

CIP.20.05.010
IT - Passenger Processing (excl. Security Screening)

Project Details Summary		
Category: Information Technology		
Primary Driver Operational Efficiency	**Secondary Driver** Capacity	**Total Capex requirement** €11.0m
Underpinning Assumptions and Cost Benchmarks	• Airlines will continue to drive their customers to use Self Service • Airline processes will support self-service boarding • There will be no change in regulation requiring a return to Agent processing • Costs based on rollout of CUPPS and CUSS equipment in 2015- 2019 • Costs for Self-Boarding gates based on Market Research and mix of wide and narrow bodied configuration • Airlines will be open to sharing CUSS infrastructure.	
Opex Impact	• Normalised incremental opex impact of €0.2m due to increased number of units	
Project Output	• Robust CUPPS and CUSS platform to support check in and bag drop operations for growing passenger numbers • CUPPS/CUSS software enhancements to meet Business needs • Rollout of Self Service Boarding technology at all gates. • CUSS SSKs will gradually be replaced by Hybrid models supporting traditional native CUSS applications running concurrently with CUWS platform	
Asset Life	• 5 years	
Project Delivery Key Milestones		
CUPPS/CUSS Hardware and software refresh		**2022 (software upgrade) Hardware replaced as it becomes unserviceable**
CUSS extension in T1 and T2		**2020 - 2022**
Self Service Boarding rollout		**2019 - 2024**

CIP.20.05.010
IT - Passenger Processing (excl. Security Screening)

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€11,000,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€11,000,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Implementation Costs	
CUPPS Hardware and Software refresh	
CUSS (SSK & SBD) Hardware and Software refresh	
Self Service Boarding	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.011
IT - Security Technology Innovation (Biometrics & FOD Detection)

Project Summary

- **This project proposes IT driven solutions to delivering a safer and more efficient airport environment.**

Dublin Airport (DAP) is constantly seeking new ways to improve the safety and security of passengers, employees and any 3rd party operating within or doing business with the airport. In addition to providing a safe environment, the airport wants to provide the best user experience for all groups of users through the provision of technology to alleviate stress at the airport. The projects outlined below will help DAP harness new technology to deliver a safer, more efficient airport environment.

1. Biometric Identification:
This project proposes the introduction of Biometric identification for passengers, employees and 3rd parties operating within the airport campus. As this technology becomes mainstream, it will reduce/ remove the need for physical document checks for passengers at key touch points, these will include;

- Self-service check-in
- Self-service bag drop
- Entry to airside security screening
- CBP process (where applicable)
- Boarding gates

We are experiencing biometrics becoming more the norm from use on our phones, larger mobile devices to vehicle usage with the level of trust in this technology growing. Initiatives such as IATA's OneID is heavily reliant on Biometric processing to deliver the envisaged seamless passenger journey. The proposed investment of €5m in biometric will deliver on 800 devices.

Biometric technology has advanced significantly in recent years with the latest devices and validation services resulting in accuracy rates of around 99% for solutions such as Facial recognition. Biometric capture and validation are becoming the "norm" for people in their daily lives, e.g unlocking phones, driving increased levels of security and safety. The level of trust in this technology has grown. Many business sectors are moving towards Biometrics as their primary method of personal identification. The technology is being widely adopted by the Aviation industry with most airports indicating significant spend in the coming years on this technology.

In addition, initiatives such as IATA's OneID are heavily reliant on Biometric processing to deliver the envisaged seamless passenger journey. Dublin airport wants to maintain its high ACI scores by delivering the best possible passenger experience through technology. Biometric identification negates the need for passengers to produce documentation at multiple touch points at the airport. It will help make passengers feel safer and less stressed in what can be a difficult environment for many people. It also significantly reduces the risk of impersonation.

Biometrics will also support the Airport's strategy around Safety and Security, giving an increased level of certainty around who exactly is travelling through the airport. The proposed solution will comprise of camera technology operating on a middle ware platform that will be integrated with our current solutions supporting passenger processing e.g CUSS platform and Autopass.
An estimated 800 biometric capture devices will be deployed across passenger touch points

CIP.20.05.011
IT - Security Technology Innovation (Biometrics & FOD Detection)

- Check-in/Bag Drop – 250
- Airside Access – 30
- Boarding Gates – 390
- Others (CBP, Lounges, Retail, Fastrack) 130

The cost of device varies between €3,500 and €5,000 depending on the image quality and decision speed required at a particular touch point. Where high volumes of passengers need to be processed at speed, higher end devices will be required.

2. Passenger Process

The technology will allow passengers enrol with a Biometric Service. The solution will support both the CBP Biometric service (TVS) if travelling to the US and a generic iPassport Service which will support both US and Non US travellers. The iPassport service allows the passenger to store multiple document types e.g Passports, Visas, National ID cards, Driving licences. The TVS service currently only stores passport details.
Biometric data can be stored for either an individual journey or if the passenger chooses, for multiple journeys. Neither the airline or the airport will have access to the biometric data. This is owned and managed by the passenger through the iPassport service. CBP and TSA will have access to passenger's biometrics travelling to the US for the duration of their trip. Passengers can complete enrolment remotely via the Airline Apps or at the airport through a kiosk. The airlines will play a significant part in encouraging passengers to enrol with a biometric service , ideally in advance of arriving at the airport.

In addition to providing a higher level of security in terms of who is travelling, it will deliver significant staffing efficiencies to airlines, handlers and airports. For airport and third party staff working within the airport, the introduction of biometrics will greatly enhance Access control technology reducing the risk of unauthorized persons accessing restricted areas at DAP.

3. Biometric validation for staff

For airport and 3rd party staff operating in airside zones, the introduction of biometrics will greatly enhance safety and security, reducing the risk of unauthorized persons accessing restricted areas. This proposal will include the provision of Biometric cameras at landside/Airside boundaries and at airside points where staff move from one zone to another e.g Terminal to Ramp. Enrolment will take place at the Airport ID Centre (AIC). The solution will be integrated with the core Access Control system. An estimated 50 cameras will be required to support staff biometrics

4. Foreign Object Debris (FOD) detection technology

FOD is any object that does not belong in or near airplanes and, as a result, can injure airport or airline personnel and damage airplanes. This project proposes the introduction of Foreign Object Debris (FOD) detection technology on runways, taxi ways and ramp that will remove/ reduce the need of visual inspections and therefore reduce the possibility of human error that could potentially result in a catastrophic event. FOD detection technology also offsets the need for full manual inspections and therefore reduces FOD inspection Opex costs.

CIP.20.05.011
IT - Security Technology Innovation (Biometrics & FOD Detection)

Project Details Summary		
Category: Information Technology		
Primary Driver Safety / Security	**Secondary Driver** Operational Efficiency	**Total Capex requirement** €5.0m
Underpinning Assumptions and Cost Benchmarks	• Biometric Identification will become standard practice with Airlines and Airports • Regulation will support the collection and use of biometric data • Airlines and handlers will work with Dublin Airport to put the technology and processes in place to make the airport a safer environment for all • Biometric devices can be retrofitted to much of the existing IT infrastructure e.g Cameras on Self Service Kiosks • Data sharing across all stakeholders will continue to grow • FOD detection technology will become mainstream and reduce in cost	
Opex Impact	• Normalised opex impact of nil due to additional support costs for new service solutions being offset by operational efficiencies	
Project Output	• Biometric devices deployed at key passenger processing point, check in, Security screening, Boarding, immigration, terminal exits • Biometric data will be collected and shared across all stakeholders supporting common security and safety goals • An automated FOD detection solution will replace manual inspections which will increase airside safety and reduce manpower requirements	
Asset Life	• 5 years	
Project Delivery Key Milestones		
Biometrics supporting the passenger journey	**Q4 2020**	
Biometrics supporting access to restricted areas	**Q4 2021**	
FOD detection solution on runways and taxiways	**2022**	

CIP.20.05.011
IT - Security Technology Innovation (Biometrics & FOD Detection)

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€5,000,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€5,000,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Implementation Costs	
Biometric devices and platforms for Pass & Staff	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.012
IT Servers and Storage - Lifecycle & Growth

Project Summary

- **This project identifies the IT Server and Storage upgrades required to ensure Dublin Airport maintains a secure and up-to-date IT infrastructure.**

The current underpinning infrastructure (Servers & Storage) that supports Dublin Airport (DAP) IT Services is part of an overall digital ecosystem that comprises of physical and software related elements. It is imperative that this ecosystem is kept up to date and upgraded, as each part of the ecosystem has a dependency on the other. These upgrades can be either hardware upgrades, bug fixes, software enhancements, performance improvements or security upgrades.

Ageing & Under Capacity IT Systems:
As systems get older the technology becomes outdated and faster more efficient technology becomes available. Vendors release fewer upgrades for older technology, so the risk of failure and service outage increases. Support and running costs of older devices and software is also higher.
As a result, DAP IT has set the lifecycle policy on servers and storage at 5 years. In addition, as business volumes grow, and more IT systems come on stream, the need for additional servers and storage also increases.
The additional server capacity will be required to ensure system performance is optimized to meet the needs of the Airport Community and deliver services against agreed SLAs. The growth rate on this infrastructure is normally around 15% per annum to cater for increased demand.
The exponential growth in Data as the business continues to move from physical to digital will drive significant investment in storage.

The aim of this ongoing project is to keep our Server & Storage environment at levels and age where it is fully supported and capable of supporting new features as they become available from our Vendors. This is critical to meeting our service level agreement (SLA) with our businesses while ensuring we have the capacity to grow our increasingly digital business.

This project requests the following:

- **Replace and add Blade & Physical Servers**
- **Replace and add Storage Arrays**
- **Replace & Upgrade Operating Systems, Backup/Recovery and Event Management**
- **Telephony Backend Servers and PABX upgrade**

CIP.20.05.012
IT Servers and Storage - Lifecycle & Growth

Project Details Summary		
Category: Information Technology		
Primary Driver Operational Efficiency / End of Life	**Secondary Driver** Capacity	**Total Capex requirement** €5.57m
Underpinning Assumptions and Cost Benchmarks	• All Server & Storage components will be replaced on a 5-year lifecycle and costs based on costs from current projects.	
Opex Impact	• Normalised incremental opex impact of €0.2m for third party licensing, support and maintenance	
Project Output	• Fully supportable Server & Storage environment with no components over 5 years old, all software on manufacturers supported versions and additional capacity and speeds delivered.	
Asset Life	• 5 years	
Project Delivery Key Milestones		
Replace Blade & Physical Servers	**Ongoing**	
Replace Storage Arrays	**Ongoing**	
Replace & Upgrade Operating Systems, Backup/ Recovery and Event Management	**Ongoing**	
Telephony Backend and PABX Upgrade	**Q4 2022**	

CIP.20.05.012
IT Servers and Storage - Lifecycle & Growth

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€5,570,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€5,570,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Implementation Costs	
Servers & Storage	
Operating Systems and Monitoring	
Telephony Backend and PABX Upgrade	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.014
IT - User Devices (Desktops, Mobile, Telephone, Radio)

Project Summary

- **This project identifies user device upgrades required to ensure Dublin Airport staff can efficiently perform their roles.**

Dublin Airport (DAP) staff rely on technology to perform their roles in ensuring the airport runs smoothly. The operations and back office teams use a range of devices in their day job including:

- **Personal Computers (PCs)**
- **Laptops**
- **Mobile Phones**
- **Radios**
- **Phones.**

The use of Desktops/ Laptops is an essential enabler across all DAP business functions. As of 2018, approx. 1700 units are used to allow our business users, both internal and external, interact with our IT services daily.

The reliance on mobile technology to deliver business efficiencies means that some staff operating in the airport need more than one device to be fully efficient. Mobile devices allow our people work from any place at any time and negate the need to return to an office location to upload critical data and interact with key systems. Radios and Telephony will continue to play a significant part in airport operations into the future. Note: As staff numbers grow in line with passenger numbers, the number of these devices will increase.

This project proposes:

- **Replacement / Upgrade of IT user devices to maintain a guaranteed level of service for staff and optimize business efficiency.**

CIP.20.05.014
IT - User Devices (Desktops, Mobile, Telephone, Radio)

Project Details Summary		
Category: Information Technology		
Primary Driver End of Life	**Secondary Driver** Capacity	**Total Capex requirement** €3.7m
Underpinning Assumptions and Cost Benchmarks	• Costs of devices will increase by 10% over the previous CIP • Mobile Device usage will continue to grow in the workplace • Radio will continue to be widely used in theairport campus • Telephony will continue to be widely used in the airport campus • Staff numbers will grow to cope with passenger numbers through the CIP period • Devices will reduce in cost and so costs will remain in line with current CIP	
Opex Impact	• N/A	
Project Output	• Guaranteed levels of services for all staff • Staff equipped with the necessary level of technology to optimize business efficiency	
Asset Life	• 5 years	
Project Delivery Key Milestones		
User Devices – Replacement and Growth	**Ongoing lifecycle policy**	

CIP.20.05.014
IT - User Devices (Desktops, Mobile, Telephone, Radio)

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€3,700,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€3,700,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Implementation Costs	
Desk tops and Mobile Devices – Replacement and Growth	
Telephony and Radio – Replacement and Growth	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.015
New Data Centre Hosting Location

Project Summary

- **This project identifies the need for a new data centre Hosting Location at Dublin Airport.**

Dublin Airport (DAP) currently uses two on site data centres to provide hosting facilities for all critical IT systems. These data centres have a capacity for 152 cabinets each with utilisation currently at approximately 70% of available cabinet space.

- **Primary data centre: Located in on Level 5 in Terminal 1. Last refurbished in 2009.**
- **Secondary data centre: Located on the second floor in Cloghran house. Purpose built in2009.**

Benefits of a new hosting location?
This proposal recommends the construction of a new primary data centre to ensure long term cost effective IT hosting facilities. The optimum location for a new hosting location will be on DAP owned land near the airport but with sufficient separation to eliminate the risk of a single incident impacting both hosting locations (currently both data centres are with 800m of each other). The rationale for this is:

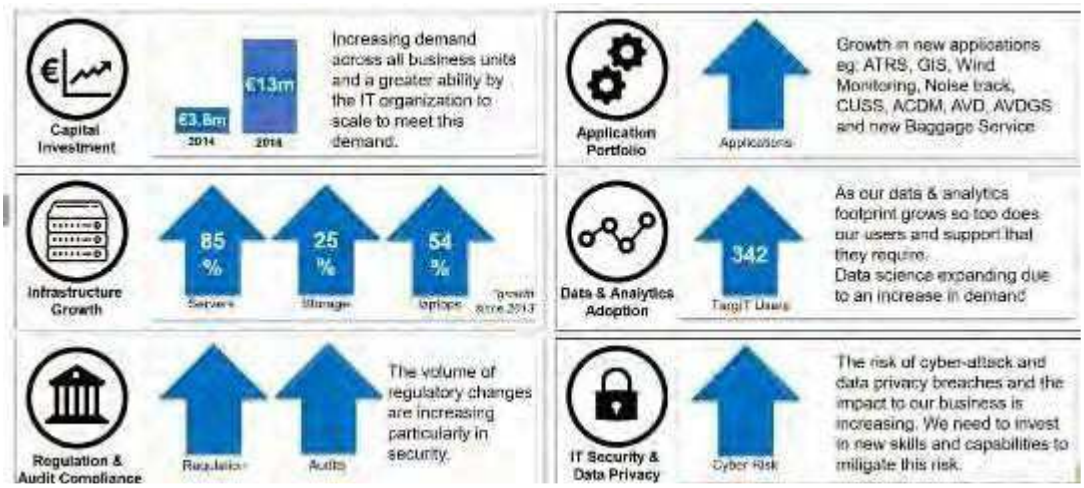
- Existing Locations: Currently the location of both hosting locations (within other buildings) limits DAPs ability to meet all the criteria required for a Tier 3 hosting facility (e.g. Data Centre Power Audit 2017). It also exposes the hosting location to unnecessary risks related to building maintenance (e.g. power supply testing).
- Cost: Building on DAP owned land of low commercial value (distant from terminals and airport facilities) will help keep construction costs to a minimum while releasing the existing hosting space in Level 5 for additional DAP office space.
- Connectivity: Building near the airport allows DAP to leverage existing investments in the airport network where full data centre interconnectivity can be achieved on DAP owned fibre reducing operating costs.
- Criticality: An on-campus location minimises dependency on third party external communication links ensuring we can fulfil our responsibilities in relation to the Critical National Infrastructure directive by minimising any risk of failure.

Utilisation of external / cloud services?
In the last three years DAP has invested in rationalising the use of external data centres as these were not providing extra resilience but were adding significant cost. DAP therefore exited from its' hosting arrangements 2017 & 2018. All critical systems are now hosted from the on-campus data centres with limited cloud-based hosting used for external Websites. As the demand for IT services continues to grow and the business becomes increasingly dependent on their uninterrupted operation DAP needs to ensure that the facilities keep pace with these requirements.

Requirements:
It is proposed that an initial space of circa 200 SQM should be delivered in new hosting location. The location is to be constructed with a foundation / slab of 400 SQM to accommodate a second similarly sized unit if required.

Note: If a new hosting location does not proceed then significant investment (circa €1.1m) will be required on the Level 5 facility in 2020 to upgrade air conditioning, fire suppression, power supply, generator and other facilities.

CIP.20.05.015
New Data Centre Hosting Location



Business Context: Growth in the Consumption of IT Services

Project Details Summary		
Category: Information Technology		
Primary Driver Operational Efficiency	**Secondary Driver** Capacity	**Total Capex requirement** €4.0m
Underpinning Assumptions and Cost Benchmarks	• Current data centre hosting locations are not suitable to meet our needs for the next tenyears • Solution will be a modular unit with 150 – 200 SQM capacity and slab capacity to accommodate a second unit if required in future	
Opex Impact	• Normalised incremental opex impact of €0.1m for maintenance and upkeep	
Project Output	• New IT Hosting location with dedicated fibreinter-connectivity to our existing hosting location in Cloghran House.	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Detail Design complete:	**Q1 2021**	
Procurement complete:	**Q4 2021**	
Construction Commence:	**Q2 2022**	
Construction Complete	**Q3 2023**	
Project Handover:	**Q4 2023**	

CIP.20.05.015
New Data Centre Hosting Location

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€4,000,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€4,000,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management	
Total - to summary	
Implementation Costs	
Data Centre hosting upgrade & New Data Centre	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.016
IT - Microsoft Enterprise Licence

Project Summary

- **This project identifies the need for Dublin Airport to renew Microsoft Enterprise Licences over the 2020-2024 CIP period.**

A Microsoft Enterprise Licence is a three-year agreement for an agreed Microsoft Software Bundle for a specified number of employees / devices. The price for the bundle is set at the outset and covers the three-year period. Any variation in volumes is catered for by a 'True-Up' payment at the end of each of the three years.

Microsoft software is essential to support employee productivity and mobility using Microsoft Office 365 suite at DAP. This provides DAP staff with a cost-effective means of accessing basic office products such as Word, Excel and PowerPoint. Improved productivity through enhanced collaboration is achieved with SharePoint, OneDrive and Skype for Business. Additionally, the security of corporate data is achieved through the deployment of InTune, Microsoft Protect, Advanced Threat Analytics and associated security products.
Note: Enterprise Licence has proven to be the most cost-effective method of procuring the software There are no realistic alternatives.

