

Appendix 3-1. Construction Environmental Management Plan

West Apron Vehicle Underpass

Preliminary Construction Environmental Management Plan



Document History

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*P = Print Name, S = Signature

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1 Purpose

This Preliminary Construction and Environmental Management Plan (CEMP) has been prepared for the West Apron Vehicle Underpass (WAVU) project, inclusive of Pier 3 fixed links, to identify the minimum standards of environmental controls together with monitoring, inspection and reporting mechanisms to be adopted for all constructions works related to this project element.

It aims to give practical guidance to the client, designers, and contractors on how they can comply with all aspects of the applicable Environmental Legislation. It will identify the current construction environmental risks within and around the environ of the proposed construction site and outline the associated controls to be adopted during all constructions works. It will provide site specific recommendations and refer to general best practice procedures to comply with when working on a construction project at Dublin Airport.

It demonstrates how potential construction phase impacts on the surrounding environment are considered early in the design stage of the project. It provides and outlines how Dublin Airport and the appointed contractor will manage and, where practicable, minimise negative environmental impacts during the construction works.

For clarity 'construction' is considered to include all site preparation, enabling works, demolition, materials delivery, construction activities, materials and waste removal, including temporary offices, temporary welfare facilities, temporary staff parking, temporary laydown areas and associated engineering works.

This preliminary assessment will be provided as part of the tender documents to tendering contractors for them to adopt all the recommendations and best practices outlined. The appointed contractor will be required to develop a detailed CEMP. The development of such document shall be in conjunction with this Preliminary CEMP and with daa's standard contract documentation (specifications, appendices and airport directions) and any associated planning conditions imposed to the project. Where conflicts and/or discrepancies exist between these documents, then the appointed contractor shall write to daa seeking clarification of which document is the most applicable for the works. Compliance with this plan, does not absolve the appointed contractor or its sub-contractors from compliance with all legislation and bylaws relating to their construction activities.

2 Environmental Regulatory Requirements

The following is a reference list of documents relevant to construction environmental management at Dublin Airport and in some cases referred to elsewhere in this Preliminary CEMP.

Dublin Airport Directions for works in and around the aerodrome:

- Airport Direction D-O Construction Projects. Specific to Airside Construction Projects.
- Airport Direction D-E Emergency Response. Airside, Fuel Spillages, Fires and Other Emergency Procedures.
- Airport Direction D-O Environment and Pollution. Environmental Standards for the Dublin Airport Site/Campus.
- Airport Direction D-O Spillages/FOD.
- Airport Direction D-O Wildlife and Habitat Management.

Guidance Documents for construction works at Dublin Airport:

- Construction Contractors Health & Safety and Environmental Rules for Working on daa Infrastructure Manual.
- daa Guidelines Control Dust Fume and Smoke.
- daa Control of Noise and Vibration.
- daa Temporary Traffic Management Requirements Specification Covering High Risk Works.
- daa Standard Traffic Management Plans Covering Low and Medium Risk Works Requiring Traffic Management.

Industry Best Practice Guidance Documents

- CIRIA C532 Control of Water Pollution from Construction Sites.
- BS5228: Code of Practice for Noise and Vibration Control on Construction and Open Sites.
- EPA Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects (April 2021) .

3 Supporting Studies

A variety of surveys and studies are undertaken in support of the proposed Underpass and fixed links, all relevant findings will be captured within the developing CEMP, which is treated as a live document. The responsibility for this document will be passed to the contractor, upon appointment, who will then finalise the findings. These studies and surveys might include the following:

- Environmental Impact Assessment (currently in preparation, but the output has not been available for the preparation of this version of the CEMP).
- Topographical and drainage survey.
- Building survey.
- Existing services survey.

4 Project Element Description

4.1 Background

A planning application has been prepared in respect of a proposed vehicle underpass of Runway 16/34. This is an airfield safety project, required to improve operational safety and efficiency at the airport.

The Underpass is proposed centrally within the airfield at Dublin Airport. The subject site incorporates Pier 3 and surrounding stands, Apron Taxiway 4, the Taxiway F-2, Runway 16/34 (the crosswind runway), Taxiway W1 and W2 and the West Apron, see Figure 1 below.



Figure 1 Dublin Airport's Existing West Apron and Central Area

The West Apron is an area of apron west of Runway 16/34, comprising 16 NBE (narrow body) and 8 WB (wide body) stands. It is used inter alia to support cargo operations, General Aviation and provision of contingency aircraft stands. It is an integral part of the infrastructure of the airport. It is currently accessed by a surface crossing of Runway 16/34 ('the West Apron Crossing') or by the airfield perimeter roads. Use of the West Apron Crossing requires meticulous coordination and adherence to strict operating procedures to ensure safety and is coordinated between Airside Management Unit and Air Traffic Control. Using the perimeter roads entails an 8km perimeter journey which is highly inefficient in terms of managing airport operations, and results in increased travel time, fuel consumption, and vehicle emissions.

Use of the West Apron Crossing will become increasingly challenging on opening of the North Runway in 2022. Once in operation, Runway 16/34 will primarily operate as a taxiway, meaning the area currently used by the West Apron Crossing will increase, from aircraft accessing the North Runway. Accordingly, an underpass of 16/34 is required for both operational safety and efficiency reasons and is proposed between Pier 3 and the West Apron, see Figure 2.

If permitted, the Underpass will support segregation of vehicles from aircraft and enable a fast, reliable and safe crossing that is critical for both the continued use of the Airport.