This licencing also covers use of MS SQL database services and systems management software to help manage DAP Microsoft server estate.

CIP.20.05.016
IT - Microsoft Enterprise Licence

Project Details Summary		
Category: Information Technology		
Primary Driver End of Life / Regulation	**Secondary Driver** Operational Efficiency	**Total Capex requirement** €6.0m
Underpinning Assumptions and Cost Benchmarks	• Microsoft continue to be a market leader in this space • Enterprise Licencing continues to be the most cost- effective method of procurement • The profile of staff growth continues to follow historic patterns • DAP will continue to achieve discount levels achieved in previous years	
Opex Impact	• No impact to opex costs	
Project Output	• Productive and mobile workforce whose data is secure. • Properly licenced Microsoft software for servers and desktop	
Asset Life	• 3 years	
Project Delivery Key Milestones		
Microsoft Enterprise Licencing – Renewal 1	**July 2020**	
Microsoft Enterprise Licencing – Renewal 2	**July 2023**	

CIP.20.05.016
IT - Microsoft Enterprise Licence

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€6,000,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€6,000,000**

LEVEL 2 - Cost Analysis	
Design and Management Costs	Redacted Cost Information
General Design & Management (Deemed included below)	
Total - to summary	
Implementation Costs	
Microsoft Enterprise Licensing	
Total - to summary	
Escalation, Contingency & Design Variability	
Escalation, Contingency & Design Variability	
Total - to summary	

CIP.20.05.020
IT - Innovation Fund

Project Summary

- **This project identifies the benefits of maintaining an IT innovation fund over the 2020-2024 CIP period.**

Dublin Airport aims to use technology to support our business, our employees, our partners and our passengers. In the current CIP we have introduced several pieces of innovative technology including CUSS, ATRS, Fire app, AVD and eGates at immigration. It is imperative that new technology and new ways of using technology are prioritised to improve operational efficiencies. As the cost of doing business increases Dublin Airport will need to be more agile and able to adapt to disruptors in the industry quickly.

In CIP 2015-2019 an Innovation fund of €8m was included to provide funding to take advantage of newer technologies as they mature and demonstrate more potential to deliver value to all stakeholders. In CIP 2020-2024 Dublin Airport are requesting €8m for an IT Innovation fund to support initiatives that could benefit from emerging technologies as they mature over the next CIP period.

Some of these newer technologies and proposed initiatives are listed below. These are the candidate initiatives to which innovation funding could be targeted depending on the speed at which technologies are maturing and the probability of benefit materialising. Dublin Airport is proposing that the Actual spend/outcomes from the IT Innovation investment fund is reported on separately to the Airlines and Airport stakeholders on an annual basis.

Initiative	Benefit Area	Benefit Description
Pavement Surface Monitoring	Safety, Security, Compliance	Pavement Surface monitoring has the potential to provide early notification of pavement degradation reducing repair costs, reducing out of service time for areas on the apron and ultimately reducing the long-term cost of pavement maintenance
Drone Detection & Mgt.	Safety, Security, Compliance	Recent events at Gatwick and New York have highlight the need for airports to have a greater awareness of the potential for drones to cause disruption to airport operations. A portion of the innovation fund will be directed towards the investigation of technologies that will detect, track and neutralise drones that have the potential to case disruption to Dublin Airport operations.

CIP.20.05.020
IT - Innovation Fund

BOTS and AI	Technology Innovation	Chat Bots are now widely used as a customer interface medium to provide information and answer queries. In an Airport context they can reduce costs of providing customer information services or switchboard services but also enhance the passenger experience by making more contextual information available at the touch of a button via mobile phone.
Mobile CUPPS	Passenger Processing	The introduction of CUSS has already seen a big reduction in check-in queuing times at Dublin airport. Inevitably unforeseen events will still see check-in resource capacity exceeded from time to time. In this context Mobile CUPPS units would provide additional flexibility for Airlines to increase throughput on such occasions.
Security Screening POC	Security Innovations	Technologies are now emerging which allow Cabin Bags to be screened without separating them from the passenger allowing for a huge improvement in the passenger experience and in Security throughput. Investment in a PoC at this stage may significantly improve speed to deploy when the technology is market ready.
Arriving Passenger Experience	Passenger Experience	As Digital Engagement becomes cheaper and more pervasive it is now feasible to provide more focus on Arriving passengers and "meeters and greeters" e.g through Social engagement, Digital Screens, Apps etc
Airside Vehicle Control Integrity	Safety, Security, Compliance	Investing in technology to account for and reconcile persons who enter or depart airside by vehicle (thus bypassing the rigours of the normal security check process) will potentially provide a cost-effective means for significantly improving security, controls and efficiency in this area.
Passenger Flow Analysis	Safety, Security, Compliance	Leveraging the existing CCTV infrastructure with the addition of analytics to provide Passenger Flow analysis, behaviour analysis and potentially Event Detection (e.g. Escalator Fall, Disruptive Behaviour) can contribute both significant operational improvements in terms of response time and reduced liability as well as commercial and process improvement opportunities to both Airport and Airlines
Beacon Infrastructure and platform	Passenger Experience	Beacon technology has fallen significantly in cost allowing affordable location based services to be deployed in the airport (e.g. passenger location vs. time to gate) for process improvement, passenger experience and commercial opportunities.
Trusted Passenger Experience	Safety, Security, Compliance	Fuller adoption of Biometrics along with other technological advances in areas such as hand baggage screening may allow creation of a meaningful Trusted Passenger Experience where individuals who are regular passengers and go through a more detailed enrolment process can be provided with a superior and speedier Airport and Boarding experience.
Airside access control integrity	Security Innovations	If deployment of biometrics evolves as expected then it may become feasible to implement full accounting for all people entering or leaving Airside greatly improving controls, giving an exact account of who is Airside at any particular and improving detection of any unauthorised entry or exit attempts.

CIP.20.05.020
IT - Innovation Fund

Robots POC	Technology Innovation	Passenger Assistance, Customer Service, Cleaning etc are all use cases for robots in an airport environment. Swedavia have recently rolled out “Pepper” the robot to help with way finding, food and beverage promotions etc
Virtual Reality/ Wearables	Business Efficiency	Supporting Maintenance and Customer Service Agents. Smart helmets, glasses etc provide real time data and support to agents working across the airport campus allowing them complete tasks in a more efficient manner
Software Defined Networking	Technology Innovation	Software Defined Networking is an emerging technology in the network space which enables significant savings on Networking costs through firstly automating the provisioning of Network services which continues to be a fairly manual process and secondly enabling better use of cheap internet bandwidth to reliably replace dedicated Wide Area network links
Server Containerisation	Technology Innovation	Daa has invested significantly in VMWare the leader the current generation of server virtualisation software and has reaped considerable benefit n terms of hardware utilisation levels and flexibility. The next generation of virtualisation, known as ‘Containerisation’ will be required in order to enable real mobility of applications between on-premise and Cloud hosting. To reap the benefits and cost saving of cloud more fully daa IT will need to invest in understanding and testing this technology.

CIP.20.05.020
IT - Innovation Fund

Project Details Summary		
Category: Information Technology		
Primary Driver Technology	**Secondary Driver** Operational Efficiency	**Total Capex requirement** €4.0m
Underpinning Assumptions and Cost Benchmarks	• Technology is constantly evolving and maturing at a rapid pace and it is not possible to have line of sight of how some of these technologies can impact on business 5 years out. • There will be future opportunities/challenges that will require Dublin Airport to adopt new technology in the next CIP period.	
Opex Impact	• N/A	
Project Output	• This project will provide funding to support initiatives that can take advantage of new and evolving technologies as they mature. A list of candidate initiatives with high level cost estimates are outlined below	
Asset Life	• 3 - 10 years	
Project Delivery Key Milestones		
Initiatives will be delivered throughout the lifetime of the CIP. Dublin Airport will report annually to stakeholders on how this funding is being used.	**Q1 2020 – Q4 2024**	

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Implementation Costs	100%	€4,000,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€4,000,000**

F SECURITY

Appendix F
Security

Appendix F – Security			
CIP Number	**Project Title**	**Cost €m**	**Pg. No.**
CIP.20.06.001	Cabin-Baggage X-Ray Replacement & EDS Upgrade	€14.6	F2
CIP.20.06.007	Full Body Scanners	€1.9	F6
CIP.20.06.009	ATRS – Additional Lane in Terminal 1	€0.6	F9
CIP.20.06.014	Screening and Logistics Centre	€13.4	F12
CIP.20.06.015	Intrusion Detection Systems for Dublin Airport Boundaries	€4.0	F17
CIP.20.06.016	Surface Road Blockers & Temporary Mobile Barriers	€1.0	F20
CIP.20.06.022	Redevelopment of Training Facility (ASTO)	€1.2	F23
CIP.20.06.025	Detection: Explosive Detection Dogs (EDD) and Mobile X Ray Unit	€0.2	F27
CIP.20.06.030	VCP Automation to Enable Remote Screening	€0.7	F30
CIP.20.06.031	Autopass - T1 Replacement & T2 Install	€1.8	F33
CIP.20.06.036	TSA - X-Ray & FBSS Replacement	€0.4	F36
CIP.20.06.041	Security Screening Equipment - End of Life	€4.5	F39
CIP.20.06.042	ATRS - Central Search Areas (T1 and T2)	€11.7	F43
CIP.20.06.044	Replacement of T1 Controllers for Access Control System	€0.5	F47
TOTAL:		**€56.4m**	

CIP.20.06.001
Cabin-Baggage X-Ray Replacement & EDS Upgrade

Project Summary

- **This project proposes a phased replacement of all existing single-view X-ray systems with Explosive Detection System (EDS) equipment in all search areas in Dublin Airport.**

Dublin Airport is mandated both by national and European regulation (i.e. European Commission Directive EU Reg 300.2008) to ensure that all items carried by persons entering the CPSRA (Critical Part, Security Restricted Area) through its terminals and vehicle-posts are screened to an appropriate standard. The primary method in Dublin Airport for achieving this is X-ray screening.

In the three primary security operations areas in Dublin Airport (Terminal 1, Terminal 2 and the Vehicle Control Posts) there is an existing installed base of 53 X-ray systems. Many of these devices will become end-of-life within the 2020-2024 CIP period. None of the existing systems provide an upgrade path to EDS.

This project proposes a full replacement of all end of life single-view X-ray systems at Dublin Airport with Explosive Detection System (EDS). The provision of EDS Cabin Baggage has the following advantages:

- **Detection: The EDS equipment improves overall detection by ensuring security screeners can better recognise items which are obscured with today's standard (single view) imaging systems**
- **Adapting to Regulatory changes: This technology puts Dublin Airport in a position where by it can easily adapt to increased explosive detection without the need for additional head count (currently more staff and Explosive Trace Detection (ETD) equipment would have to be deployed to meet such an increase which would take a significant period of time and cost to implement).**
- **Passenger Experience: The overall passenger experience is enhanced with EDS-Cabin baggage (CB). EDS-CB system allows the passenger to leave permissible liquids and gels as well as large electrical items in their bag for screening, avoiding the current delays caused by having to divest**

CIP.20.06.001
Cabin-BaggageX-RayReplacement & EDS Upgrade

these items.

- Efficiency: The lower images per person (IPP) is significantly lower with EDS screening units and is forecast to enable Dublin Airport to screen more passengers than single-view systems by approximately 100 PPH/lane in T1 and 45 PPH/lane in T2. The throughput benefits will result in a reduction in the number of lanes required along with the associated capital and operational costs.

Thisprojectproposesthefollowingphasesforcabinbaggage X-rayreplacement:

- Phase 1 – T1: Rollout of EDS Cabin Baggage screening in a suitable CSA location (proposal for T1 CSA relocation is considered in CIP 2020-2024). T1 will require 13 active and 2 redundant EDS-CB lanes. T1 Currently has 12 active lanes with 3 redundant lanes.
- Phase 2 – T2: Rollout of EDS Cabin Baggage screening in the existing T2 CSA. T2 will require 10 active and 2 redundant EDS-CB lanes. T2 Currently has 15 active lanes with 3 redundant lanes.
- Phase 3 – Others: Rollout of EDS CB in the remaining areas outside of the T1 and T2 CSAs (Transfer and VCPs)
- Although Dublin Airports provides security equipment for the TSA area, the screening mandate is determined by TSA and not by daa. TSA have requested that current equipment be maintained with a requirement for end-of-life replacement on a like for like basis. We are aware that TSA are reviewing the implementation of C3 screening equipment and should the TSA proceed with this option, the existing area can accommodate the new equipment.

CIP.20.06.001
Cabin-Baggage X-Ray Replacement & EDS Upgrade

Project Details Summary		
Category: Security		
Primary Driver Regulation	**Secondary Driver** End of Life	**Total Capex requirement** €14.6m
Underpinning Assumptions and Cost Benchmarks	• System costs based on market research with relevant vendors and industry forums (ACI, IATA and airports) • Re-use of all existing IT network CCTV, Blu-fi etc • Contingency is set at 10%	
Opex Impact	• Normalised net opex impact of c.€1m saving p.a. being driven by reduced resource requirements as a result of processing throughput efficiencies	
Project Output	• Rollout of EDS CB systems in all screening areas of the Dublin Airport Campus (not incl. CBP). • Training	
Asset Life	• 7 years	

Project Delivery Key Milestones	
Feasibility / requirements / pilot complete:	**Q3 2021**
Planning complete:	**Q4 2021**
Design complete:	**Q1 2022**
Procurement complete:	**Q2 2022**
Rollout T1 (Phase I)	**Q2 2024**
Rollout T2 (Phase II)	**Q1 2024**
Rollout – Remaining Screening areas – (Phase III)	**Q4 2024**

CIP.20.06.001
Cabin-Baggage X-Ray Replacement & EDS Upgrade

LEVEL1-Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	91%	€13,307,150
Escalation, Contingency & Design Variability	9%	€1,330,715
Total		**€14,637,865**

LEVEL2 - Cost Analysis				
Design and Management Costs	**Value**	**%Fee**	**Total Fee**	**Total**
General Design & Management	Redacted Cost Information			
Total-to summary				
Construction Costs				
T1 X-Rays - Units				
T1 X-Rays - Sundries + Backend Storage				
T2 X-Rays - Units				
T2 X-Rays - Sundries + Backend Storage				
VCP X-Rays - Units				
T1 X-Rays - Sundries + Backend Storage				
System Management				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

CIP.20.06.007
Full Body Scanners

Project Summary

- **This project proposes a phased implementation of Full Body Scanners / Shoe Scanners in Dublin Airport.**

Dublin Airport (DAP) is mandated both by national and European regulation (i.e. European Commission Directive EU Reg 300.2008) to ensure that all persons entering the CPSRA (Critical Part, Security Restricted Area) through its terminals and vehicle-posts are screened to an appropriate standard. Currently the only method used for screening all passengers entering the CPSRA is Walk Through Metal Detectors (WTMD). In-order to improve our overall detection capability and align DAP with the emerging European standards, DAP now proposes to deploy Full Body Scanners initially as a secondary screening methodology for alarm resolution at the WTMD for selected lanes in Terminal 1 and 2 Central Search Area (CSA).

This project proposes the following:

- **Pilot: Evaluation of existing certified FBSS technologies suitable for use at DAP. Focus primarily on screening capability, operational efficiency, customer interaction and processing time.**
- **Open Journal Tender: Full EU tender cycle required prior to choosing vendor.**
- **Rollout Phase: This phase of the project will implement FBSS to Terminal 1.**

The benefits to providing Full Body Scanners (FBSS) at DAP are as follows:

- **Detection: The deployment of FBSS in the search areas will greatly enhance detection capability. Security screeners can better recognise items which require further investigation.**
- **Passenger Experience: FBSS reduce the need for manual full body searches.**
- **Adapting to regulatory change: The provision of FBSS-SS will greatly prepare DAP for any increase in security screening requirements. Note: Recently issued regulatory changes by the UK civil aviation regulator (CAA) to airports within their remit mandated the use of full body security scanners (FBSS) to the extent of 25% of passengers by the end of 2017, and 100% of passengers by the end of 2019.**

CIP.20.06.007
Full Body Scanners

Project Details Summary		
Category: Security		
Primary Driver Safety / Security	**Secondary Driver** Customer Experience	**Total Capex requirement** €1.9m
Underpinning Assumptions and Cost Benchmarks	• Full Open Journal tender required • No civil, mechanical or electrical works included in this proposal • Footprint increase in CSA due to FBSS rollout to be captured under other capacity projects • No additional Blu-fi etc requirements • Provision of new data and power infrastructure required • Contingency is assumed at 10%	
Opex Impact	• Normalised incremental opex impact of c.€0.5m p.a. relating to equipment support and additional resource requirements	
Project Output	• Rollout and commissioning of 4 FBSS in Terminal CSA	
Asset Life	• 7 years	
Project Delivery Key Milestones		
Feasibility / requirements / pilot complete	**Q2 2020**	
Planning complete:	**Q3 2020**	
Design complete:	**Q4 2020**	
Procurement complete:	**Q1 2021**	
Rollout T1 (Phase II)	**Q1 2022**	
Rollout T2 (Phase III)	**Q4 2022**	
Project Handover:	**Q3 2023**	

CIP.20.06.007
Full Body Scanners

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	6%	€123,315
Construction Costs	85%	€1,644,200
Escalation, Contingency & Design Variability	9%	€176,752
Total		**€1,944,267**

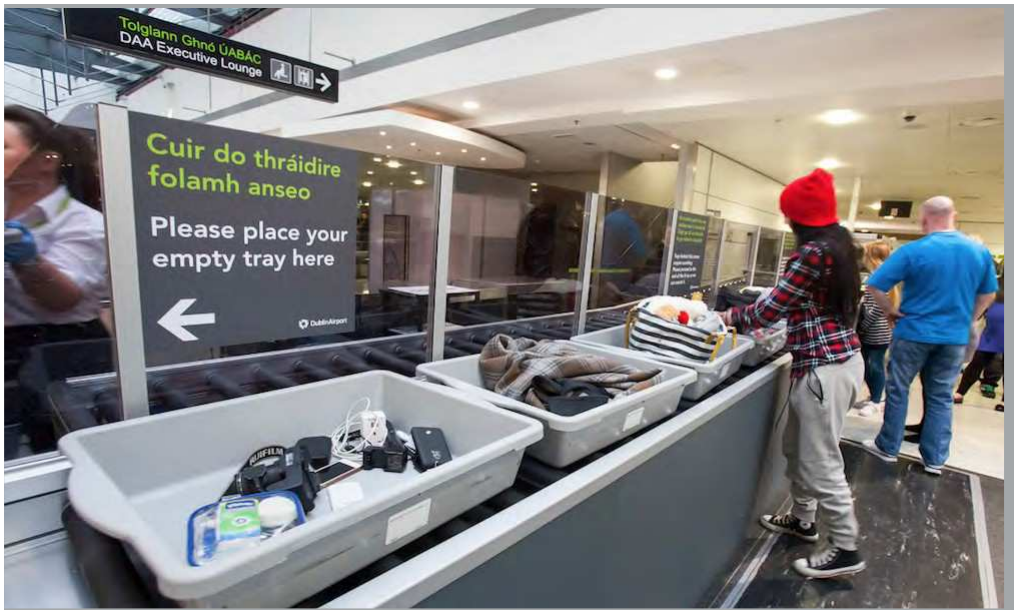
LEVEL2 - CostAnalysis				
Design and Management Costs	**Value**	**%Fee**	**Total Fee**	**Total**
General Design & Management	Redacted Cost Information			
Total-to summary				
Construction Costs				
T1 - FBSS (incl. support)				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

CIP.20.06.009
ATRS – Additional Lane in Terminal 1

Project Summary

- **This project proposes to convert the existing staff entry/exit lane in the departures level of the T1 CSA to a new passenger ATRS lane.**

The introduction of the Automatic Tray Return System (ATRS)in Terminal 1 in Dublin Airport has enabled an increase in screening capacity in this Central Search Area (CSA) by more than the originally targeted 15%. The passenger forecast for T1 is expected to reach capacity by 2021 at which time the capacity of the existing 15 lanes will have reached its limit (with 2 lanes for resilience/redundancy). To address this pending capacity issue, this project provides for the provision of one additional lane in the existing location to meet this Pax growth.
Specifically, there is a need to provide sufficient screening capacity up until the fourth quarter of 2022, when the planned expansion to the Terminal 1 Mezzanine is completed. This project is therefore positioned primarily as a capacity proposal but would also act as risk mitigation against exceeding queue time should there be delays in completing the Terminal 1 CSA Expansion initiative beyond its scheduled completion date.



This project proposes to convert the existing staff entry/exit lane in the departures level of the CSA in T1 to a new passenger ATRS lane, specifically:

- **Close the existing staff entry in the departure level of the CSA in T1**
- **Convert this area to provide passenger access.**
- **Install 1 new ATRS screening lane in T1 CSA.**

CIP.20.06.009
ATRS – Additional Lane in Terminal 1

Project Details Summary		
Category: Security		
Primary Driver Operational Efficiency	**Secondary Driver** Customer Experience	**Total Capex requirement** €0.6m
Underpinning Assumptions and Cost Benchmarks	• No Open Journal tender will be required, systems will be provided under the existing framework agreements • IAA submission required, and approval needed prior to implementation • System costs are based on the AMD project for ATRS phase I for T1 in 2016 from Dublin Airport assets register • No changes to regulation, configurations etc already approved and in operation • To reduce costs, it is assumed that for the period of its operation a current spare x-ray unit will be used. • Contingency is set at 10%	
Opex Impact	• Normalised incremental opex impact of c.€0.01m p.a. relating to equipment support and additional resource requirements	
Project Output	• New ATRS lane in Terminal 1 CSA	
Asset Life	• 7 years	
Project Delivery Key Milestones		
Feasibility / Outline Design complete:	**Q1 2020**	
Planning complete:	**Q2 2020**	
Detail Design complete:	**Q2 2020**	
Procurement complete:	**Q32020**	
Construction Commence:	**Q3 2020**	
Construction Completed	**Q3 2021**	
Project Handover:	**Q3 2021**	

CIP.20.06.009
ATRS – Additional Lane in Terminal 1

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	9%	€50,088
Construction Costs	72%	€400,702
Escalation, Contingency & Design Variability	19%	€106,368
Total		**€557,158**

LEVEL2 - CostAnalysis				
Design and Management Costs	**Value**	**%Fee**	**Total Fee**	**Total**
General Design & Management	Redacted Cost Information			
Total-to summary				
Construction Costs				
ATRS Lane				
Electrical mechanical, civil costs to reconfigure staff lane to screening lane				
ATRS Lane Fit-out - Other				
ATRS Lane				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

CIP.20.06.014
Screening and Logistics Centre

Project Summary

- **Dublin Airport proposes the rationalisation of airside logistics to drive efficiency in future airport and airline logistic operations and mitigate future construction projects risk**

The present approach to screening of airport supplies and examination of vehicles going airside is conducted at Vehicle Control Posts (VCPs) dispersed at 4 different locations throughout the airport campus (i.e. Gates1A, 4, 9 and 32).

Construction Consolidation compound, need:

It is proposed that in the longer term that consolidation of high value construction goods will be undertaken at the proposed consolidation centre in the east lands (Phase 2). However, given that:

- some of these works are due to commence in the near term (2019)
- that the consolidation facility is proposed to come on line at the midpoint of CIP
- and that there will be a continued need for bulk, hard to screen, goods to continue to go directly to site, it is proposed that two Construction Coordination compounds (CCC) will be established, as an interim measure

These compounds cannot be funded from other projects as they are required in advance of works to facilitate the de-risking of projects.

Project driver:

The primary driver to this project is the need for a more coordinated, controlled system for the delivery of construction materials to airside sites. It is proposed to establish compounds on the eastern and western campus. These coordination facilities would:

- Avoid non-compliant construction material deliveries to VCPs (Which today are causing significant delays and disruptions to other airport suppliers) by carrying out paperwork and permit checks remotely
- Under take pre-screening activities of construction vehicles and process the pertinent permits
- Co-locate landside administrative facilities for airside access operations by contractors
- Reduce opex associated with airside access for both daa and contractors
- Provide for coordinated delivery of construction materials to airside compounds through an online booking system, allowing:
  A. reducing construction traffic peaks
  B. coordination of off-peak delivery
  C. Increase the level of reporting and data available to Dublin Airport regarding airport construction deliveries for the management of construction traffic
  D. coordination of escorts

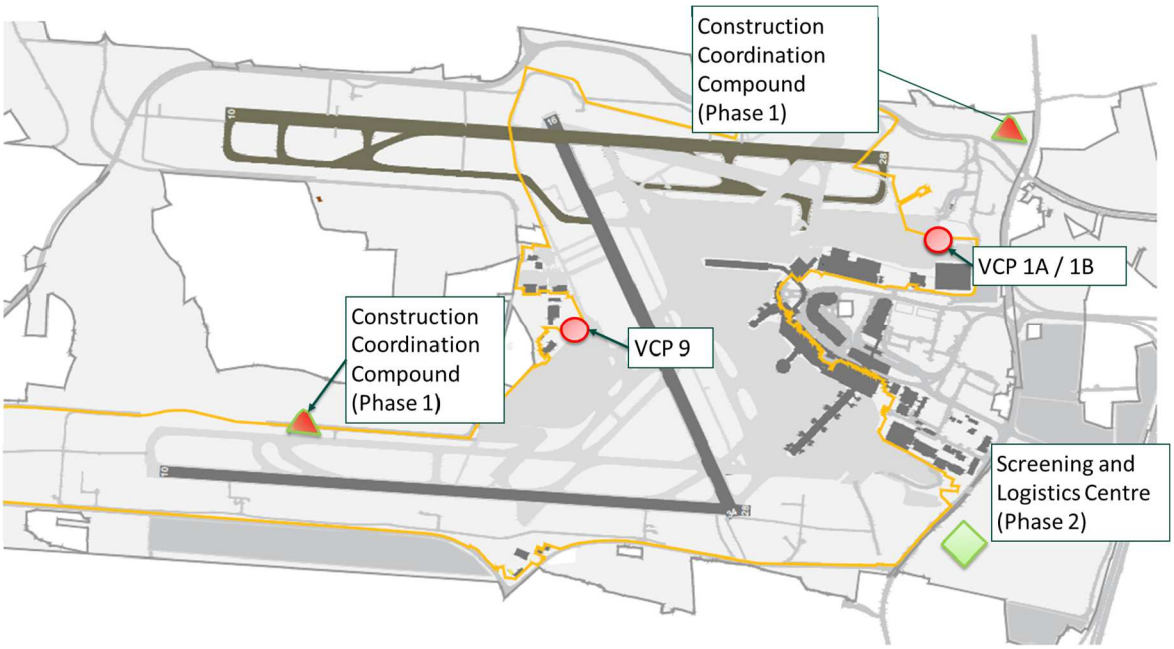
and in doing so mitigate the impact on the surrounding environment from construction noise and traffic.

Construction Consolidation Compound (CCC), locations:

West: The proposed location of the western compound is north of the current runway. This location has been identified as it down stream of both the existing and proposed Gate Post 9 and is adjacent to daa lands which may be made available to contractors as future site compounds.

CIP.20.06.014
Screening and Logistics Centre

East: The proposed location is in proximity to the existing Gate Post 1A and future gate pot 1B. This location is ideal as it is remote from the main airport campus (minimising traffic impact) but close to both the short (1A) and long-term (1B) northern gate post.



Construction Consolidation Compound (CCC), Benefits

The benefits of using these CCCs are significant, not only for the airport but also to its customers who will benefits from a better coordinated operation, but also to make Dublin Airport a more attractive organisation towards the construction market, resulting in more competitive costs.

Integration with Screening and logistics centre (Phase 2)

In the longer term, the proposed screening and logistics facility, located in the east lands, will provide a locus for all airport logistics. This facility would complement the proposed construction coordination compounds through a full services coordination facility capable of coordination all airside delivers (apart from, hard to screen bulk goods) and construction staff. With the roll-out of this facility the demand on the compounds would reduce and, subject to future capital investment programs, could be removed entirely.

Security Rationale (Consolidation centre - Phase 2)

The second phase of this project will develop a consolidation centre in the east lands which will drive significant changes in operations methodology to optimise the Security operation at the vehicle control posts. This consolidation centre will comprise of three key elements in this dedicated facility as follows:

- Airport Supplies Screening Centre (ASSC): delivering a central point for screening all airport supplies on a pre-booked basis, ensuring all vehicles presenting to the gateposts are processed in the same way.

CIP.20.06.014
Screening and Logistics Centre

- Logistics centre: providing a facility where goods can be stored in advance of screening and subsequently scheduled for delivery to the CPSRA on vehicles which are optimally loaded, reducing the numbers of vehicles required to present at the gateposts.

- A facility to provide safe, discrete and secure processing of passengers in Garda custody, their items carried and where appropriate their escorts (along with their items carried), away from the environs of the main gateposts.

Project Benefits:

Compliance and Security Operations benefits

- Providing a consistent, optimised approach to the screening of airport supplies and the examination of vehicles.
- Reducing the number of suppliers entering the CPSRA by 33% over the course of the next CIP.
- Increase substantially the level of reporting and data available to Dublin Airport regarding airport supplies delivered (assist with forecast/predictive traffic analysis)
- Potential reduction of the number of VCPs required on a given day/night.
- Reduction in the requirement for ASU personnel in construction activities.
- The ability to implement scheduling of vendor delivery slots (ease existing congestion)

Financial benefits for Security

- Given the reduced number of vehicles entering the CPSRA there will be a consequent reduction in the resource requirements and associated OPEX spend for this function.
- Reduced requirement to provide expensive escorts.

CIP.20.06.014
Screening and Logistics Centre

Project Details Summary		
Category: Plant and Equipment		
Primary Driver Regulatory	**Secondary Driver** End of Life	**Total Capex requirement** €13.4m
Underpinning Assumptions and Cost Benchmarks	• Service is outsourced • Site location variances not included • IAA will approve project • Planning permission will be granted	
Opex Impacts	• Increase in system support costs annually from 2023. Provision of consolidated screening and logistics centre will reduce Opex at other gate posts	
Project Output	• Two Construction Coordination compounds • Building and fit-out of new Airport Supplies Screening and Logistics Centre • New outsourced service provided	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Feasibility / requirements complete:	**Q1 2020**	
Planning complete:	**Q1 2020**	
Detail Design complete:	**Q1 2020**	
Procurement complete:	**Q2 2020**	
Development commenced:	**Q2 2020**	
Development complete	**Q2 2022**	
Project Handover:	**Q2 2022**	

CIP.20.06.014
Screening and Logistics Centre

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	10%	€1,227,000
Construction Costs	70%	€9,461,000
Escalation, Contingency & Design Variability	20%	€2,740,000
Total		**€13,428,000**

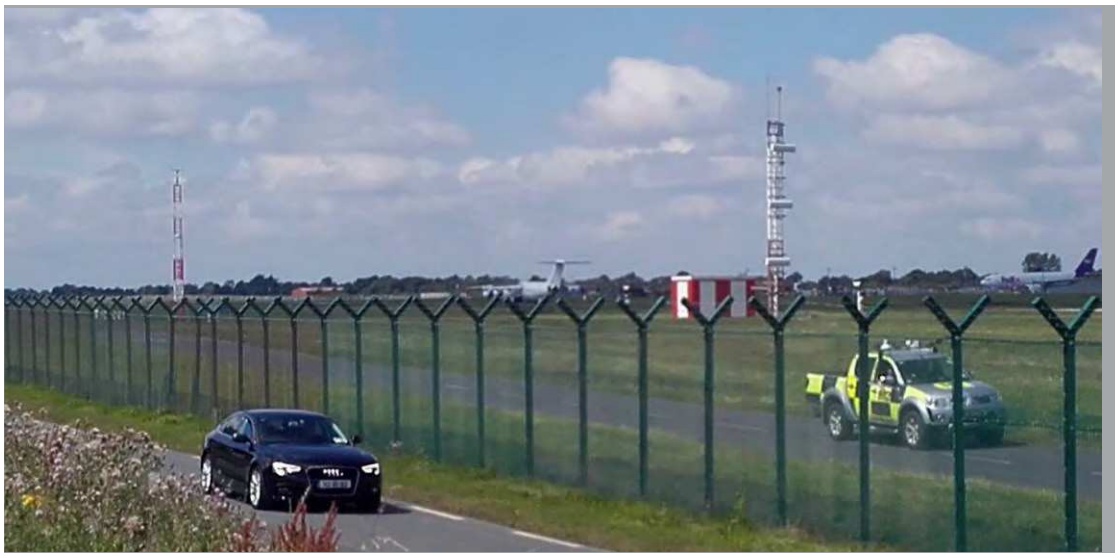
LEVEL2 - CostAnalysis				
Design and Management Costs	**Value**	**%Fee**	**Total Fee**	**Total**
General Design & Management on construction, prelims and design development	Redacted Cost Information			
Total-to summary				
Construction Costs				
Construction compound 1				
Construction compound 2				
Consolidation Centre				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

CIP.20.06.015
Intrusion Detection Systems for Dublin Airport Boundaries

Project Summary

- **This project identifies the requirement for improved boundary monitoring by introducing automatic intrusion detection systems.**

Surveillance, patrols and other physical controls are required at airports to identify suspicious behaviour of persons, identify vulnerabilities which could be exploited to carry out an act of unlawful interference and in order to deter persons from committing such acts. Currently the frequency and means of undertaking surveillance and patrols are based on a risk assessment as stipulated by the IAA. The risk assessment considers the limitations of current means of undertaking surveillance, and patrols. Presently all such monitoring and patrolling of these boundaries is undertaken by the Airport Police via manual patrols and/or monitoring of CCTV cameras which are dispersed around the boundaries.



Ensuring that there is no penetration of the airport boundaries are hampered by:

- **Having patrols present at the right time and place when unauthorised intrusions occur, which by their nature are not predictable or guaranteed.**
- **Bad weather and poor visibility conditions (i.e. night-time), which can limit the ability of patrols to detect intrusions.**

This project proposes the following:

- **Improve the effectiveness of boundary monitoring by introducing automatic intrusion detection systems, which will constantly monitor the boundary of the CPSRA on a 24x7 basis, with emphasis on vulnerable locations on the airfield. When breaches do occur, the system will detect them as they happen and direct both CCTV recording and Airport Police responses to the specific area where they are required.**

CIP.20.06.015
Intrusion Detection Systems for Dublin Airport Boundaries

Project Details Summary		
Category: Security		
Primary Driver Security / Safety	**Secondary Driver** Operational Efficiency	**Total Capex requirement** €4.0m
Underpinning Assumptions and Cost Benchmarks	• Full Open Journal tender required • IAA submission required, and approval needed prior to implementation • System costs based on discussions with vendors who presently implement similar systems and functionality	
Opex Impact	• Normalised incremental opex impact of c.€0.1m p.a. relating to equipment support and additional resource requirements	
Project Output	• Implementation of Intrusion Detection technology for airport boundaries • Supporting civil and IT infrastructure • Training	
Asset Life	• 7 years	
Project Delivery Key Milestones		
Feasibility / requirements complete:	**Q1 2022**	
Planning complete:	**Q1 2022**	
Design complete:	**Q1 2022**	
Procurement complete:	**Q3 2022**	
Construction completed	**Q1 2023**	
Project Handover:	**Q2 2023**	

CIP.20.06.015
Intrusion Detection Systems for Dublin Airport Boundaries

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	10%	€392,491
Construction Costs	65%	€2,616,610
Escalation, Contingency & Design Variability	25%	€987,737
Total		**€3,996,839**

LEVEL2-CostAnalysis				
Design and Management Costs	**Value**	**%Fee**	**Total Fee**	**Total**
General Design & Management	Redacted Cost Information			
Total-to summary				
Construction Costs				
Intrusion Detection - NAV0112 - FLIR radar type - 1 km range				
Intrusion Detection - PTZ cameras				
Intrusion Detection - IT				
Intrusion Detection - Other				
Builders Work In connection with Services				
Other Development Costs				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

CIP.20.06.016
Surface Road Blockers & Temp. Mobile Barriers

Project Summary

- **This project identifies the requirement for portable vehicle ramps and temporary mobile barriers at each of the four active vehicle control posts (VCPs) at Dublin Airport.**

Dublin Airport presently has 4 vehicle control posts (VCPs) allowing airport supplies and their accompanying vehicles and drivers to be screened prior to entering the Critical Part Security Restricted Area (CPSRA), as is required under EU regulation and the Airport Security Program (ASP). At present these access points are composed of non-armoured, raiseable, steel gates during opening hours and supplemented by steel-wire fence gates during out-of-hours. These elements of the VCP which are used to prevent breaches do not meet the PAS (Publicly Available Specification for vehicle security barriers) standards used in many airports to reduce the risk of unauthorised access via vehicles "ramming" these security points (e.g. Heathrow).

Given the central role the VCPs play in ensuring the security integrity of the airside aspect of the airports operation and in view of the increasing security risks to the airport as a target for unauthorised intrusions, it has been noted in several risk assessments that the VCPs should be equipped with hostile vehicle mitigation systems which are cognisant of Aviation Security in Airport Development (ASIAD) best practices and comply with PAS69:2013 standards.

Therefore, this project proposes to address the above risk by:

- **Deploying 4 sets of PAS 68 portable armoured ramps at each of the four active VCPs (1 Alpha, 4, 9 and 32), which would allow for continuous deployment to supplement the existing wire-fence gating during operational hours.**
- **Provide emergency, solar powered, mobile replacement security gates for each post.**
  Note: Gates can be transported to the site of any permanent gate malfunction (incl. power outage) and allows the screening staff to proceed while controlling the entry and exit of vehicles.