Figure 2 Airfield Underpass

The project is strongly supported by IAA SRD as a critical safety project to enable operational safety both now and in the future.

The Underpass alignment near Pier 3 will result in the need for a reconfiguration of aircraft stands and access roads around Pier 3. Maintaining safe access from the pier to stands will require the installation of 3 no. fixed links with elevated walkways to safely cross over the new underpass ramp and head of stand road (HOS). This part of the project is referred to as the Fixed Links & Nodes.

The fixed links will span from the Pier 3 departures level and connect to three new node buildings situated on each stand. The fixed links will make use of current fixed link infrastructure connecting to the existing Pier along the same façade facets re-using the existing structural supports. The fixed links will be supported on columns positioned on either side of the tunnel ramp and HOS road, at up to 25m apart to allow for the maximum structural span of the links.

The Pier 3 layout will be altered slightly to accommodate the new stand arrangement to the North but will retain the existing layout to the South as no changes are required to the fixed links and gate lounges serving the existing stand arrangement. A new airlock will be constructed between the entrance / exits of the fixed links A and B. This will ensure full segregation of departing and arriving passengers.



Figure 3 Existing Pier 3 gate lounges serving the surrounding stands.

4.2 Key Contacts

Table 4.1 List of key contacts to the project element

Role	Organisation	Name	Contact Number	Contact Email
Client Rep	daa	Keith O'Hanlon	+353 87 9891 271	keith.ohanlon@dublinairport.com
PSDP	AECOM	Steve Powell	+10791855 2838	stephen.r.powell@aecom.com
Design Team	Ramboll (Underpass)	Andrew Hayden	+45 51612008	adrh@ramboll.dk
Design Team	Atkins (Fixed Links & Nodes)	Rob Jenner	+44 7803258980	Rob.Jenner@Atkinsglobal.com
PM	daa	Sean McBride	+353 1 944 2075	sean.mcbride@dublinairport.com

4.3 The Surrounding Environment

The development is located entirely on the airfield at Dublin Airport, adjacent to the Corballis Road South and Corballis Park Road in County Dublin.

Primary strategic road access to Dublin Airport is from the M50 via the M1 motorway. Road access to the airport is heavily dependent on the M1 Spur route and existing R132 roundabout. The existing airport internal road network consists of a one-way system, split with northern and southern routes.

Water-courses on and within the vicinity of Dublin Airport are identified in the figure below.

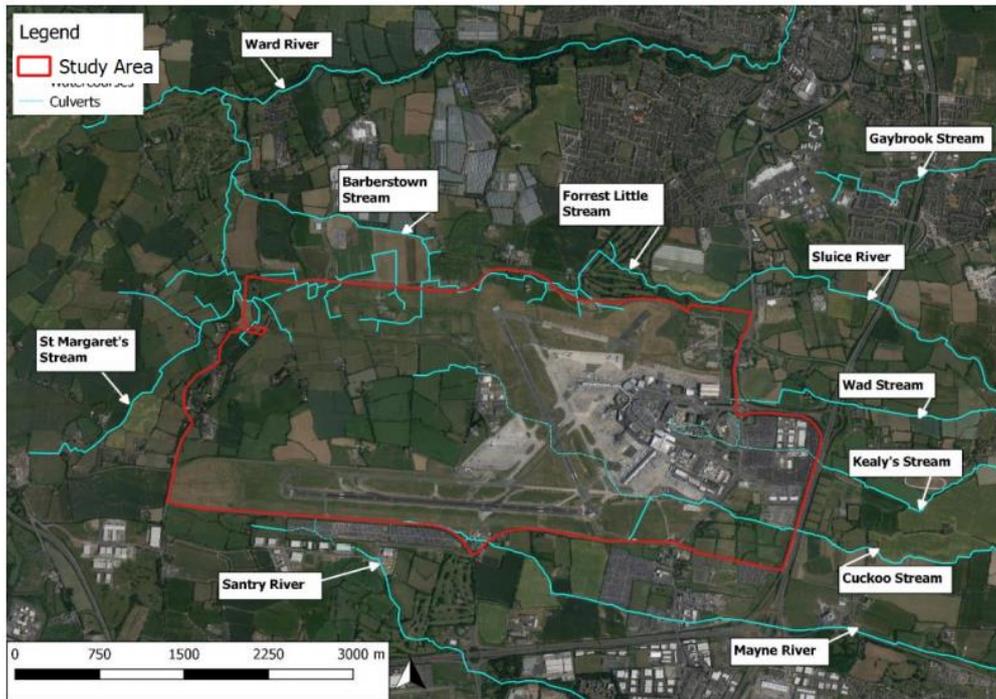


Figure 4 Water-courses

The following sensitive receptors have been identified within the vicinity of the site. There are currently no known archaeological sites within the site boundary. The only known protected species within the site boundary is the Irish Hare, for which a derogation license is held. When producing the detailed CEMP, the EIAR and associated surveys will have been undertaken to better inform the potential effects on any sensitive receptors identified and the planning conditions will have been determined. The detailed CEMP, developed by the contractor, will include protection and mitigation measures accordingly.

Table 4.2 Sensitive receptors at the Dublin Airport (for reference only)

Potential Impacts	Receptor Locations
Noise and vibration	Dwellings and other noise sensitive receptors. Noise Monitoring Terminal 21, north of the North Apron.
Construction traffic	Public road network. Haul routes on North Runway planning permission.
Flooding	Aircraft operating surfaces (Aprons, taxiways, runways)
Contamination	Water-courses, e.g., Airfield trunk culvert. Groundwater beneath the Airport.
Aviation safety (i.e., vibration, physical obstruction, interference)	Nav aids equipment. Radar. Obstacle Limitation Surfaces (OLS) for runways. ATC tower.

4.4 General Description of Works

The summary scope for the project considered in this report includes the delivery of the following:

1. Enabling works comprising service diversions and construction logistics facilities.
2. Temporary re-routing of some airport operations.
3. Civils works relating to the construction of the Underpass, ramps, portals and the plant room.
4. Mechanical, Electrical, Instrumentation, Control and Automation (M&E/ICA) Installations.
5. Reconfiguration of existing Pier 3 interface, West Apron interface and compound.
6. Associated infrastructure works including airfield and general services, surface water attenuation and pollution control. (Including safeguarding works for future airfield drainage projects).

Further details of this scope are described below.

4.5 Alignment and Dimensions

The proposed alignment is shown in the figure below. The Underpass consists of a twin cell enclosed section linked to the surface by two ramps, one at each end. The enclosed section of the Underpass is approximately 0.7 km long with the overall alignment being approximately 1.1 km in length from top of ramp to top of ramp.

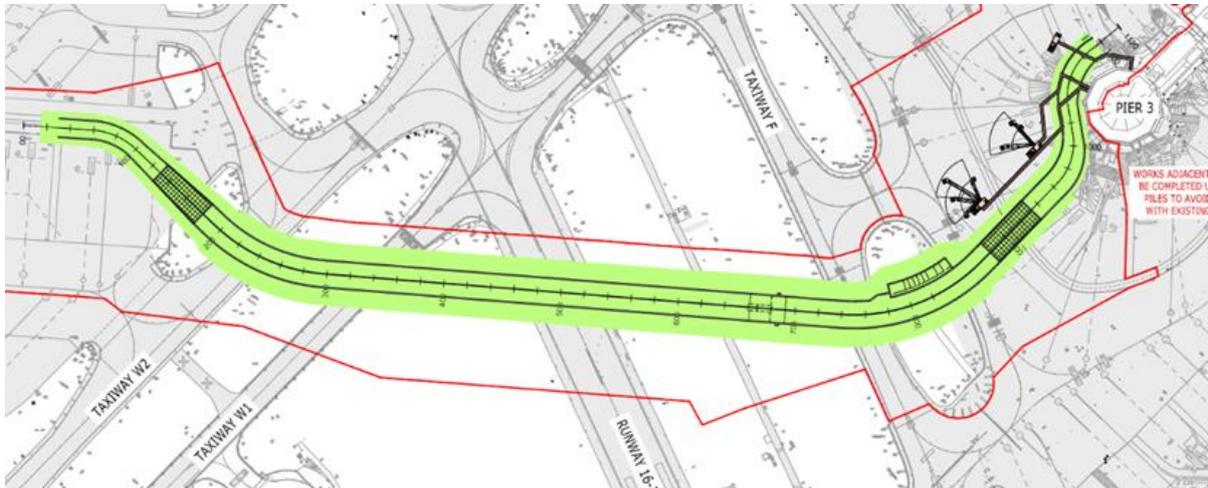


Figure 5 Proposed West Apron Vehicle Underpass Alignment

The West Ramp near the West Apron will transition from the enclosed section to a ramp at a portal located west of Taxiway W-2. From this point the ramp will continue to climb and turn to the left reaching ground level at the north of the West Apron.

The East Ramp near Pier 3 will transition from the enclosed section to a ramp at a portal located east of existing Taxiway F. From this point the ramp will continue towards the end of Pier 3 and wrap along the northern side, reaching ground level.

A typical cross-section through the twin cell cross-section is presented in Figure 6.

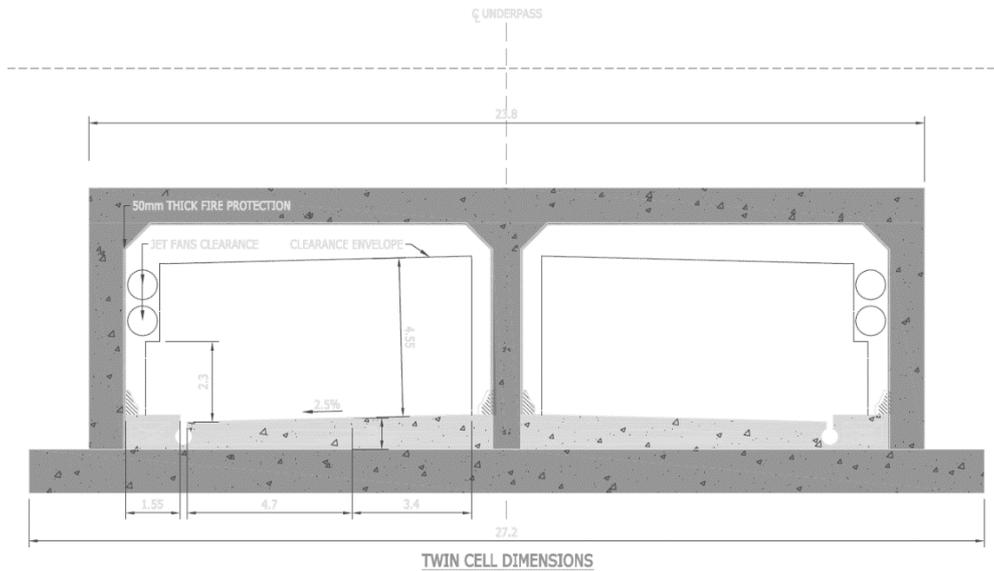


Figure 6 Typical Cross-Section of Twin Cell Tunnel – West Apron Vehicle Underpass

A plant room is proposed at the portal of the East Ramp. The individual compartments proposed in the plant room and their approximate floor areas are given in the table below. Including wall construction, the overall plant room is expected to have a floor area of approximately 640m².