CIP.20.06.016
Surface Road Blockers & Temp. Mobile Barriers

Project Details Summary		
Category: Security		
Primary Driver Security / Safety	**Secondary Driver** Stakeholder Requirements	**Total Capex requirement** €1.0m
Underpinning Assumptions and Cost Benchmarks	• Full Open Journal tender required • IAA submission required, and approval needed prior to implementation • Costs are based on 2016 budgetary estimates provided by vendor in the absence of detailed / requirements and based on equivalent deployments in the UK • Minimal civil, electrical and mechanical works	
Opex Impact	• Normalised incremental opex impact of c.€0.04m p.a. relating to equipment support and maintenance	
Project Output	Surface Road Blockers: • Deployment of portable vehicle ramps at the 4 VCPs • Training • Reporting Temporary Mobile Barriers: • Procurement of mobile gates, transport trailers and forklift truck • Training	
Asset Life	• 7 years	
Project Delivery Key Milestones		
Feasibility / requirements complete:	**Q2 2020**	
Procurement complete:	**Q2 2020**	
Build complete	**Q4 2020**	
Training Complete	**Q4 2020**	
Project Handover:	**Q4 2020**	

CIP.20.06.016
Surface Road Blockers & Temp. Mobile Barriers

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	87%	€824,419
Escalation, Contingency & Design Variability	13%	€127,785
Total		**€952,204**

LEVEL2 - CostAnalysis				
Design and Management Costs	**Value**	**%Fee**	**Total Fee**	**Total**
General Design & Management (Deemed included below)				
Total-to summary				
Construction Costs				
Gate 9				
Gate 32				
Gate 4				
Gate 1 Alpha				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

Redacted Cost Information

CIP.20.06.022
Redevelopment of Training Facility (ASTO)

Project Summary

- **This project identifies the increased security training facilities required at Dublin Airport.**

Dublin Airport (DAP) security training and certification is governed under mandatory requirements specified in the Airport Security Programme (ASP), Chapter 11 and derived from Authority under EC Regulation 300/2008, EC Regulation 2015/1998, Commission Decision 8005.2017. Under recent changes to the ASP (December 2017), DAP will conduct all training via the auspices of the newly certified Aviation Security Training Organisation (ASTO). This presents a significant change in the training model needed to ensure DAP has sufficiently qualified security staff and requires a more focused and specialised approach to training provision.

The security training demands for Dublin Airport have evolved significantly over the past 3 years due to increased Regulatory requirements for all systems used in screening. The level of detail, number of required tests and level of audit during testing has increased exponentially (especially around screening systems – e.g. ATRS). The current facilities available for training (incl. ASTO) at DAP are composedofa mix ofsharedtraining rooms, rental facilities (hotels etc) and staff offices. Also, there are no dedicated hands-on training facilities (withdedicated training equipment) which results in the completion of critical training using live CSA equipment (the resultant obstruction to operations is not an optimal solution). Given the increase in both staff and additional volume of regulatory training, the current arrangement is at risk of not meeting IAA requirements or the future volume of training that must be completed.

CIP.20.06.022
Redevelopment of Training Facility (ASTO)

This project proposes:

- **Facilities: Consolidated facilities in which the ASTO can deliver training and examination of security staff and administer/manage activities of the ASTO. This requires a minimal refurbishment of 2 additional rooms within the existing Castlemoate facility.**
- **Equipment: Dedicated screening equipment to provide hands on instruction to those being trained - mirror equipment currently in operation in the screening operations areas (Terminal 1, 2 and VCPs)**
- **E-training platform: Platform to allow remote security training via a dedicated training application from which all security training courses can be designed, developed, taught and evaluated (via any remote location in either Dublin and Cork airport)**

The benefits of redeveloping existing training facilities at DAP areas follows:

- **Professionalise the approach to training (including recurrent training) to ensure it is aligned correctly with the ASP.**
- **Assist in addressing continuing non - conformances and improve screening standards (ongoing effort at DAP).**
- **Provide flexibility to DAP regarding ongoing testing and validation of systems and processes. This proposal will minimise the need to disrupt security operations when responding to new security requirements (threats and increased requirements from IAA).**
- **Provide capability to offer training facilities to other parties within the Irish aviation industry.**

CIP.20.06.022
Redevelopment of Training Facility (ASTO)

Project Details Summary		
Category: Security		
Primary Driver Operational Efficiency	**Secondary Driver** Customer Experience	**Total Capex requirement** €1.2m
Underpinning Assumptions and Cost Benchmarks	• Castlemoate location assumed to be location for this project • Contingency @10%	
Opex Impact	• Normalised incremental opex impact of c.€0.04m p.a. relating to security training equipment support and maintenance	
Project Output	• New ASTO Training Facilities	
Asset Life	• 15 years	
Project Delivery Key Milestones		
Feasibility / Outline Design complete:	**Q2 2020**	
Planning complete:	**Q3 2020**	
Detail Design complete:	**Q3 2020**	
Procurement complete:	**Q4 2020**	
Construction Commence:	**Q4 2020**	
Build complete	**Q4 2021**	
Project Handover:	**Q4 2021**	

CIP.20.06.022
Redevelopment of Training Facility (ASTO)

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	10%	€112,554
Construction Costs	77%	€900,434
Escalation, Contingency & Design Variability	13%	€157,013
Total		**€1,170,001**

LEVEL2-CostAnalysis				
Design and Management Costs	**Value**	**%Fee**	**Total Fee**	**Total**
General Design & Management				
Total-to summary				
Construction Costs				
Internal Finishes				
ATRS				
ETD				
LEDS				
WTMD, HHMD & PVM				
MIP				
Training Equipment				
Classrooms				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

Redacted Cost Information

CIP.20.06.025
Detection: Explosive Detection Dogs (EDD) Capability & Mobile X-Ray Unit

Project Summary

- **This project identifies the need:**

  A. To augment the existing Airport Police Dog units at Castlemoate House with specifically trained Explosive Dog Detection units which can be deployed rapidly across the campus when required.

  B. To procure 2 portable X-ray units for Dublin Airport Police

A. Explosive Detection Dog (EDD) Capability:

This project proposes to augment the existing Airport Police Dog units at Castlemoate House with specifically trained EDD units (3 no.) which can be deployed rapidly across the campus when required. Expanding EDD capability helps randomise search times and location to avoid counter measures, supports rapid mobilisation to threats regardless of location or time and expands explosive detection beyond the Central Search Areas (incl. vehicles). The key components of this project are as follows:

- **Facilities at Dublin Airport: This includes the refurbishment of existing housing and the provision of 3 new kennels**
- **Facilities at residence of handler: Provision of 3 kennels at the handler's residence**
- **Vehicle equipment: 1 x twin mobile vehicle box**

B. Mobile X Ray Unit:

This proposal (mobile X-ray unit) looks to reduce the requirement for EOD deployment on all occasions by introducing a preceding phase of examination. Officers, without disturbing or moving the suspect baggage or item, can conduct an x-ray examination of the suspicious luggage and determine the right course of action – remove the item or if required escalate to the EOD. This project proposes:

- **Procure 2 portable X-ray units for the DAP Police.**

CIP.20.06.025
Detection: Explosive Detection Dogs (EDD) Capability & Mobile X-Ray Unit

Project Details Summary		
Category: Security		
Primary Driver Security / Safety	**Secondary Driver** Regulation	**Total Capex requirement** €0.2m
Underpinning Assumptions and Cost Benchmarks	• Vacant outhouses in Castlemoate assumed to be location for EDD Kennels project (no new build requirement) • Contingency @10%	
Opex Impact	• Normalised incremental opex impact of c.€0.03m p.a. relating to facilities upkeep and equipment	
Project Output	EDD Capability: • 3 explosive detection dog teams • Refurbish kennels at Castlemoate • Build of kennels at handler's residence • Dog and handler training Mobile X-Ray Unit: • Procurement of 2 portable security x-rays • Training	
Asset Life	• 6 years	
Project Delivery Key Milestones		
EDD Capability (delivered):	**Q3 2020**	
Mobile X Ray Unit (procured):	**Q3 2020**	

CIP.20.06.025
Detection: Explosive Detection Dogs (EDD) Capability & Mobile X-Ray Unit

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	87%	€151,420
Escalation, Contingency & Design Variability	13%	€23,470
Total		**€174,890**

LEVEL2-CostAnalysis				
Design and Management Costs	**Value**	**%Fee**	**Total Fee**	**Total**
General Design & Management (Deemed				
Total-to summary				
Construction Costs				
3 x kennels, concrete base and drainage				
Refurbishment of existing housing				
Other Works				
X Ray Equipment				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

Redacted Cost Information

CIP.20.06.030
VCP Automation to Enable Remote Screening

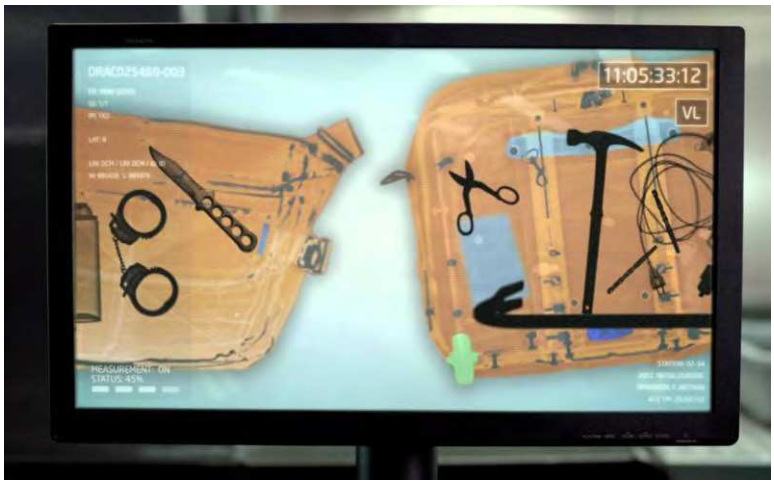
Project Summary

- **This project proposes a redesigned x-ray screening system with the implementation of remote screening functionality at each of the 4 Vehicle Control Posts (VCPs).**

Since 2016 Dublin Airport has deployed ATRS in T1 CSA and has subsequently availed of:

- **Improved security consistency in relation to compliance.**
- **Improved operational efficiencies.**
- **Configuration for remote screening to deliver further compliance improvements and efficiencies.**

Considering these benefits, Dublin Airport proposes to extend remote screening to the existing 4 VCPs (Gatepost 1 Alpha, 4, 9 and 32) to avail of resource efficiency opportunities through the centralisation of X-Ray screening at DAP.



This project proposes that only the relevant elements of the full ATRS systems (VCP and CSA have different volumes of throughput) are implemented as follows:

- **Remote screening software.**
- **Lane automation**
  - **PLC logic & photoelectric**
  - **Transfers tables**
  - **Separator units at x-ray entry points**
  - **Reject lane holding 1 tray**
  - **Review workstation**
- **Introduction of larger trays to facilitate cabin crew luggage sizes.**

CIP.20.06.030
VCP Automation to Enable Remote Screening

Project Details Summary		
Category: Security		
Primary Driver Security / Safety	**Secondary Driver** Operational Efficiency	**Total Capex requirement** €0.7m
Underpinning Assumptions and Cost Benchmarks	• No further major regulatory changes will be implemented in the next five years regarding ATRS • Full Open Journal tender may be required • IAA submission required, and approval needed prior to implementation • Costs are based on 2018 high level budgetary estimates provided by the vendor	
Opex Impact	• Normalised incremental opex impact of c.€0.04m p.a. relating to vendor equipment support costs	
Project Output	• Deployment of remote screening to all VCPs on the Dublin Airport Campus • Training • Reporting	
Asset Life	• 7 years	
Project Delivery Key Milestones		
Feasibility / requirements complete:	**Q1 2020**	
Procurement complete:	**Q2 2020**	
Build complete	**Q1 2022**	
Training Complete	**Q1 2022**	
Project Handover:	**Q1 2022**	

CIP.20.06.030
VCP Automation to Enable Remote Screening

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	87%	€595,100
Escalation, Contingency & Design Variability	13%	€92,241
Total		**€687,341**

LEVEL2-CostAnalysis				
Design and Management Costs	**Value**	**%Fee**	**Total Fee**	**Total**
General Design & Management (Deemed				
Total-to summary				
Construction Costs				
ATRS - ATRS Lanes				
ATRS - Mech & Elec for Screening Room				
ATRS - Equipment (incl. PCs, IT, CCTV etc)				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

Redacted Cost Information

CIP.20.06.031
Autopass – T1 Replacement & T2 Install

Project Summary

- **This project proposes implementing Autopass in Terminal 2 and replacing end of life Autopass in Terminal 1.**

The Autopass service automatically reads passenger's boarding card and if valid allows them access to the central screening area with minimal intervention from Dublin Airport staff. The implementation of the "Autopass" service in Terminal 1 has provided passengers with a faster, more convenient approach to the Central Screening Area and makes better use of staff resources within Security Operations.

Theservice also assists DublinAirportinitsoverallmanagementofpassengerqueuetimesby enabling larger flows of passengers into the CSA than manual boarding pass checks. Given the success of the Autopass service in Terminal 1 Dublin Airport proposes to:

- **Replace end-of-life Autopass system in T1 (install 15 entry points). This will need to be coordinated with T1 CSA relocation projects proposed in 2020-2024 CIP. The number of Autopass gates in T1 will increase from 10 to 15 entry points (considering forecast PAX numbers and new CSA location).**
- **Rollout of Autopass in T2 (install 10 entry points): It is proposed to replicate the T1 Autopass service in T2 to provide customers with a common product offering, optimise queue times and avail of Opex savings through reduced numbers of boarding pass check staff.**

CIP.20.06.031
Autopass – T1 Replacement & T2 Install

Project Details Summary		
Category: Security		
Primary Driver Operations Efficiency	**Secondary Driver** Customer Experience	**Total Capex requirement** €1.8m
Underpinning Assumptions and Cost Benchmarks	• No major structural changes will be required to convert the existing manual boarding card check gates to Autopass gates • Costs are based on previous Autopass projects pricing • Contingency is taken at 10%	
Opex Impact	• Normalised incremental opex impact of c.€0.05m p.a. relating to systems software support costs	
Project Output	• Deployment of Autopass in Terminal 1 & 2 departures • Training	
Asset Life	• 7 years	
Project Delivery Key Milestones		
Feasibility / Outline Design complete:	**Q1 2021**	
Planning complete:	**Q1 2021**	
Detail Design complete:	**Q1 2021**	
Procurement complete:	**Q1 2021**	
Construction Commence:	**Q2 2021**	
Construction Complete	**Q4 2021**	
Project Handover:	**Q4 2021**	

CIP.20.06.031
Autopass – T1 Replacement & T2 Install

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	81%	€1,441,992
Escalation, Contingency & Design Variability	19%	€340,253
Total		**€1,782,245**

LEVEL2 - CostAnalysis				
Design and Management Costs	**Value**	**%Fee**	**Total Fee**	**Total**
General Design & Management (Deemed				
Total-to summary				
Construction Costs				
T2 Autopass				
T1 (EOL replacement)				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

Redacted Cost Information

CIP.20.06.036
TSA - X-Ray & FBSS Replacement

Project Summary

- **This project identifies screening equipment upgrade requirements at US preclearance areas in Dublin Airport.**

The Transport Security Administration (TSA)US Preclearance screening area in Dublin Airport (DAP) has, as part of its cabin-baggage screening process, X-ray systems which recheck passenger's cabin baggage and a full- body scanning system which can be used on a randomised basis to scan passengers entering the area for US bound flights. These systems are mandated by the TSA as one of the conditions for pre-clearance of passengers and, over the course of the next CIP, these systems will reach end-of-life and will require replacement to ensure compliance and operational efficiency.

This project proposes:

- **Replacement of 1 full body screening unit**
- **Replacement of 5 X-ray systems**

CIP.20.06.036
TSA - X-Ray & FBSS Replacement

Project Details Summary		
Category: Security		
Primary Driver End of Life	**Secondary Driver** Regulation (TSA)	**Total Capex requirement** €0.4m
Underpinning Assumptions and Cost Benchmarks	• There will be a re-use of all existing network and power infrastructure • There will be no major changes to the standards or functionality which are in use today • Systems will be purchased under existing procurement frameworks/contracts • System costs based on historical 2017 pricing • Contingency is taken at 10%	
Opex Impact	• N/A	
Project Output	• Replacement of 1 full body screening unit • Replacement of 5 X-ray systems	
Asset Life	• 7 years	

Project Delivery Key Milestones	
FBSS: Contracts and supply agreements in place	**Q1 2022**
FBSS: Rollout complete of new WTMD replacement	**Q3 2022**
X Ray: Contracts and supply agreements in place	**Q1 2020**
X Ray: Rollout of new X-ray replacement commencement	**Q1 2021**
X Ray: Rollout of new X-ray replacement complete	**Q32024**

CIP.20.06.036
TSA - X-Ray & FBSS Replacement

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	91%	€332,200
Escalation, Contingency & Design Variability	9%	€33,220
Total		**€365,420**

LEVEL2-CostAnalysis				
Design and Management Costs	**Value**	**%Fee**	**Total Fee**	**Total**
General Design & Management (Deemed	Redacted Cost Information			
Total-to summary				
Construction Costs				
TSA X-ray Replacement (5No.)				
TSA FBSS Replacement (1No.)				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

CIP.20.06.041
Security Screening Equipment - End of Life

Project Summary

- **This project identifies the need for end of life replacement of screening equipment in Dublin Airport.**

Dublin Airport is mandated both by national and European regulation (i.e. European Commission Directive EU Reg 300.2008) to ensure that all passengers (including persons other and passengers) and accompanying items (e.g. cabin baggage etc.) entering the CPSRA, through terminals and vehicle-posts must be screened to an appropriate standard. This is primarily accomplished in Dublin Airport through:

- **X-ray screening for cabin baggage and items carried (addressed in separate proposals – CIP.20.006.001)).**
- **Walk-through metal detectors (WTMD) for the screening of the passengers.**
- **Handheld metal detector (HHDM) for screening of passengers where they cannot be screened via WTMD due to disability (e.g. wheelchair bound), possible interference with medical devices (e.g. pace-makers) or where WTMD alarms have been triggered and a targeted examination is required to locate the threat item.**

CIP.20.06.041
Security Screening Equipment - End of Life

In addition to these primary screening methods, the Regulator also mandates the requirement for supplementary random screening of passengers and items carried for the presence explosives (10% of passengers). Presently Dublin Airport is required to test a minimum of 10% of all passengers and their hand baggage for explosives and to implement a secondary search where x-ray and WTMDs have triggered an alarm.
These mandatory supplementary screening requirements are implemented in Dublin Airport through:

- **Liquid explosive detections systems (LEDS) – used for the detection of the presence of explosives in liquids carried by passengers**
- **Explosive threat Detection systems (ETD) systems: used for the detection of the presence of explosives in items carried other than liquids carried by passengers**

This project proposes the following deliverables:

- **A one-to-one replacement of each system is implemented**
  - **15 LEDs out of 15 deployed**
  - **57 ETDs and equipment management and monitoring system (out of 62)**
  - **23 WTMDs out of 37 deployed**
  - **65 HHMD out of 65 deployed**
  - **97 Mobile radios out of ~120 deployed**
- **Where possible, only one system model will be procured for each screening category**
- **An Open Journal (Competitive bidding) tendering process required given the expected 5-year costs of the project.**
- **The new units procured under this project will include a change in technology which will no longer require the use of radio-active elements/sources in these devices where applicable. This reduces risks to operators and management overhead.**

Reduction in radioactive source-based systems in Dublin Airport:

Given the existing base of ETDs and LEDS systems operate with the use of a radioactive source (RS), the opportunity will be taken to replace the RS existing models where possible. This approach is in line with Dublin Airport's strategy to reduce the number of radiological licenses and overall footprint in the airport campus. Research indicates that this can be done within the near- equivalent unit cost as per today.