Table 4.3 Plant room & floor areas

Plant Room	Approximate Floor Area (m ²)
Water Reservoir	100
Pump Room	30
HVAC Room	30
Control Room	30
Communication Room	30
UPS Room	30
Low Voltage Room	60
Medium Voltage Room	40
Transformer Room	50
Structures & Access Space	225
Total Area	625

A general arrangement plan is given in the Figure 7.

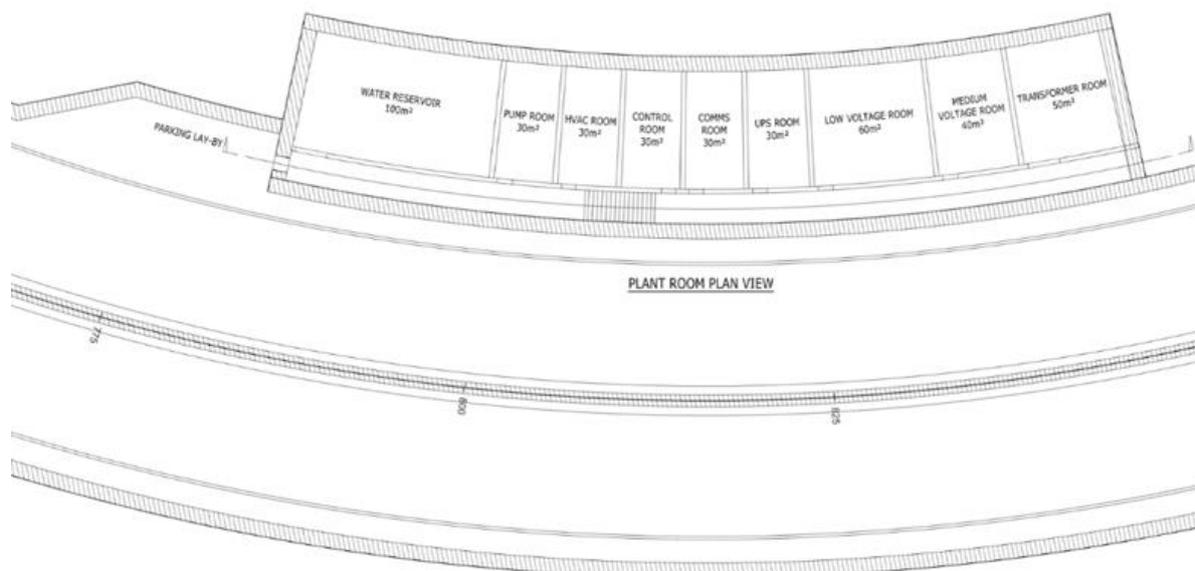


Figure 7 General Arrangement of Proposed Plant Room

4.6 Civil and Structural Works

For the proposed Underpass, the general civil and structural works have been defined to include the following activities:

- Excavation (including removal of existing paved areas and diversion of shallow utilities).
- Construction of concrete structures.
- Backfilling around and above the structure.
- Reinstatement of runway, taxiways and aprons (where applicable) including shallow utilities/AGL.

For construction purposes the overall Underpass structure will be subdivided into approximately 50+ segments. Construction of the segments will take place progressively in a staggered manner. Concrete casting for each segment may be done in two stages, firstly the floor slab and thereafter the walls and roof.

The figure below shows a typical cross-section through an Underpass segment during construction including benched excavation slopes.

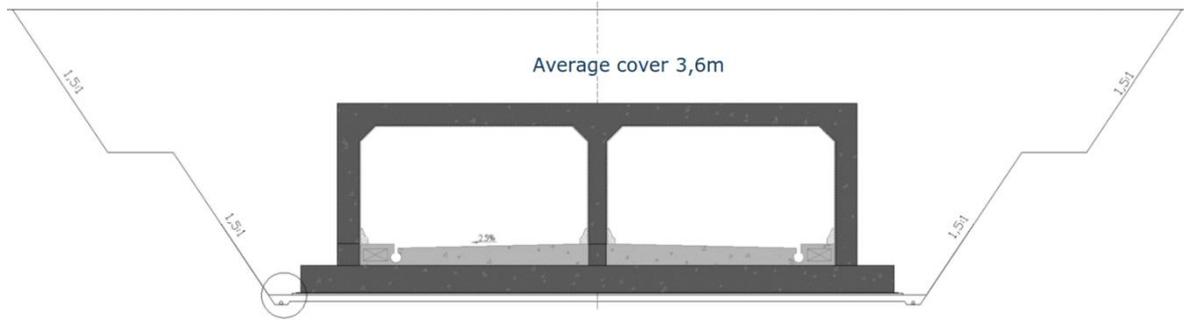


Figure 8 Typical Underpass Cross-Section including benched excavation slopes

4.7 Pier 3 Fixed Links & Nodes

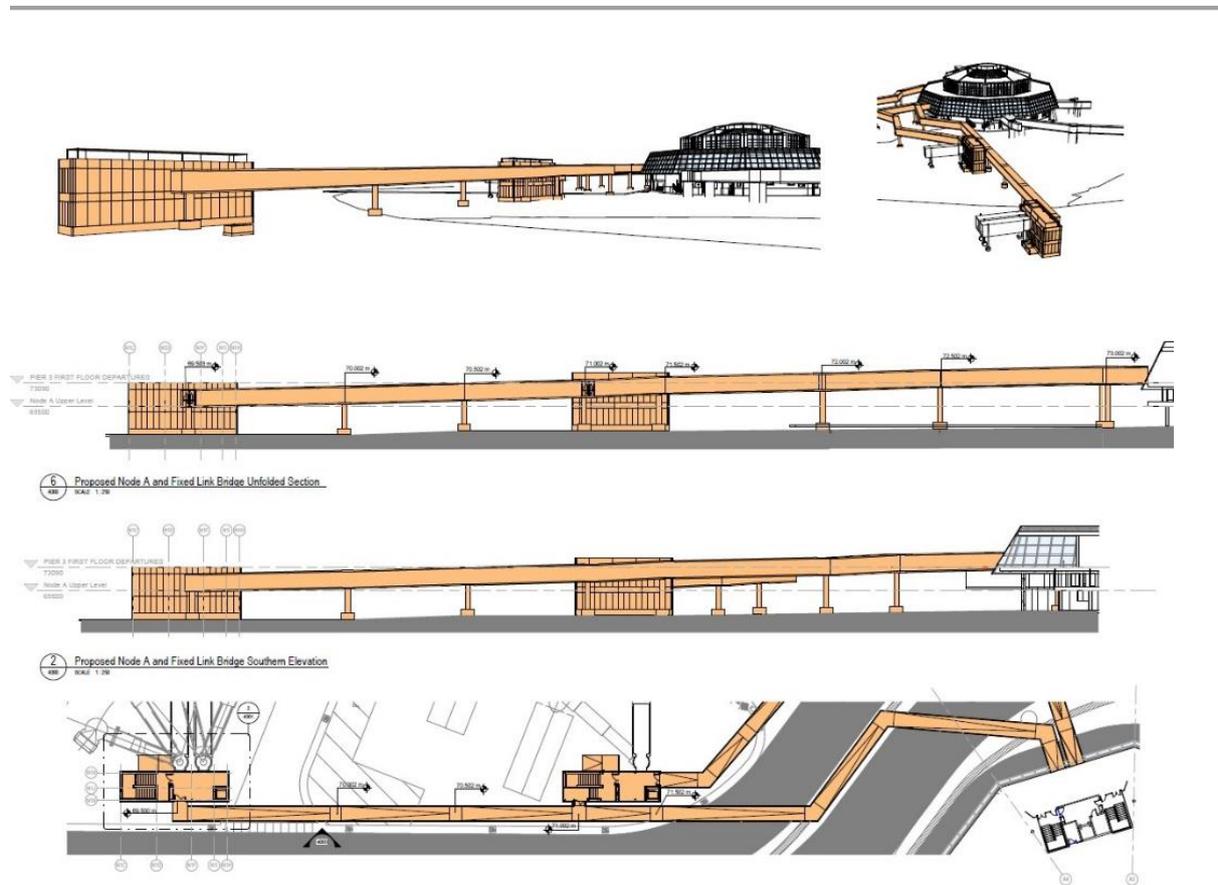
4.7.1 Link Bridges

The Underpass introduces an access ramp, portal and airside road positioned to the north of the Pier 3. The airside road connects with the existing airside road network adjacent to Terminal 1. This road requires a height clearance of 4.7 m for vehicles passing through the Underpass. Further impact on the apron includes a new re-aligned head of stand (HOS) road to the north of Pier 3, also requiring a height clearance of 4.7 m.

The stands to the north of the Pier have been reconfigured to include two Code E stands, is reconfigured as a MARS (Multiple Aircraft Ramp System) stand. The new inter-stand clearway roads between these stands require a height clearance of 4.4m. The existing stand arrangement to the South are retained with the exception of a realigned centreline for Stand 315L. The maximum number of NBE aircraft that can be accommodated at any time is reduced from 12 to 9. The maximum number of WB aircraft that can be accommodated at any one time is increased from 4 to 5.

The revised stand arrangement drives the need for new fixed links and nodes to connect the proposed stands to the Pier 3 decagon. The nodes are positioned in the most optimal location on the stand to serve the connecting airbridges and have the least impact on the operational stand activity. Space on the stands is highly constrained and therefore limits the size and location of the nodes.

Node A, serving two airbridges and parallel with the HOS road, is the further away from the Pier 3 decagon and requires the longest fixed link. Node B, serving one airbridge, is the middle node positioned parallel with the HOS road. Node C, located nearest to the Pier, does not provide jetty-service due to site constraints.



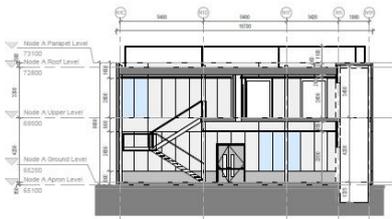
4.7.2 Nodes

The nodes are two storey rectangular buildings based on a modular planning grid of 1.8 m and a structural grid of 5.4 m. The node building structural frames are anticipated to be economically constructed using traditional braced steel frames with a concrete upper floor and light-weight roof.