CIP.20.06.041
Security Screening Equipment - End of Life

Project Details Summary		
Category: Security		
Primary Driver End of Life	**Secondary Driver** Regulation	**Total Capex requirement** €4.5m
Underpinning Assumptions and Cost Benchmarks	• There will be a re-use of all existing network and power infrastructure where applicable • There will be no major changes to the standards or functionality which are in use today • A full Open Journal tender will be required supported by operational trials • System costs based on historical 2014/2015 pricing • Contingency is taken at 10% (to take account for unknown costs of moving to non-radiological source systems and any PAX growth impact)	
Opex Impact	• Normalised incremental opex impact of c.€0.1m p.a. relating to increased vendor support costs due to higher specifications and increased technology elements	
Project Output	Replacement of: • 15 LEDs of 15 deployed • 57 ETDs and equipment management and monitoring system (out of 62) • 23 WTMDs of 37 deployed • 65 HHMD of 65 deployed • 97 Mobile radios of 120 deployed	
Asset Life	• 7 years	

Project Delivery Key Milestones	
Tender complete:	**Q4 2018**
Contracts and supply agreements in place	**Q1 2019**
Rollout of new ETD replacement commencement	**Q1 2020**
Rollout of new ETD replacement complete	**Q4 2024**

CIP.20.06.041
Security Screening Equipment - End of Life

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	91%	€4,060,750
Escalation, Contingency & Design Variability	9%	€406,075
Total		**€4,466,825**

LEVEL2-CostAnalysis				
Design and Management Costs	**Value**	**% fee**	**Total Fee**	**Total**
General Design & Management (Deemed included below)	Redacted Cost Information			
Total-to summary				
Construction Costs				
ETD Replacement - T1, T2, VCP & Other				
LEDS - T1, T2, VCP & Other				
HHMD				
Mobile Radios				
WTMD				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

CIP.20.06.042
ATRS - Central Search Areas (T1 & T2)

Project Summary

- **This project identifies the need for end of life replacement of screening equipment in Dublin Airport.**

Since2016 Dublin Airport (DAP)has deployed an Automatic Tray Return System (ATRS)inT1which provides passengers with a system-controlled flow for the processing of cabin baggage screening in the Central Search Area. The system has been able to provide:

- **Improved security consistency in relation to compliance.**
- **Improved operational efficiencies of 20% when compared to equivalent manual tray systems.**
- **More efficient movement of passengers (Slow passengers do not inhibit or prevent efficient passengers from progressing).**
- **A quieter working and customer environment.**
- **Easy loading and unloading of cabin baggage.**
- **Configuration of remote screening to deliver further compliance improvements and efficiencies.**
- **Improved performance data compared to manual systems.**

Over the period of the next CIP, DAP Security Operations anticipate that the forecasted PAX will require an extension/expansion of this system in both CSAs in order to accommodate the increase in expected volume of cabin baggage requiring screening into the Critical Part Security Restricted Area (CPSRA).

CIP.20.06.042
ATRS - Central Search Areas (T1 & T2)

The project proposes the following:

- **Replace the existing 15 ATRS lanes (19-meter system configuration) with 17 longer ATRS lanes (25-meter system configuration) which will enable improved throughput sufficient to meet the forecasted increase. It is proposed that the existing older units in T1 will then be transferred to and reused in the CSA in T2.**
- **Newly deploy the ATRS service to Terminal 2 (using the existing T1 ATRS system), in the expectation that T2 CSA will be able to avail of the increased throughput productivity but in addition:**
    - **Provide a consistent product offering to all DAP passengers regardless of which terminal they use.**
    - **Extend the use of remote screening to this area of screening operation and standardise operational processes across both terminals.**
    - **Position DAP for staff interoperability between terminals.**
- **Expand the existing remote screening facility to accommodate the additional screeners needed to monitor the new T2 lanes.**

CIP.20.06.042
ATRS - Central Search Areas (T1 & T2)

Project Details Summary		
Category: Security		
Primary Driver Regulation	**Secondary Driver** Operational Efficiency	**Total Capex requirement** €11.7m
Underpinning Assumptions and Cost Benchmarks	• Total number of lanes are based on CIP40mppa Facility Requirements Rev27 and assumed that EDS-CB (proposed separately) is approved to enable IPP of 1.2. This is a key dependency regarding the quantities included in this proposal • IAA submission (& approval) required, • Costs are based on 2016 Asset register D14206 for T1 ATRS project supplemented by workshops with Dublin Airport IT and Security Operations • Project assumed the implementation of the T2 and T1 CSA expansion projects • No further major regulatory changes will be implemented in the next five years • Contingency @10%	
Opex Impact	• Normalised net opex impact of c.€0.4m saving p.a. being driven by savings in resource requirements as a result of processing throughput efficiencies which offset increased equipment support costs	
Project Output	• 15x25-meterATRSlanes deployed in T1 • 12x17-meterATRSlanesdeployedinT2 • Extension of the remote screening room to accommodate T2 remote screening • Training for T2 Staff	
Asset Life	• 7 years	

Project Delivery Key Milestones	
Feasibility / Outline Design complete:	**Q2 2020**
Planning complete:	**Q2 2020**
Procurement complete:	**Q3 2020**
Construction Commence:	**Q3 2020**
Construction Completed	**Q2 2022**

CIP.20.06.042
ATRS - Central Search Areas (T1 & T2)

LEVEL1-CostAnalysis	Represents	Total
Design and Management Costs	6%	€674,295
Construction Costs	77%	€8,990,595
Escalation, Contingency & Design Variability	17%	€2,029,627
Total		**€11,694,517**

LEVEL2 - CostAnalysis				
Design and Management Costs	**Value**	**%Fee**	**Total Fee**	**Total**
T1 - General Design & Management	Redacted Cost Information			
T2 - General Design & Management				
Total-to summary				
Construction Costs				
T1 - ATRS lanes				
T1 - Support to ATRS Lanes (lengthening of 19m lanes, CCTV, BLUFI etc)				
T2 ATRS (reuse of T1 lanes - 19m lanes)				
Remote Screening Room (fit-out - 10 Workstations)				
Total-to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total-to summary				

CIP.20.06.044
Replacement of T1 Controllers for Access Control System

Project Summary

- **This project identifies the need for end of life replacement of Terminal 1 Controllers for Access Control System.**

Access control is the selective restriction of access to a place, building, room, resource or installation. To gain access to a restricted location an individual generally needs to have authorisation or to be given permission to enter by someone that already has authorisation

In Dublin Airport Access Control is deployed across all restricted boundaries through the use of Access Control Controllers. Currently 155 Bed as type controllers used to maintain access control are approaching end of life and not compliant with new readers coming on line. The Bed as controllers are on average 13-14 years old and are becoming increasingly unreliable leading to issues with stakeholders; freezing during boarding and failure to return to service following power interruption / outage are some of the issues with the controllers.

This project proposes:
Replacement of all end of life Bed as type controllers. Readers currently in use will sit on new type be-net controllers which will enable the business to retain existing mixture of readers
currently in service and put in place a program for controlled replacement of old readers leading to upgraded and fully compatible access solution.
This will tie in with the road map for the future of Access Control and guarantee asset life for an additional 10 years. The project will be delivered in 3 phases, each phase will cover c.50 Controllers.

Project Benefits
As the Controllers are at the end of lifecycle and are not compatible with the new readers, the main benefit of this project is to retain the Access Control functionality and reliability of the system.

CIP.20.06.044
Replacement of T1 Controllers for Access Control System

Project Details Summary		
Category: Security		
Primary Driver End of Life	**Secondary Driver** Security / Safety	**Total Capex requirement** €0.5m
Underpinning Assumptions and Cost Benchmarks	• Existing framework vendor is assumed as supplier for this proposal • Based on the results of the site survey, daa will decide which Controllers need to be upgraded • Project will be delivered in 3 phases (caa 50 Controllers in each phase) • Estimated total cost of outstanding controllers is €500 000 • Additional €97 660 will cover any network/ cabling needed, site resource, PM, etc.	
Opex Impact	• No material impact on opex.	
Project Output	• Upgrade of 155 T1 Controllers	
Asset Life	• 7 Years	
Project Delivery Key Milestones		
Replacement of T1 Controllers for Access	**Q2 2020**	

CIP.20.06.044
Replacement of T1 Controllers for Access Control System

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	6%	€30,176
Construction Costs	75%	€402,341
Escalation, Contingency & Design Variability	19%	€102,057
Total		**€534,574**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
T1 - General Design & Management	Redacted Cost Information			
Total - to summary				
Construction Costs				
DAA Controller Upgrade PHASE 2				
DAA Controller Upgrade PHASE 3 Costs				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

G OTHERS

Appendix G
Other

Appendix G - Others			
CIP Number	**Project Title**	**Cost €m**	**Pg. No.**
CIP.20.07.001	Programme Management	€4.0	G2
CIP.20.07.002	Minor Projects (projects generally under €100k, water pump replacements, gate area repairs etc.)	€12.5	G5
CIP.20.07.004	Metro Coordination	€0.5	G8
CIP.20.07.014	Terminal Operations Improvement Projects	€4.9	G11
TOTAL:		**€21.9m**	

CIP.20.07.001
Programme Management

Project Summary

- **This budget contains the costs associated with Programme Management for CIP 2020 to 2024 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 standardisation in approach to managing cost, risk, change control, time, quality, safety, project reporting and monitoring and controlling all projects within the CIP. All projects within the CIP will be delivered using the Programme Management methodology.

Programme Management will include;

- Optimisation and prioritisation of projects for delivery
- Integration of cost and schedule through project control procedures
- Driving risk management and associated risk mitigation
- Driving 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.
- Integration of cost and schedule through project control procedures and provision of performance metrics.
- Providing Procurement strategy to ensure best buy in the market place.
- Providing interface management to ensure minimal disruption to operations and passengers.
- Providing dedicated Programme and Project Environmental and Health and Safety management systems and personnel.
- Providing proactive Stakeholder Management across all projects.
- Reviewing / Updating all procedures to meet on-going requirements.

CIP.20.07.001
Programme Management

Project Details Summary		
Category: Other		
Primary Driver Future Proofing	**Secondary Driver** Safety	**Total Capex requirement** €4.0m
Underpinning Assumptions and Cost Benchmarks	• FTE of 5 Senior Technical Staff • FTE of 2 support staff / admin • FTE of 2 Safety Staff • BIM computer software • Specialist consultants on Environment • Specialist Consultants on Planning	
Opex Impact	• N/A	
Project Output	• Minimise operational disruption through careful sequencing of CIP projects and work programmes • Ensure safety standards are applied to all projects to protect staff, customers and passengers • Achieve value for money through most optimum procurement route • Provide programme leadership and governance to CIP 2020 – 2024 • Actively manage risk and in particular risk mitigation to achieve cost and timeline objectives	
Asset Life	• 5 Years	
Project Delivery Key Milestones		
Initial Set-up:	**Q3 2019**	
Ongoing Programme Management Commence:	**Q1 2020**	
Ongoing Programme Management Complete:	**Q4 2024**	

CIP.20.07.001
Programme Management

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	92%	€3,650,000
Construction Costs	0%	€0
Escalation, Contingency & Design Variability	8%	€350,000
Total		**€4,000,000**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
Technical Staff	Redacted Cost Information			
Support Staff				
Safety Staff				
Specialist Consultants (Environment)				
Specialist Consultants (Planning)				
Total - to summary				
Construction Costs				
NA				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

CIP.20.07.002
Minor Projects

Project Summary

- **This budget contains the costs associated with addressing minor projects, typically under €100k, that arise on an annual basis.**

Minor projects comprise numerous small value projects that arise on an annual basis to address the normal operation of a c.30 million passengers per annum airport. These projects would normally be valued at under €100k and include projects across the full airport campus, from landside to terminals to airfield. These projects are essential to keep the airport operating on a day to day basis and can be generally broken down into the following categories.

General Maintenance

- **General upkeep / upgrade and refurbishment of the external and internal elements of the Main Terminal Building, Piers, Airside and Landside operational buildings. e.g. replacement of life expired matwells in Terminal 2 lobby's, replacement of life expired floor cleaning equipment.**
- **Unforeseen reactive works including maintenance, refurbishment and/or upgrades to the runways, taxiways, aprons, parking stands or critical services in the Airside Operational area. e.g. replacement of individual concrete slabs on the apron following breakup to address FOD issues, removal and replacement of collapsed drainage systems.**

Efficiency

- **Minor projects to improve energy or operational efficiencies. These projects would include replacing halogen lighting with LED lighting. e.g. replacement of the halogen lighting in Terminal 2 baggage reclaim area.**

Airport Operations

- **Ensure Dublin Airport building compliance with current regulatory standards relating to Health and Safety, Fire Strategy and Management systems and Building Regulations. Modifications to Life Safety Systems**
- **Response to ongoing operational / security infrastructural requirements. Projects in this category can range from the purchase of radios for security, renewing passenger seat coverings, improving apron line markings to road signage.**

CIP.20.07.002
Minor Projects

Project Details Summary		
Category: Other		
Primary Driver End of Life	**Secondary Driver** Operational Efficiency / Stakeholder Requirements	**Total Capex requirement** €12.5m
Underpinning Assumptions and Cost Benchmarks	• Costs based on historic spend analyses airport operations projects in current and previous CIPs • Cost based on average spend of €2m / year • Costs commensurate with ongoing maintenance and upgrade associated with 30mppa airport.	
Opex Impact	• Minimal Opex impact envisaged – will materialise as projects are delivered	
Project Output	• Minor projects to address day to day issues. • Minimise operational disruption through ability to address unforeseen issues. • Ability to respond to essential minor airline requirements • Ability to respond to passenger requirements.	
Asset Life	• 7 years	
Project Delivery Key Milestones		
Initial Set-up:	**Q3 2019**	
Minor Projects Commence:	**Q1 2020**	
Minor Projects Complete:	**Q4 2024**	

CIP.20.07.002
Minor Projects

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	0%	€0
Construction Costs	100%	€12,540,000
Escalation, Contingency & Design Variability	0%	€0
Total		**€12,540,000**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
Design & Management Costs	Redacted Cost Information			
Total - to summary				
Construction Costs				
General Maintenance				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

CIP.20.07.004
Metro Coordination

Project Summary

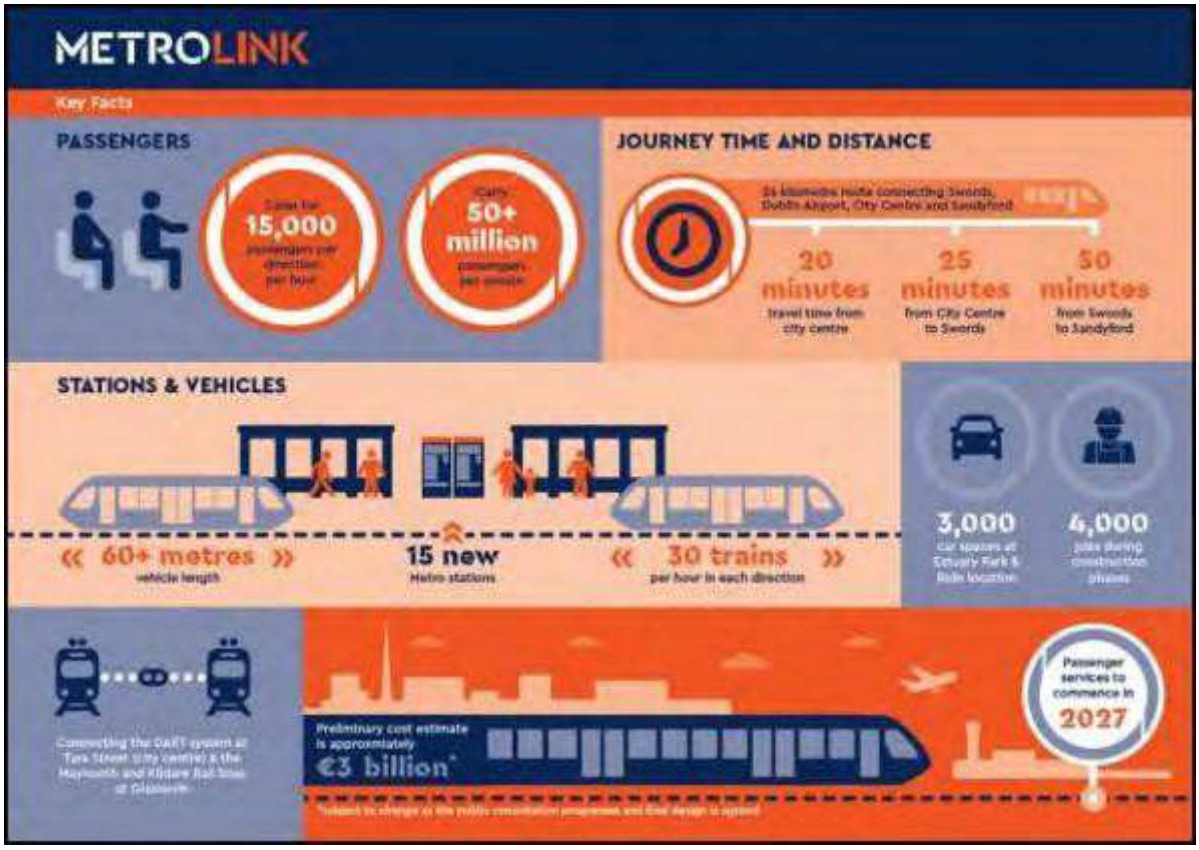
- **This budget contains the fees associated with allocating resources to ensure coordination with the MetroLink proposal during the design and construction stage.**

METRO Proposal

The MetroLink project is the development of a north-south high frequency, high capacity, electric urban railway service that will run between Swords and Sandyford, connecting key destinations including Dublin Airport and the City Centre along the 26km route. A large proportion of the route will be underground, including where it passes under the important city centre area and Dublin Airport.

There will be a total of 25 stations, including a station at Dublin Airport, with a journey time to the city centre of 20 minutes.

Construction is due to commence in 2021 and this project is required to cover resource fees and specialist consultants to ensure adequate coordination between Dublin Airport and the MetroLink project, so that the passenger needs are addressed in the design and implementation of the MetroLink project.