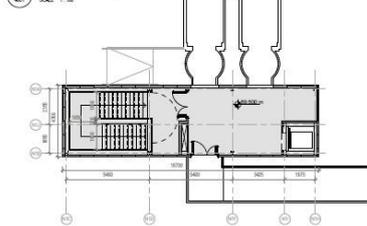
Node A is located furthest away from the Pier 3 decagon with a fixed link that is approximately 150m long. It is 16 m long, 4.7 m wide, 8.4 m tall and has a GIA of 157 m². Node A services two airbridges and has a rotunda height of 4.4 m high.

Node B is located in the middle of the three nodes and has a fixed link that is approximately 95m long. It is 15 m long, 4.7 m wide, 8.9 m tall and has a GIA of 154 m². Node B services one airbridge and has a rotunda height of 4.4 m high.

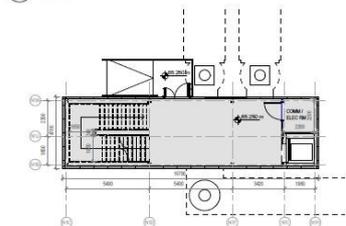
Node C is located nearest to the Pier 3 decagon and has a fixed link that is approximately 70 m long. It is 15.8 m long, 4.7 m wide, 9.2 m tall and has a GIA of 148 m².



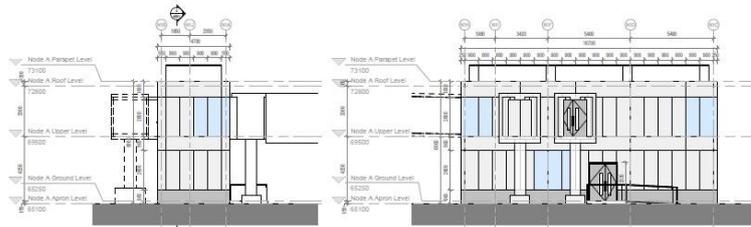
3 Node A - Section 1
SCALE: 1:50



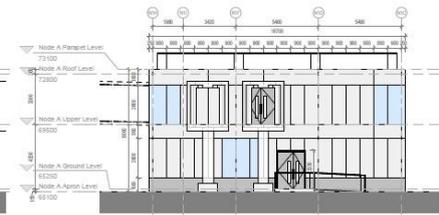
2 Node A - Plan - Upper Level
SCALE: 1:50



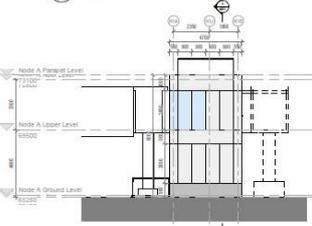
1 Node A - Plan - Apron Level
SCALE: 1:50