CIP.20.07.004
Metro Coordination

Project Details Summary		
Category: Other		
Primary Driver Future Proofing	**Secondary Driver** Stakeholder Requirements	**Total Capex requirement** €0.5m
Underpinning Assumptions and Cost Benchmarks	• 1 No. FTE Dedicated resources required to interface with the Metro project x 5 years. • Specialist design consultants required to review Metro proposals	
Opex Impact	• N/A	
Project Output	• Passenger and airport concerns / requirements addressed in the design and phasing of the project in relation to the construction of the station at Dublin Airport. • Passenger journey times to city centre are minimised through the station design and interface with other modes of transport and terminal connections • Minimum disruption to airport operations during construction.	
Asset Life	• 40 Years	
Project Delivery Key Milestones		
Interface with MetroLink Commences:	**Q4 2019**	
Construction of Dublin Airport Station Commences:	**Q4 2021 (TBC)**	
Construction of Dublin Airport Station Completes:	**Q4 2025 (TBC)**	
MetroLink to Dublin Airport Operational	**Q2 2027 (TBC)**	

CIP.20.07.004
Metro Coordination

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	100%	€500,000
Construction Costs	0%	€0
Escalation, Contingency & Design Variability	0%	€0
Total		**€500,000**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
METRO Interface – 1 FTE (5 Years)	Redacted Cost Information			
Metro Consultants – Planning				
Metro Consultants – Design				
Metro Consultants – Site				
Total - to summary				
Construction Costs				
NA				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

CIP.20.07.014
Terminal Operations Improvements Projects

Project Summary

- **This project identifies key Terminal Operations improvement works required at Dublin Airport.**

Over the 2020-2024 CIP period Dublin Airport (DAP) plans to implement several small terminal operation improvement projects to improve the overall passenger experience. The key projects being considered can be categorised as follows:

1. **Washrooms**
2. **Seating**
3. **Luggage Trolleys**
4. **Barriers**
5. **Signage**
6. **Visual environment**
7. **T2 OCS relocation**

1.Washrooms

Clean, accessible and well-stocked washroom can significantly improve the passenger experience which in turn contributes to the traveller's perception (and brand image) of the airport. Today, the washrooms in Pier 1 & 2 are sub-standard and in need of a full upgrade and refurbishment. This is to address Asset Care maintenance issues and improve the passenger perception of these areas. There is also insufficient capacity in these areas to deal with projected passenger demand.

Note: These refurbishments will reduce the amount of maintenance and Asset Care call-outs.

2. Seating

Seating is a significant factor in maintaining passenger satisfaction at airports. Seating offers passengers an opportunity to relax and unwind in the fast-paced airport environment. According to Dublin Airport metrics, 50-70% of departing passengers should be seated to meet targeted level of service.

To improve seating and waiting gate comfort, additional boarding gate seating is required in Piers 1, 2 and 3. This project proposes 1,000 seating banks (4 seats per bank) be provided in areas with insufficient seating.

CIP.20.07.014
Terminal Operations Improvements Projects

3. Luggage Trolleys

Luggage trolleys allow passengers in the airport to easily transport large items of luggage long distances. Today, DAP requires 2249 new trolleys to serve essential operations in T1 and T2(replace existing end of life trolleys and allow for increase passenger forecasts). This is to ensure there is adequate passenger service.

Note: In 2010, there were approximately 5,000 trolleys in DAP while today there are only 2,500 in circulation in the current fleet.

4. Barriers

Barriers are a critical means to managing queuing spaces and cordoning off access to restricted areas in airports. Today, DAP has several different types of barrier (including several bespoke airline barriers) provided across the entire facility. This project proposes the implementation of a standardised DAP tensile 'topped' barrier which would be fixed in place for 24hours of operation throughout the facility. A total of 1,500 new barriers are required during the 2020-2024 CIP period.

The key driver behind standardising barrier operation at DAP is to comply with new airport security regulations which minimises the number of loose fittings in landside areas which could pose security risks. Also, replacement of existing tensile barriers will provide a consistent approach to barrier layout and potentially reduce FTE resources, freeing up approx. 3 FTE per day for other operational work.

5. Signage

Intuitive signage can easily disseminate important information from the airport to the travelling public, give passengers more control over their journey (wayfinding signage) and improve overall passenger satisfaction. Over the 2020-2024 CIP period DAP will required an ongoing investment in signage (New wayfinding and lightboxes) to ensure efficient passenger operations.

Note: Spend on signage will continue similar to today spend.

CIP.20.07.014
Terminal Operations Improvements Projects

6. Visual Environment

The Visual Environment initiatives serve to create a common and unifying visual environment that is developed with the Dublin Airport brand guidelines, essence (warmth, practicality, ingenuity) and positioning (best use of travel time) in mind. Dublin Airport Passenger Experience (DAPEX) investigates the current and future needs of passengers and adapts the environment to create memorable and engaging experiences.

Some of the benefits of the DAPEX are as follows:

- **Improve the journey for passengers throughout our terminals**
- **Ensure Dublin Airport does not become sterile and without personality**
- **Breathe new life into old infrastructure**
- **Create a connection with passengers**
- **Add value to our airline partners by enhancing their product**
- **Bring a greater consistency to all DAP offerings (Terminal 2 Vs Terminal 1)**
- **Improve staff working environment**

Given the feedback from airline customers and passengers DAP proposes to continue the project to cover new infrastructure and address areas that need addressing throughout the airport. This will be delivered through DAP visual environment work stream and the connecting journeys project which DAP partner with local organisations to give a platform to emerging artists.

7. T2 OCS Relocation

Catering for passengers who require special assistance (disabled persons or persons with reduced mobility) is a key consideration at DAP (in line with EC 1107/2006). The One Complete Solution (OCS) Group provides this service in both Terminal 1 & 2.

In Terminal 2 the OCS reception is located on level 10 of check-in adjacent to the Aer Lingus ticket desks. This area is currently a reception/waiting space for PRMs being transported by wheelchair to their destination in the terminal. The current location is unsuitable as it utilises key space in check-in and prevents expansion of the OCS operation. Additionally, the space can be used for alternative accommodation.

This project proposes relocating the existing PRM reception / waiting space from the existing location (south-east corner of T2 Check-in) to a new location at the centre of the check-in building adjacent to the 3 central lifts and staircase.

CIP.20.07.014
Terminal Operations Improvements Projects

Consideration was given to providing two PRM locations with feasibility studies showing that a single central location was more efficient. The proposed central location does not experience significant traffic or obstructions. It is also an easily identifiable location and is equidistance to both ends of the check-in building.

Project Details Summary		
Category: Other		
Primary Driver Customer Experience	**Secondary Driver** End of Life	**Total Capex requirement** €4.9m
Underpinning Assumptions and Cost Benchmarks	• Costs based on previous projects completed in 2016-2018	
Opex Impact	• N/A	
Project Output	• Refurbishment of washrooms in Pier 1 & 2 to similar standard to toilets in other locations in DAP • Continued improvement in: Seating. Luggage Trolleys, Barriers and Signage • Further Visual Environment Initiatives (T1 Immigration, CBP Departure Gates, Air-bridges, T1 Orientation Area, Terminal Entrances (frontdoors), Carparks, T1 Mezzanine, Pier 2 Departures • Relocation of Terminal 2 OCS accommodation	
Asset Life	• 5 years	
Project Delivery Key Milestones		
Terminal Operations Improvement Programme	**Q1 2020 – Q4 2024**	

CIP.20.07.014
Terminal Operations Improvements Projects

LEVEL 1 - Cost Analysis	Represents	Total
Design and Management Costs	6%	€284,574
Construction Costs	88%	€4,358,529
Escalation, Contingency & Design Variability	6%	€282,156
Total		**€4,925,259**

LEVEL 2 - Cost Analysis				
Design and Management Costs	**Value**	**% Fee**	**Total Fee**	**Total**
Design & Management Costs				
Total - to summary				
Construction Costs				
Washrooms/toilets (minor refurbishments)				
Trolleys				
Barriers				
Signage				
Visual Environment				
OCS Relocation				
Seating				
Total - to summary				
Escalation, Contingency & Design Variability				
Escalation, Contingency & Design Variability				
Total - to summary				

Redacted Cost Information

J CIP2020+ Consultation Meeting Actions / Clarifications

DublinAirport

Capital Investment Programme 2020 +

CIP 2020 – Consultation Meeting Actions / Clarifications

Issued: 20 December 2018

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CIP 2020+ Consultation Meeting Actions / Clarifications

This document addresses stakeholder questions/clarifications raised during the consultation meetings for CIP 2020 held between 3rd December and 6th December 2018, which have been comprehensively documented by the Commission for Aviation Regulation (CAR) and issued to all stakeholders on 14th December 2018.

The following actions were documented in CAR's draft minutes and are addressed below;

1. Dublin Airport to provide answer on TSA screening requirements, in the context of the question asked by United.

The specific question raised by United at consultation, was 'are we proposing C3 search equipment in TSA?'

Although DAP supply security equipment for the TSA area, the requirements for TSA screening are mandated by TSA themselves and not by daa. We have currently been requested to maintain the current screening equipment in the TSA area and have included for replacement of end of life equipment, on a like-for-like basis.

We are aware that TSA are reviewing the implementation of C3 screening equipment and should the TSA proceed with this option, the existing area can accommodate the new equipment. In addition, the proposed expanded CBP/TSA area is also safeguarded to accommodate the planned intentions to move to EDS-CB/C3

It has been agreed that any future deployment of enhanced screening capabilities (including EDS-CB/C3) would be included in the capacity CIP proposals rather than the Core Security proposals.

2. Dublin Airport/Pascal Watson to provide underlying assumptions, and any relevant available data, in relation to e-gate utilisation, and staffing of immigration, for both terminals.

The utilisation of e-gates at Dublin Airport is described in the below image (2-month view). When fully in use, the e-gates have achieved processing rates of over 30% of arriving pax.

Based on the above performance, the e-gate requirement is developed assuming a maximum 5-minute queue at e-gates, 10 minutes at EU Booths and 20 minutes at Non-EU Booths.

The assumptions used in the analysis are as follows;

Terminal 1 – Pier 1 & Pier 2

- E-Gate usage up to 40%
- Maximum 5-minute queue at E-Gates, 10 minutes at EU Booths and 20 minutes at Non–EU Booths

Terminal 1 – Pier 3

- Maximum 5-minute queue at E-Gates, 10 minutes at EU Booths and 20 minutes at Non–EU Booths

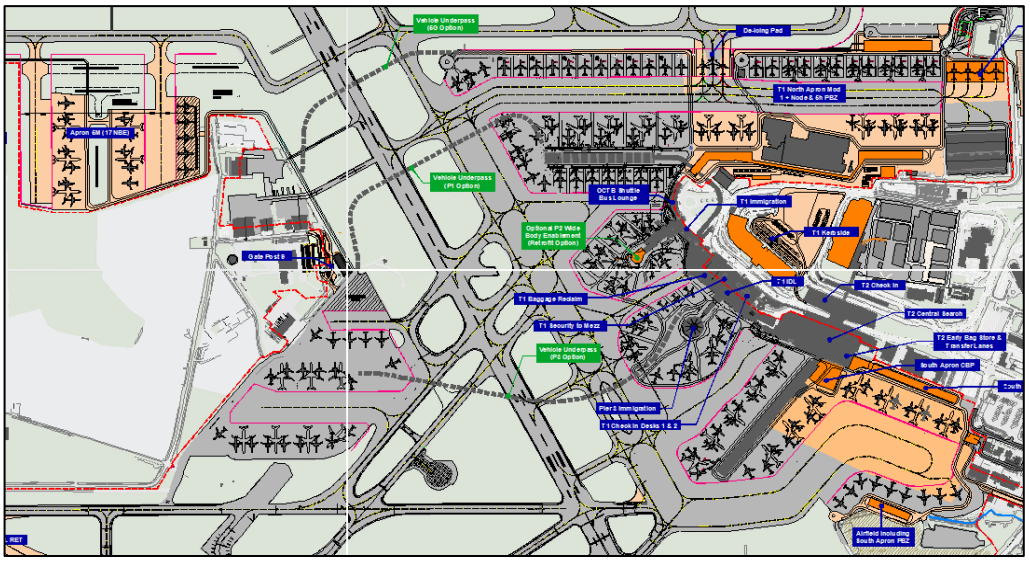
Note: Dublin Airport are working with INIS to see how maximum efficiencies can be achieved from the gates going forward.

3. Dublin Airport to share a project-by-project stand delivery timeline to get to 134 NBE stands.

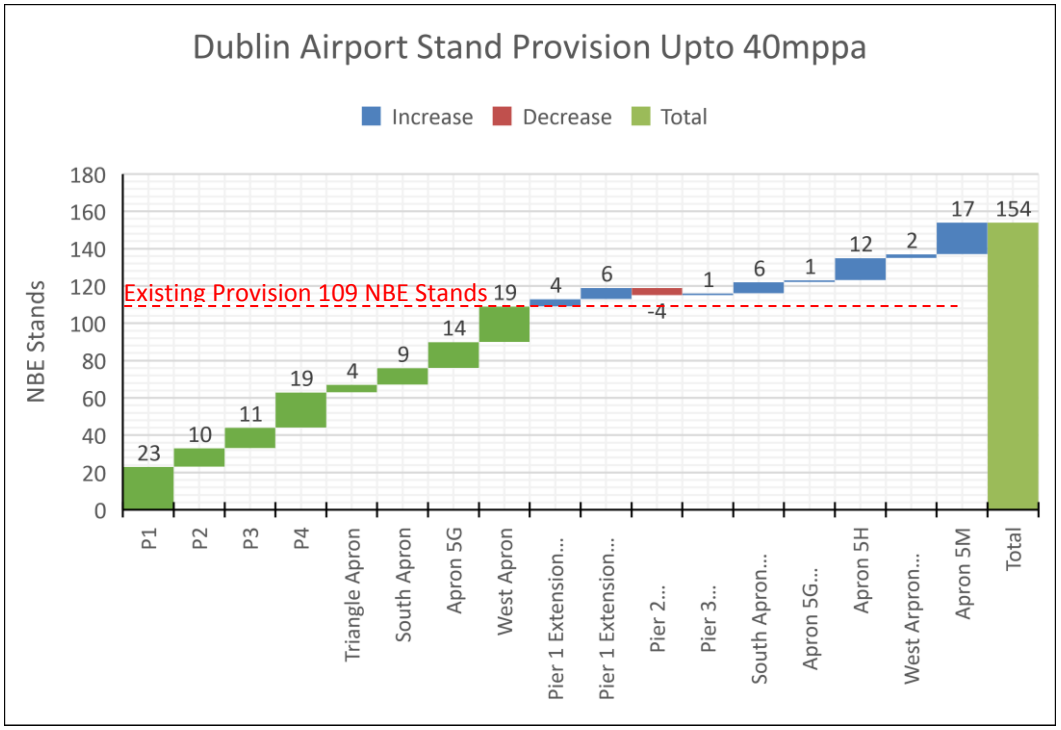
Dublin Airport are providing c.45 additional aircraft parking stands (NBEs) over the next 5 years with the following key projects delivering the majority of the capacity;

- Apron 5H – 12 NBEs
- South Apron – 6 NBEs
- Apron 5M – 17 NBEs
- Stands 101 to 104 – 6 NBEs

The proposed stand provision to meet the 40mppa demand is shown in the drawing and chart below.



The waterfall chart below details the delivery of aircraft parking stands to meet the demand of 154 NBEs at 40mppa.



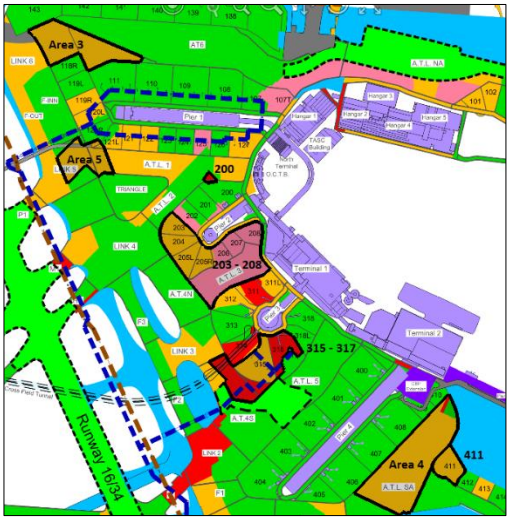
In the CIP Consultation Document Apron 5M was presented as 10 NBE stands. Following further analysis & design a 17 NBE layout will be proposed as part of the final CIP submission. The Apron 5M 17 NBE option provides an increased number of stands, critical to meet forecast demand while also optimising initial set-up costs associated with establishing Apron 5M. The total installed cost per stand reduces by further optimising the apron / stand potential in a MARS configuration in the Apron 5M location. The revised cost, still under review, of increasing this layout to 17 NBEs is an additional c.€30m and this will be included in our final CIP submission to CAR.

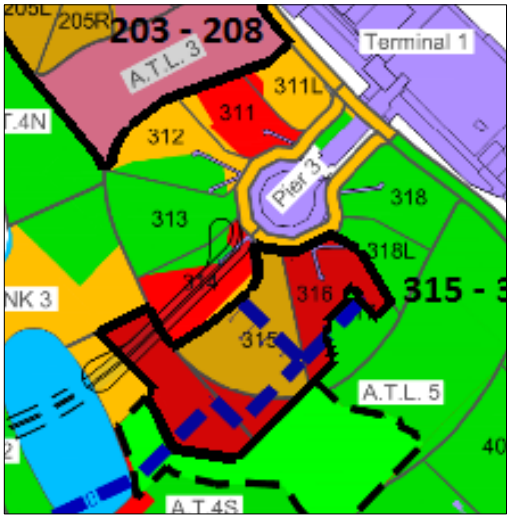
4. Dublin Airport to revert to clearly distinguish the scope of CIP.20.01.002 and CIP.20.03.033.

The two projects referenced above are Apron Rehabilitation (CIP 20.01.002 - €44m) and Enablement of Pier 3 for Precleared US Bound Passengers (CIP 20.03.033 - €49.4m). The rehabilitation of apron pavement on Pier 3, in the amount of €8m is included in CIP 20.003.033 – see breakdown below;

Description (CIP 20.03.033)	Estimated Cost €m
Apron Rehabilitation Pier 3	€8.0
Bussing Solution to Pier 3	€4.9
Pier 3 Reconfiguration with Flexible Gates	€16.5
Fixed corridor to Pier 3	€20.0
Total	**€49.4**

We can confirm there is no overlap on the two projects referenced above in relation to the Apron Rehabilitation element in the amount of €8m. The Asset Care scope of works for the Apron Rehabilitation project (CIP 20.01.002) includes the area within the black lines below:





The allowance on the Pier 3 – 20.03.033 (€8m) costs was to cover works around Stand 311 which was not covered on the asset care apron rehabilitation project.

The allowance for this apron rehabilitation will be transferred into the Asset Care project (CIP 20.02.003) in the final CIP submission. This will increase the Apron Rehabilitation project from €44m to €52m and remove the rehabilitation element of above project number CIP 20.03.033 in the amount of €8m.

5. Dublin Airport to follow up with information regarding selling vehicles which are being replaced.

Vehicles from the Light Vehicle Fleet (LVF) are replaced on a regular basis at a frequency of between 3 & 7 years depending on function, level of use, mileage and condition. However, vehicles less than 5 years old are rotated within the LVF to optimise their remaining life and residual warranty. All vehicles are written down over 5 years.

The average age of light vehicles at the point of sale is 5.6 years at which point the residual value is normally very low. VRT on multi-passenger vehicles such as cars, jeeps or crew vans, which was previously exempted, must be paid on sale. ATC & DAP radios, airfield transponders, branding and Hi-Viz decals must be removed, and the vehicles made good before they are sold off or otherwise disposed, the cost of which reduces the remaining value of the vehicles significantly. Any remaining value achieved from the sale of the vehicles is returned to the business unit P&L account in accordance with the accounting rules.

The disposal of the vehicles and equipment within the Heavy Fleet generally follow the same approach. The frequency of replacement for heavy fleet vehicles varies from 3 to 20 years. Heavy Fleet vehicles are written down according to their expected life (3-20 years). VRT is not an issue as it is paid at the point of purchase. ATC & DAP radios, airfield transponders, branding and decals must be removed. The remaining (residual) value achieved from the sale of the vehicles and equipment is normally relatively low and this value is returned to the business unit P&L in accordance with accounting rules.

6. Dublin Airport to provide information regarding the cost of removing the T1 spirals road.

The Terminal 1 spiral ramps provide vehicle access to Level 4 (where the main Terminal 1 plant room is located) and they also are used as the **primary fire escape route** for Levels 4 and 5 and are key to the fire strategy for Terminal 1. They would have to remain in place until an alternative fire escape route was provided. As a result, essential structural repair is required to ensure structural integrity is maintained and to prevent further deterioration.

The emerging Dublin Airport Masterplan currently does not identify a specific use for the Terminal 1 spiral ramps and the Energy Centre below is retained indefinitely.

The T1 spiral ramps at Dublin Airport comprise 2 No. cast in-situ concrete structures each approximately 500m long. There are bridged connections to the existing Terminal 1 at Levels 4 and 5 which would also need to be removed along with a section of raised / bridged road c.100m long. The total volume of concrete in the spiral ramp structure is c.5,000 tonnes.

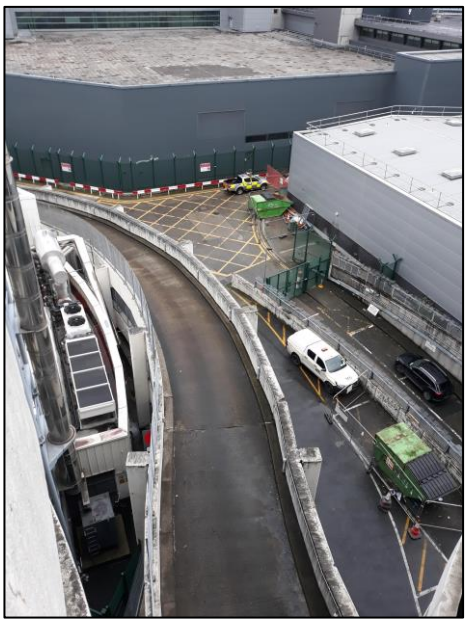
There is a diesel storage tank located in the south spiral core, which will require replacing and relocating including connection pipework etc. There are also a significant amount of extraction vents and other M&E installations supported by the spiral structure, therefore alternative supports would need to be erected to facilitate demolition.

A portion of the energy centre is currently located under the canopy of the north spiral, so extensive protection

measures would be required during demolition along with significant diversion of existing services.

As the spirals provide access to plant rooms and act as a fire escape route it is assumed that construction of a new fire core with goods lift would be required in advance of demolition.

The demolition would require a phased top down approach using temp props and a large crash deck for protection as the site is considerably constrained.



The estimated cost for the demolition of Terminal 1 Spiral Ramps is as follows;

Description	Estimated Cost €m
Design & Management Costs	€0.6m
Contractor Preliminaries	€0.6m
Demolition of Concrete Structure	€1.4m
Diversion of Existing Services	€0.5m
New Construction (fire Escape from Level 5 incl goods lift)	€1.5m
Other Development Costs	€0.1m
Escalation & Contingency	€1.7m
Total Cost	€6.4m

7. Dublin Airport to follow up with more information on how it has defined 'highly utilised' stands.

Highly utilised stands are stands with live passenger turns (excl cargo, technical stops etc.) that include the following;

- All contact stands, including Pier 1, Pier 2, Pier 3 and Pier 4.
- All PBZ stands, including South Gates.
- Remote stands on the East Campus used for live operations, including Apron 5G, Triangle etc.

8. Dublin Airport to provide more detailed cost breakdown in relation to CIP20.02.004.

The cost breakdown of CIP.20.03.004 'Passenger Boarding Bridges & Fixed Electrical Ground Power' is as follows:

Description	Estimated Cost €m
Design & Management Costs	€0.5
Airbridge Rehab / Upgrade (Pier 3 & 4)	€5.1
New Dual Airbridge (Pier 3)	€2.1
Electricity Distribution to External Plant and Equipment: (Power supply from main switchgear to external plant and equipment.)	€4.9
Main Contractor Preliminaries	€0.6
Other Development Costs	€0.9
Escalation & Contingency	€3.8
	€18.1

9. Dublin Airport to provide correspondence in relation to the Dardistown substation single point of failure.

During consultation the 'Second Medium Voltage (MV) Connection Point' (CIP.20.02.002) was presented with particular focus on risk of the existing single point of failure.

The two MV supplies currently entering Dublin Airport (from Finglas and Kilmore) both enter at the main airport 110kV/10kVsubstation known as Dardistown Substation. A dual supply at 110kV is generally considered secure and dependable but both incoming supplies connecting at the same point represents a single point of failure. This has driven the need to consider a second MV Connection point for the airport.

To further inform users on the single point of failure, a Connections Option Report prepared by Aecom consultants (completed 12th December 2018) has been attached to this document. See attachment A.

10. Dublin Airport to provide further information regarding the benefits of the Airfield Optimisation project.

The Airfield Optimisation project (CIP.20.02.001) proposes that Dublin Airport participate in further SESAR initiatives. The objective of SESAR is to modernise European ATM by defining, developing and delivering new or improved technologies and procedures (SESAR Solutions).

SESAR's vision builds on the notion of trajectory-based operations' and relies on the provision of air navigation services (ANS) in support of the execution of the business or mission trajectory — meaning that aircraft can fly their preferred trajectories without being constrained by airspace configurations.

This vision is enabled by a progressive increase of the level of automation support, the implementation of virtualisation technologies as well as the use of standardised and interoperable systems. The system infrastructure will gradually evolve with digitalisation technology, allowing air navigation service providers (ANSPs), irrespective of national borders, to plug in their operations where needed, supported by a range of information services. Airports will be fully integrated into the ATM network level, which will facilitate and optimise airspace user operations.

The key IT investments in this category are outlined below with high level descriptions of the scope and benefits including any expected efficiencies.

A. System Wide Information Management (SWIM);

This project will deliver a modern, scalable, secure and resilient platform to facilitate System Wide Information Management (SWIM) and integrations to allow for future data exchange between Dublin Airport and all its partners. SWIM is also a pre-requisite for iAOP project below.

daa has received EU funding under the 2016 CEF Call for this SWIM project.

Benefits;
The implementation of the SWIM concept will enable direct Air Traffic Management business benefits to be generated by assuring the provision of commonly understood quality information delivered to the right people at the right time.

B. Initial Airport Operations Plan (iAOP);

The initial AOP is the local airport part of the Airport Operations Plan (AOP) and consists of the following;

- Integration of Flight trajectory data using System Wide Information Management (SWIM) i.e. Information sharing related to Flight Progress Information, Elements of an Inbound/Outbound/airport transit Trajectory for Dublin Airport.
- Improved management of Airport Resources data: Airside and landside resources such as runway capacity & configuration and parking stands.
- Local weather data: Information sharing via SWIM related to MET Information
- Introduce landside processes to facilitate better decision making among stakeholders
- The initial AOP will share information with the Network Manager which provides a rolling picture of the network situation used by stakeholders.

As part of the SESAR Pilot Common Project, Dublin Airport is mandated to implement iAOP by December 2020. daa has received EU funding under the 2017 CEF Call for this project.

Benefits;
With up-to-the-minute information sharing facilitated by the iAOP, every operational stakeholder at Dublin Airport can have access to changes in scheduling, operating conditions and circumstances, allowing better, proactive performance management by everyone. This ultimately makes operations run more smoothly and efficiently.

C. Full Airport Operations (AOP) and AOP /Network Operations (NOP) Integrations

With a full AOP, individual airports receive more information and better control over the activities occurring on their sites. The combination of AOP and NOP increases predictability across the network and, of course, at individual airports.

Benefits;

Ultimately, this initiative empowers airports to be the ground coordinators within the network. The knock-on effect of airports taking on that role is that their facilities will be used in a better, more efficient, optimised way. And better predictability will result in reduced delays, less unnecessary fuel burn by airlines (so, less pollution and more cost-savings for airlines), optimised resource utilisation and better services for passengers.

As part of the PCP, Dublin Airport is mandated to implement AOP-NOP by December 2023. daa has not yet received EU funding but it is expected to be granted in the coming CIP period.

11. Stakeholders to consider setting up a forum specifically for IT related projects and data sharing.

The Community App which was originally developed and launched by London Gatwick (LGW) in 2016 has now over 200 companies, 14,000 downloads and 11,500 active daily users using it on the LGW campus. Over 50% of all campus workers are using the App as a key communications tool.

Several other airports have also adopted the Community App e.g Manchester, Dubai, Edinburgh. All have reported very positive feedback from their stakeholders.

Dublin Airport fully intend to consult its stakeholders on the features of the Community App. LGW have a good engagement model that Dublin Airport would be keen to adopt. LGW meet all stakeholders, Airlines, Handlers, Concessionaires etc on a quarterly basis to get their input on new features, enhancements etc to the App. In addition, the App would have an inbuilt feedback facility. This feature is being heavily utilized in LGW, driving ongoing enhancements of the App.

The quarterly meeting could also be used as a mechanism to provide general updates on IT projects from both an airport and airline perspective. Data Sharing could be part of the agenda but if warranted, a separate forum could be established.

12. Dublin Airport to provide clarity on where the biometrics options are set out.

Dublin Airport's strategy is to deliver a seamless passenger experience and improve the safety and security of the airport for everyone through the introduction of Biometric validation at all key passenger touchpoints. These include

- Self-service Check-in
- Self Service Bag Drop
- Entry to Airside Security Screening
- CBP process (where applicable)
- Boarding gates

Biometric technology has advanced significantly in recent years with the latest devices and validation services resulting in accuracy rates of around 99% for solutions such as Facial recognition.

Biometric capture and validation is becoming the "norm" for people in their daily lives e.g unlocking phones driving increased levels of security and safety. The level of trust in this technology has grown. Many business sectors are moving towards Biometrics as their primary method of personal identification. The technology is being widely adopted by the Aviation industry with most airports indicating significant spend in the coming years on this technology.

In addition, initiatives such as IATA's OneID is heavily reliant on Biometric processing to deliver the envisaged seamless passenger journey. Dublin airport wants to maintain its high ACI scores by delivering the best possible passenger experience through technology. Biometric identification negates the need for passenger to produce documentation at multiple touch points at the airport. It will help make passengers feel safer and less stressed in what can be a difficult environment for many people.

Biometrics will also support the Airport's strategy around Safety and Security, giving an increased level of certainty around who exactly is travelling through the airport.

Original Scope and Technology proposed

The original CIP proposal for a €3m investment in Biometric technology and Self Boarding gates would deliver Biometric capture at approximately 60 Self Service Kiosks and Bag Drops and introduce 25 self-Boarding gates across both terminals in Dublin Airport.

With this level of investment, we expect that up to 30% of our passengers will provide biometrics at check-in, Bag drop and Boarding by end 2024.

The investment does not allow for any Biometric validation at the entrance to Security, although potentially we could reduce the number of other touch points e.g less check-in, bag drop and Boarding gates to prioritize rolling out biometrics at some of the lanes at the entrance to Security screening.

The proposed solution is integrated with our current CUSS platform. It will allow passengers enrol for either the CBP Biometric service (TVS) if travelling to the US or to the iPassport Service which will support both US and Non US travellers. The iPassport service allows the passenger to store multiple document types e.g Passports, Visas, National ID cards, Driving licences. The TVS service currently only stores passport details.

Extended scope proposal (increased investment from €3m to €10m)

Ideally, we would like to deliver a consistent passenger experience with the increased level of safety and security that Biometrics brings at all passenger touch points. This would require the following

1. Rollout of Self Service Boarding gates to all gates in the airport. We will have a total of 129 gates by end of the 2024 CIP period. This would require an additional 104 Self Boarding gates, over the original 25 proposed, to be purchased, integrated and deployed across both terminals.

2. Biometric devices and system integrations to be rolled out at all passenger touch points i.e All Self-Service Kiosks, All bag Drops, Each lane at entry to the Security Screening and at all Boarding Gates

We estimate the total cost, based on today's prices of extending Biometric validation and Self-Service Boarding to meet the desired landscape as described above, to be in the region of €10m. This is an increase of €7m over the original €3m proposed (€1m Self Boarding gates, €2m Biometrics) and this is what will be included in our final submission to CAR.

13. Dublin Airport to revert with a proposed innovation fund value.

Dublin Airport have reviewed the potential of including an IT innovation fund are now including an IT Innovation fund in the amount of €8m – See attached project Sheet CIP 20.05.017 – Attachment F for further detail.

Given the rigorous justification required in putting forward Capital Investment proposals for the CIP and cognisant of everyone's efforts to minimise costs, daa IT has limited its proposed investment proposals to "must do" lifecycle and Compliance related spend and those technologies and areas we feel are adequately mature and proven to deliver guaranteed ROI.

There are a number of other initiatives we considered which have the potential to deliver significant benefit during or following the CIP period if the foundations are laid. However, as these are not yet fully proven and examples of where they were already deployed and delivering benefit in an airport could not be found, we did not include these in our proposed initiatives.

During our CIP Presentation on 4 December 2018, we discussed the benefits of providing an IT Innovation Fund (we had €8m in the 2015-19 CIP) to provide funding to take advantage of newer technologies as they mature and demonstrate more potential to deliver value to all stakeholders.

Dublin Airport are requesting €8m for an IT Innovation fund to support initiatives that could benefit from emerging technologies as they mature over the next CIP period.

Some of these newer technologies and proposed initiatives are listed in the attached Project Sheet with high level cost estimates.

14. Dublin Airport to revert with further information reconciling the biometrics, autopass, and T1 central search relocation projects

The full proposal includes the Biometric validation of passengers at the Security checkpoint at airside entrance. The technology being proposed for Biometric validation will integrate with any Autopass solution. The biometric solution will replicate the data currently read from the Boarding Pass scan on receipt of this data the Autopass gates will open to allow the passengers proceed to Airside Security Screening.

Dublin Airport believe that Biometric validation is a more safe and secure method than the current Boarding Pass scan when allowing passengers to move across the landside /airside divide. Boarding passes can be stolen or replicated and the first passenger to present that boarding pass at the Autopass gates is allowed to pass through. This may not be the actual passenger who has booked/checked in with the airline.

Biometric data is unique to the passenger and so only the passenger who has enrolled at a previous step, either through an Airline process or at the airport Self Service kiosk or Bag Drop, will be allowed to cross over to Airside.

15. Dublin Airport will revert with information on the direct use of the screening and logistics centre by airlines.

The present approach to screening of airport supplies and examination of vehicles going airside is conducted at Vehicle Control Posts (VCPs) dispersed at 4 different locations throughout the airport campus.

This project will drive significant changes in operations methodology to optimise the Security operation at the vehicle control posts which benefits all airport users including airlines. These will comprise the following key elements in this dedicated facility as follows:

- Airport Supplies Screening Centre (ASSC): delivering a central point for screening all airport supplies on a pre-booked basis, ensuring all vehicles presenting to the gateposts are processed in the same way.
- Logistics centre: providing a facility where goods can be stored in advance of screening and subsequently scheduled for delivery to the CPSRA on vehicles which are optimally loaded, reducing the numbers of vehicles required to present at the gateposts, which benefits all users including airlines.
- Construction consolidation centre: providing a coordinated, controlled system for the delivery of construction materials to airside sites, reducing the potential impact on existing access gateposts, thereby benefitting all airport stakeholders including airlines. It is proposed to establish compounds on the eastern and western campus.
- A facility to provide safe, discrete and secure processing of passengers in Garda custody, their items carried and where appropriate their escorts (along with their items carried), away from the environs of the main gateposts.

16. Note: F&B project CIP.20.04.030 was not included in the consultation document. It is in the slides.

An additional project, 'New Kitchen at Slaney Bar Location, T2 IDL' (CIP 20.04.030) will be included in the CIP 2020 submission to CAR. This project was presented to users on 4th December 2018 under the Commercial Revenue presentation.

This project comprises the relocation of the existing kitchen serving the Slaney Bar and The Chocolate Lounge in the Terminal 2 IDL. The existing facilities are not fit for purpose as they lack the correct level of services (e.g. extraction, gas, M&E etc) which results in a very poor F&B offering for passengers. This project will address these issues resulting in a significant improvement to the overall passenger experience.

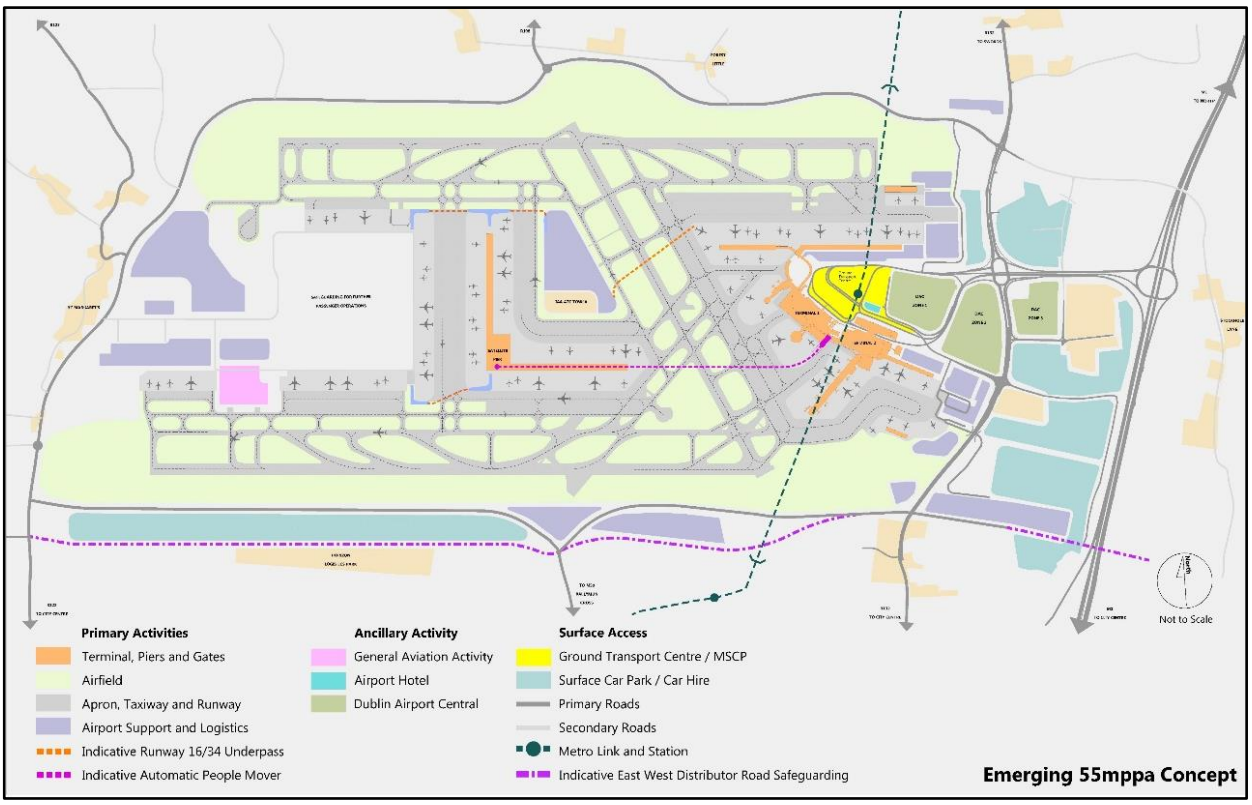
The capital cost of this project is €3.3m and it delivers the following business case;

- IRR - 24%
- NPV - €7.5m
- Revenue Impact €0.5m

Additional details are included in the attached project Sheet, **New Kitchen at Slaney Bar Location, T2 IDL (CIP 20.04.030)**. See attachment B.