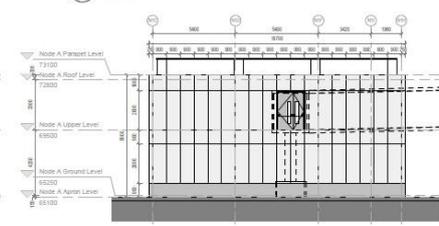
5 Node A - East Elevation
SCALE: 1:50



7 Node A - North Elevation
SCALE: 1:50

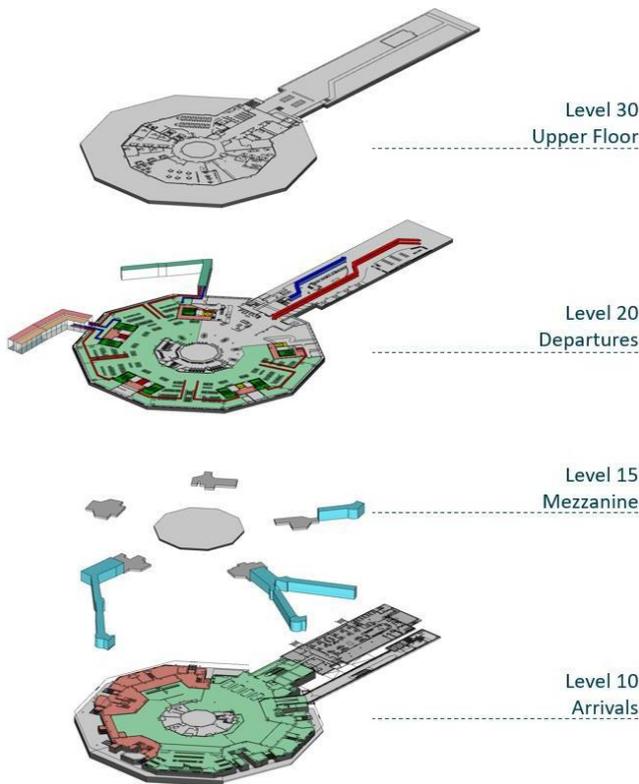


4 Node A - West Elevation
SCALE: 1:50



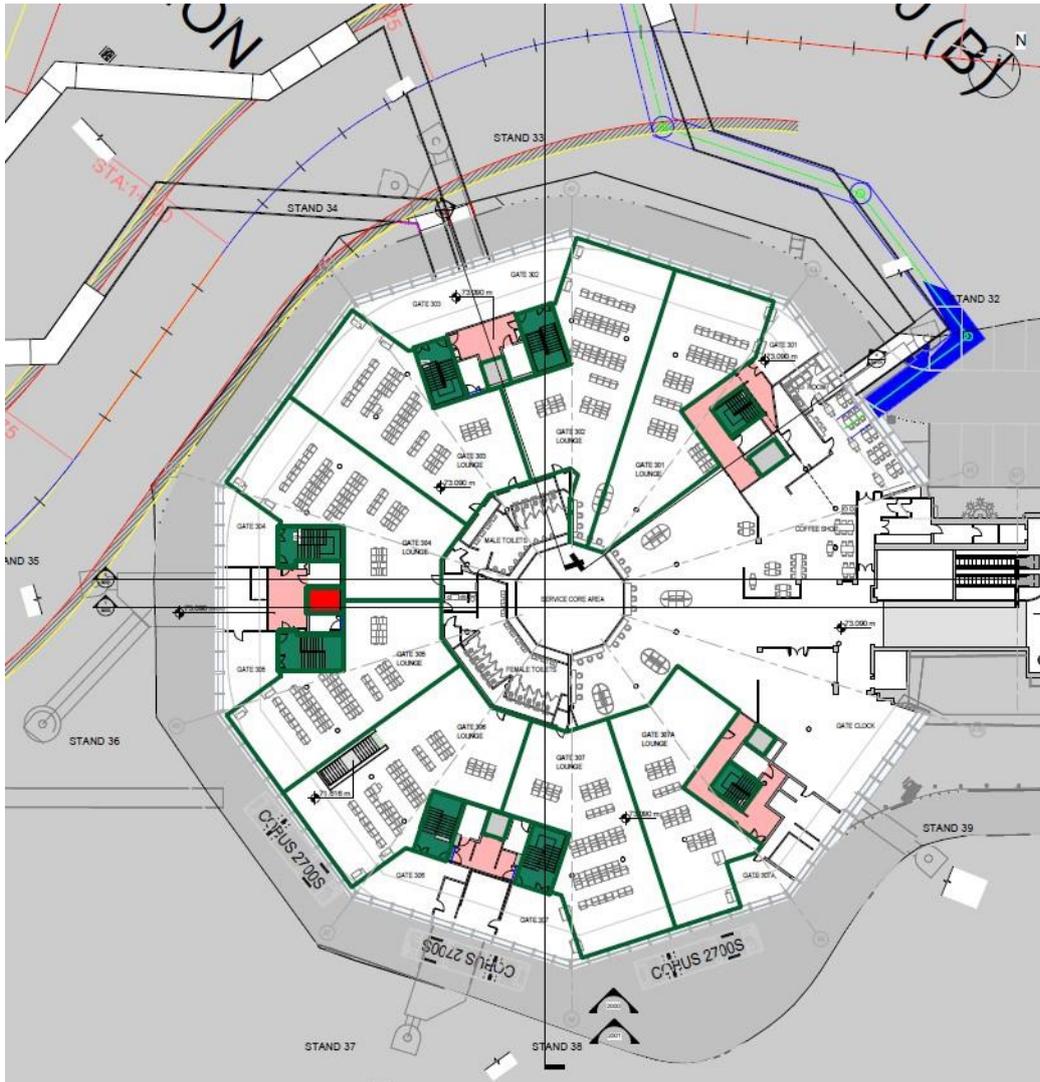
6 Node A - South Elevation
SCALE: 1:50

4.7.3 Pier 3 – Internal Layout



The Pier 3 decagon comprises of four levels including Level 30 office accommodation, Level 20 departure gates with open lounges, Level 15 mezzanine providing access to the fixed links and nodes and Level 10 arrivals immigration hall.

The new fixed links will connect and span from Level 20 where the departure gates are located. Fixed Link A will serve passengers from gate lounge 303, Fixed Link B passengers from gate lounge 302 and Fixed Link C passengers from gate lounge 301.



A new partition creating an airlock will be required between the entrance/ exits of Fixed Links A and B to ensure full segregation of departing and arriving passengers. Fixed Link C has been positioned to join the departures level where it has the least impact on the existing food and beverage concession. Due to the retained stand arrangement to the South, no changes are required to the fixed links and gate lounges serving these stands.

4.8 Drainage

4.8.1 General Drainage Works

The outline scope of the Underpass drainage works from Pier 3 to the West Apron includes:

- Clean surface water drainage;
- Potentially polluted surface water drainage; and
- Contaminated flow from fuel spillage or use of fire suppression system.

The proposed clean surface water drainage is designed to convey the rainfall generated within the underpass portals/ramps to the low point and sump pump system via combined kerb drainage. The flow will be pumped back up to surface level for discharge to the Airfield trunk culvert network via below ground attenuation tank and flow restriction set to match greenfield runoff rates (based on the open ramp catchment area). The pump will encompass emergency storage to ensure protection against failure of the pump system. The existing surface water catchments at ground level will be retained where possible with appropriate diversions provided to ensure the existing surface water regime is maintained at ground level. Drainage at ground level including Pier 3 and the West Apron will continue to discharge as existing to the Airfield trunk culvert.

Potentially polluted surface water drainage (by fuel spillage or fire events) will run through the same collection system as the surface water network and will pass through a fuel interceptor prior to discharging to the pumped network.

In addition to the fuel interceptor a fire suppression system will be installed within the underpass. This will include an automated valve system and separate contaminated storage tank. Should there be a major spillage event or fire, contaminated flow is to be diverted to the contaminated storage tank. The tank will then be emptied via a dry riser by a tanker at surface level.