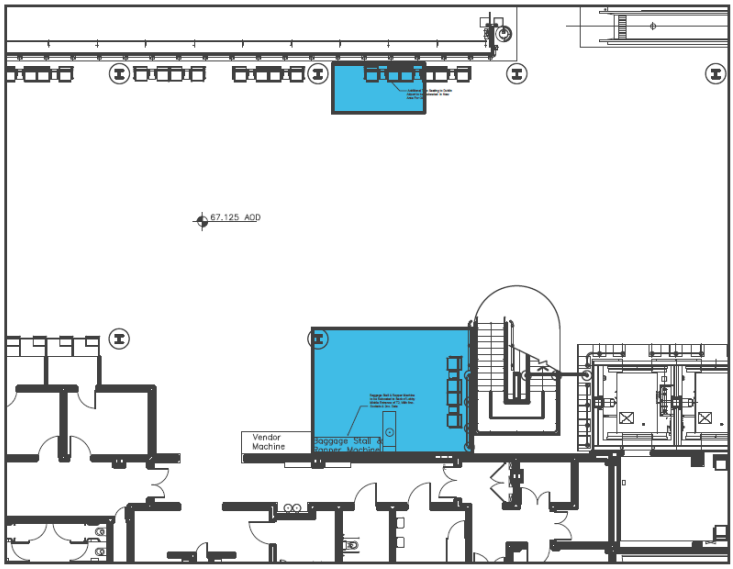
17. Dublin Airport to share soft copy of the 55 mppa masterplan.

The emerging 55mppa masterplan (A4 size) was included in the CIP Consultation document issued on 25th October 2018, Figure 73, page 104. A smaller copy of the emerging 40mppa development plan was also included in the CIP Consultation document, Figure 75, page 105. This image (40mppa) was subsequently issued to stakeholders on 5th December 2018, 'Evolving CIP Layout'. Attached now please find similar image relating to the 55mppa masterplan, 'Emerging 55mppa Layout. See attachment C.



18. Dublin Airport to consider a PRM facility on both sides of T2 departures.

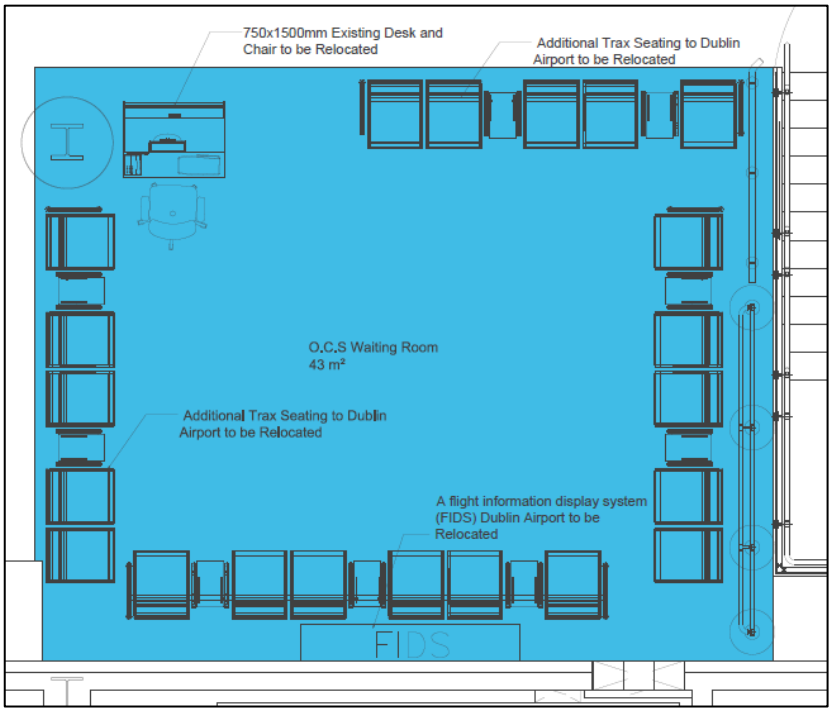
During consultation two different scenarios for a suitable PRM location were discussed; providing a PRM facility on both sides of T2 departures or providing a single central PRM location. Following further design and investigation Dublin Airport proposes a single central PRM location. The proposed location for the PRM facility is shown in the image below (see large blue box).



Proposed PRM location.

The proposed PRM location (large blue box) is located adjacent to the central staircase and 3 no. lifts. The location currently facilitates a bag-wrap facility which be relocated towards the T2 Façade (small blue box).

The purpose of moving OCS from their current location is to free up the current location for potential future expansion of ticket desks which also providing an improved PRM facility on the ground floor. The drop off point externally would remain the same as currently. The centralised location does not experience significant traffic or obstructions. It is also an easily identified location and is equidistance to both check-in west and east approx. 90m distance to either end. There is no modification required to the existing floor level internally.



Proposed PRM arrangement in central location.

Note: Further information on the T2 PRM relocation is provided in CIP.20.07.014 in the CIP Consultation document.

19. Dublin Airport to revert with information regarding costs/benefits of moving the T2 reception lobbies onto the kerb.

Following queries from Airport Users, Dublin Airport has investigated the option of moving the T2 reception lobbies onto the front kerb.

The relocation of the T2 reception lobbies increases the internal floor area in check-in by 280m^2. The replacement lobbies on the T2 kerb (2 no.) provided a total new kerb reception lobby area of 340m^2.

The key constraints associated with moving the lobbies onto the kerb are as follows:

- Proximity of mobility parking spaces
- Existing tactile mobility wayfinding tiles
- Fixed floor mounted air binnacle locations to stay in position
- Single PRM location for operational efficiency and way finding

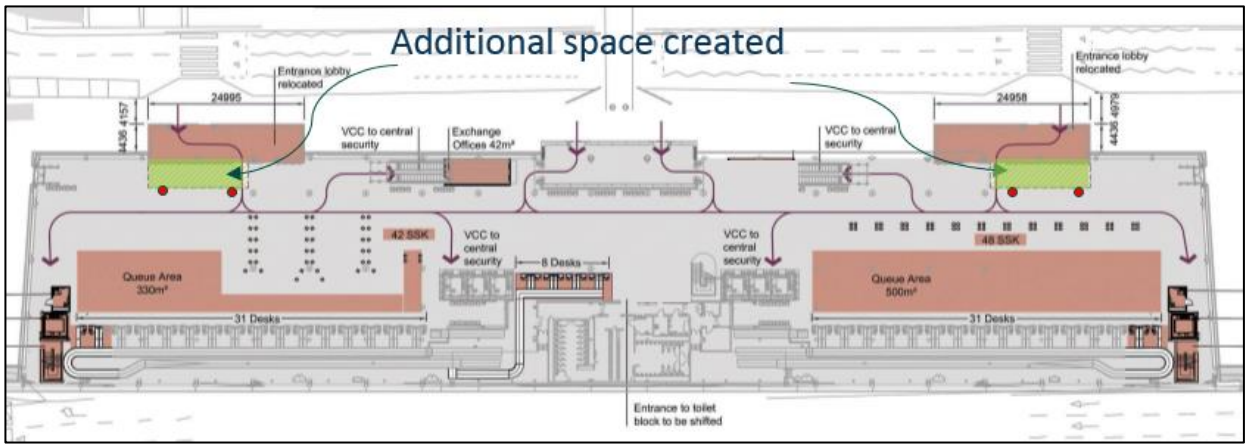


Image: Relocation of T2 reception lobbies.

Estimated costs for the relocation of the T2 reception lobbies; as follows:

Description	Estimated Cost €m
Demolition Works	€0.1
Substructure	€0.1
Superstructure	€1.7
Internal Finishes	€0.2
Services (Space Heating, Air Con &Electrical)	€0.5
Main Contractor Preliminaries	€0.5
Other Development Costs	€0.8
Escalation & Contingency	€1.3
	€5.2

20. Dublin Airport to follow up regarding opex implications for the early bag store.

The total estimated Opex cost for the operation of the Early Bag Store is €150k broken down as follows;

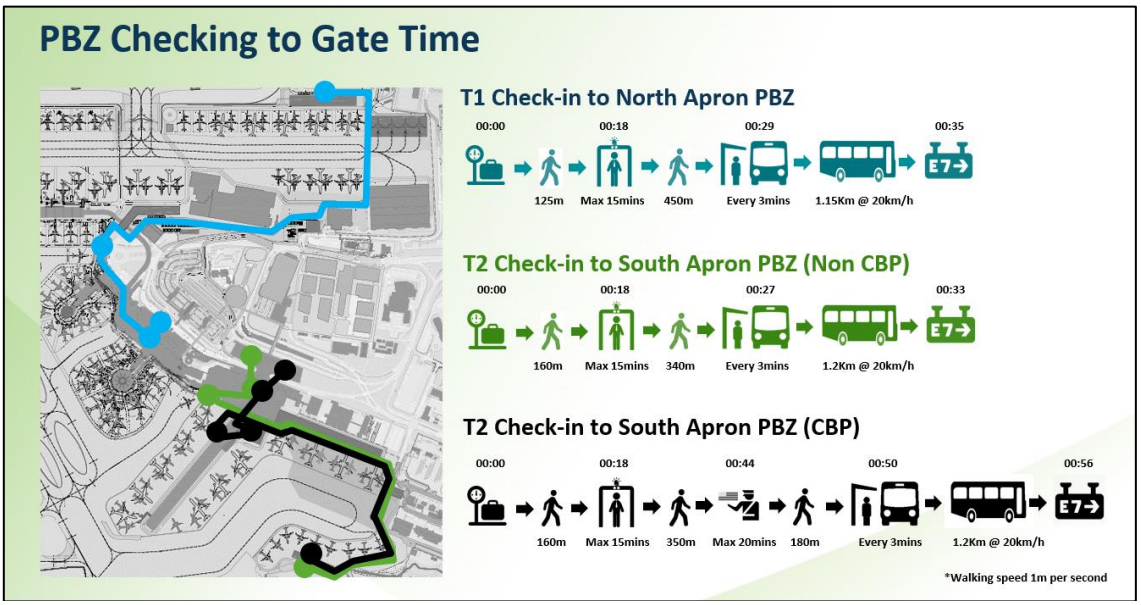
Description	Estimated Opex € k
Energy cost year, based on L 3 & 4 similar profile as EB	35
Maint. based on L 3 & 4 data taken CMMS	35
SAC & SCADA up lift based on same supplier support.	35
PLC support up lift based on same supplier support.	25
ATR support up lift on same supplier	5
Spare parts on similar systems estimate. based on same supplier equipment supplied for EB is as we have on site.	15
Total Cost	**150**

This will be reflected in the final Project Sheet for the Early Bag Store as part of the CIP submission to CAR.

21. Dublin Airport to provide information on passenger travel times from check-in to gates following the new CIP 2020 developments.

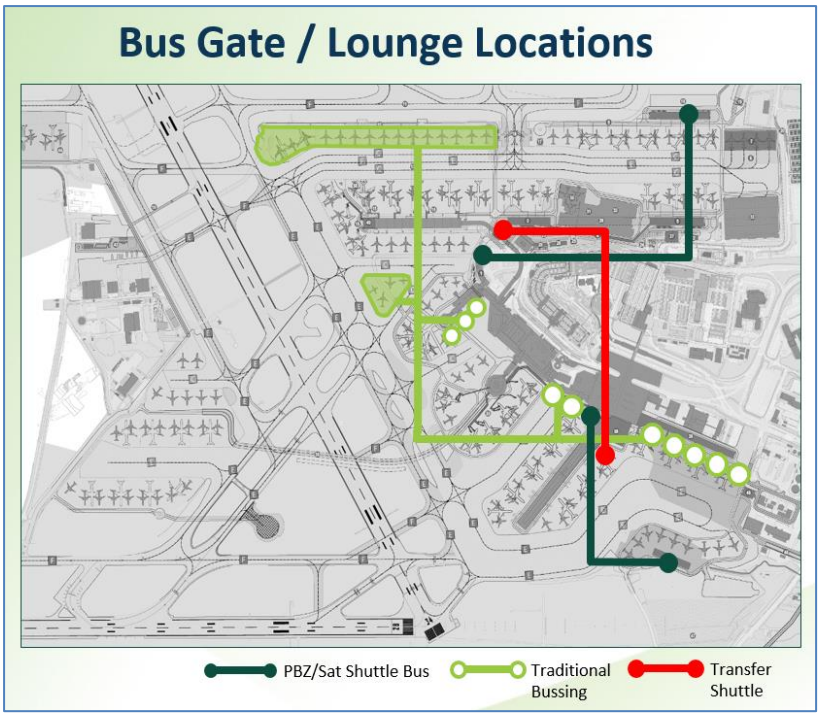
The estimated travel times from check-in to gates for the developments proposed in CIP 2020 are detailed in the graphic below, and are summarised as follows;

- Terminal 1 to North PBZ – 35mins
- Terminal 2 to South Apron PBZ – 33mins
- Terminal 2 to South Apron PBZ (CBP) – 56mins



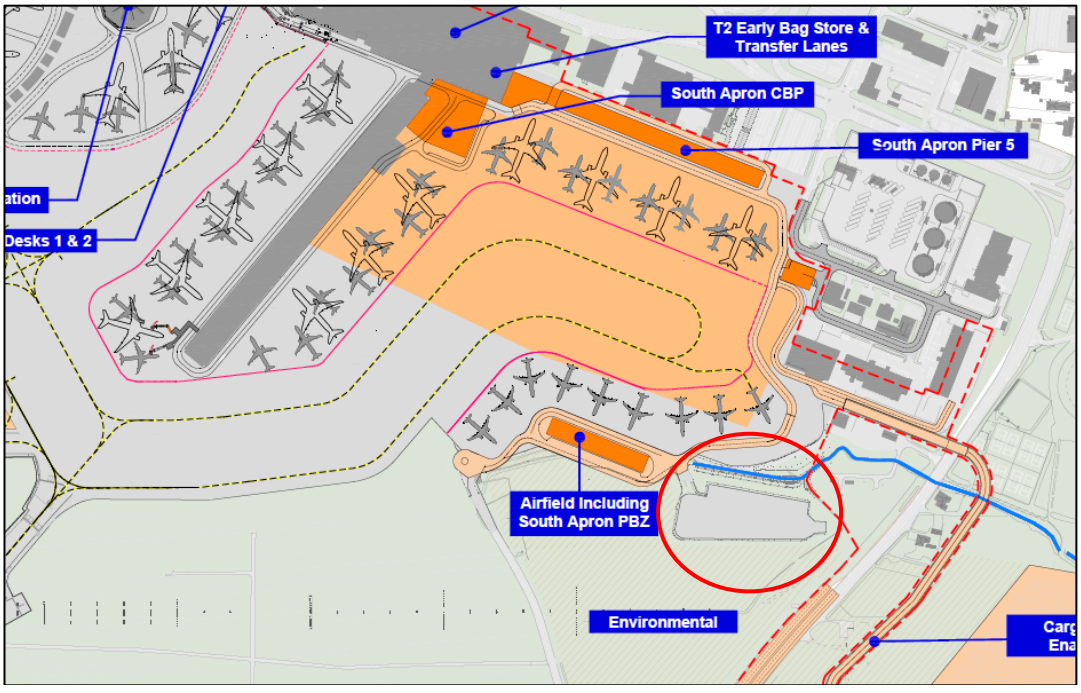
22. Dublin Airport to share a matrix showing intended links between gates and stands.

The graphic below highlights in matrix form the links between bus gates and stands that could result following the implementation of this CIP proposal.



23. Dublin Airport to provide information on the relocation of T2 storage area.

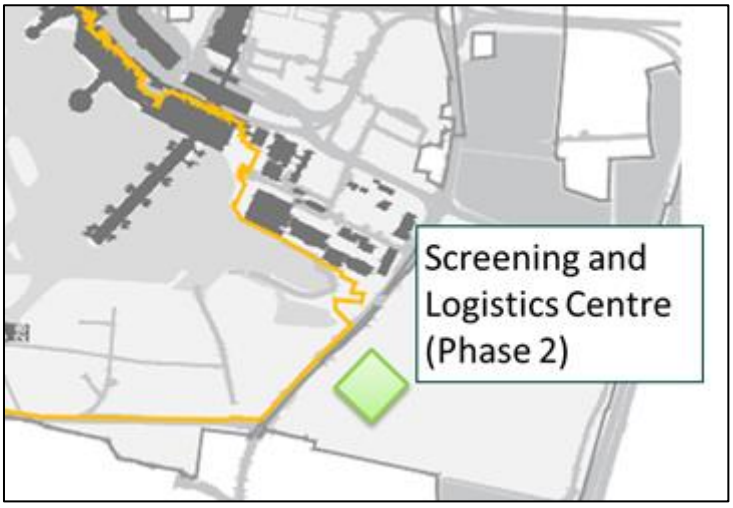
The current T2 storage area for ULDs is not impacted by the South Apron Development – Reference drawing below. As discussed, this area could be further optimised if necessary.



Existing T2 ULD Storage Area

24. Dublin Airport to provide clarity on the proposed location of the logistics and screening centre.

The proposed location for the logistic and screening centre is shown in the image below. The facility will be located in the East Lands (note: location in East Lands shown below is only indicative as further design is required to refine exact facility location).



The detailed Project Sheet for the Screening and Logistic Centre (CIP.20.06.014) is attached. See attachment D.

25. Dublin Airport to provide information/project sheets on the now-preferred option (Pier 3) for the underpass.

In the CIP Consultation document, we included 2 Options for consideration, Pier 1 and Apron 5G. However, following detailed analysis over the past 4 weeks it became clear that an option previously considered (Pier 3) and discounted was in fact the most optimum solution for a long-term asset with an asset life of 50 years.

The Pier 3 option has the following benefits over the other options;

- It provides more predictable assess to the West Apron with no interruptions to traffic traversing to/from the West Apron. Apron 5G location requires all vehicles to cross a 'triple taxiway' which could delay access. Pier 1 location conflicts with passengers walking out to stands which could also delay access and increases the safety risk to passengers.
- The Pier 3 option is centrally located and has reduced access times to the West Apron.

The estimated cost of the Pier 3 option is €150 - €170m and the construction timelines would indicate that it could be delivered in 2023/2024. The cost and programme are at an early stage and as this is a complex project continued assessment and cost refinement will continue.

The detailed Project Sheet for Pier 3 Underpass Option (CIP 20.03.051B is attached). See attachment E.

Additional Comment

In addition to the actions identified by CAR in the draft minutes, we would like to clarify our commitment to delivering the proposed CIP with flat pricing. Ultimately CAR will determine the maximum permitted revenue per passenger in the 2019 determination but we can confirm that our preliminary assumptions are predicated on a continuation of the status quo, i.e. in the absence of differentiated services at differentiated prices. We acknowledge that CAR is actively considering this as set out in paragraphs 4.7 and 4.8 of its Issues Paper.