The proposed design of the new drainage infrastructure includes the decommissioning and removal of existing infrastructure that will either be redundant or will be an obstruction to the provision of the new drainage system. The construction of proposed infrastructure and decommissioning of existing infrastructure will be phased such that there is no reduction in the total available storage volume of existing systems for either clean or polluted surface water runoff at any point during the project.

4.8.2 Airfield Trunk Culvert Diversion

Due to the location of the proposed Underpass it will be necessary to divert a section of the existing Airfield Trunk Culvert in the temporary case. The proposed diversion will be via temporary pipework and short-term over pumping. The Airfield Trunk Culvert Diversion report (ref. 1100040489--DIP-REP-4003) provides further details regarding the approach to the temporary diversion of this watercourse. For surface water protection measures see Section 13.

4.8.3 Drainage Masterplan Safeguarding Measures

The Drainage Masterplan (DMP) will be delivered under an incremental phased approach over several development cycles, after the delivery of the Underpass.

Several elements of the DMP follow a similar alignment to that of the Underpass from the west to the east of the airfield. This includes the proposed CW3 and WCP pipeline crossings of Runway 16/34, which have been identified by the DMP as essential elements of infrastructure to convey flows from future developments in the north-west of the airfield and the west of the airfield respectively. It is therefore proposed to construct these sections of pipeline as part of the Underpass Project in order to avoid repeat construction along this route in future.

4.9 Construction Materials

All construction materials shall be responsibly sourced. In procuring responsibly, daa seek assurance that goods and services are legitimately secured from legal and well-managed sources and from suppliers and contractors who can demonstrate responsible sourcing of their materials.

- The project element contract and procurement procedures will be developed to ensure that aggregates are sourced from reputable sources.
- All potential suppliers will be vetted for their environmental management status and regulatory and legal compliance.
- The source of imported fill material will be carefully selected and vetted to ensure that it is of a reputable origin and that it is 'clean' (i.e., will not introduce contamination to the environment). To the extent possible, material excavated from site will be re-used to minimise the volume of imported fill.
- If recycled aggregate is used as imported fill, rigorous chemical testing will be undertaken to confirm that it is 'clean' (i.e., will not introduce contamination to the environment).

- Pavement demolished on site as part of the works may potentially be taken off site to a dedicated facility, tested for contamination, crushed, and brought back to be reused in the construction works.

An estimate of construction material quantities is given in the table below.

Table 4.4 Construction materials estimates

Description	UoM	Quantity
Concrete (Underpass)	m ³	75,600
Concrete (Fixed Links & Nodes - Including Node A, B, C and Fixed Link Foundations)	m ³	755
Reinforcement bars (Underpass)	tonnes	12,100
Steelwork (Fixed Links & Nodes – Including Node A, B and C)	tonnes	50
Asphalt (Underpass)	m ³	16,900
Asphalt (Taxiways & Aprons)	m ³	3,300
Pavement Quality Concrete (Taxiways & Aprons)	m ³	7,600
Granular fill (Taxiways & Aprons)	m ³	10,400
Granular fill (Underpass)	m ³	11,200
Imported Backfill	m ³	200,000
Reused Site-won Backfill	m ³	70,000
Cladding (Fixed Links & Nodes)	m ²	818
Glazing (Fixed Links & Nodes)	m ²	118
Lifts (Fixed Links & Nodes)	No.	3
Staircases (Fixed Links & Nodes)	No.	3

Given the nature of the site, a significant part of existing pavements demolished to allow construction of the Underpass will need to be eventually reconstructed in the same location. Pavement demolition material may potentially be reused to reconstruct the new pavement. The extent of re-usability will be determined during the works. Any such material will be carefully processed to ensure that no contamination is released to the environment.

Monthly Environmental Reporting is required on a number of parameters, in line with daa Sustainability goals and environmental management.

Estimates of monthly water consumption based on key materials and activities will be developed for general construction activities. Monthly environmental reporting will be completed to record water consumption and report on this as required.

4.10 Plant, Machinery and Equipment

At each phase of the project the plant, machinery and equipment on site will be recorded. The noise levels of this plant, machinery and equipment will be controlled by risk assessments and method statements to ensure it does not exceed noise restrictions. The operational airfield is a high noise environment, however, during quieter periods (night-time) construction plant, machinery and equipment will have a greater impact to overall noise levels.

Where available, alternative energy sources should be used which reduce fuel consumption, fuel handling risk, carbon emissions and noise levels.

Mobile concrete pumps will be used for casting the structural concrete floor, wall and roof-slab.

Mobile cranes may be used for certain activities during the project.

Use of all equipment shall comply with all Dublin Airport Directions for works in and around the Aerodrome and Guidance Documents for construction works at Dublin Airport.

Given below is a list of typical construction plant that may be used in construction works for the Project.

Removal of existing runway and taxiway:

- Excavator.
- Cold planer.
- Dump truck.

-
- Wheel loader.
 - Soil compactor.
 - Grader.

Underpass excavation works:

- Hydraulic excavators.
- Dump trucks.

Underpass construction:

- Telescopic cranes.
- Concrete mixer pumps.
- Concrete mixer trucks.
- Trailers – supply materials.
- Mobile elevating work platforms.

Underpass backfill:

- Excavators.
- Dump trucks.
- Soil compactors.
- Tractors + water tank.

Underpass end wall:

- Piling rigs.
- Generators.
- Trailers.
- Wheel loaders.

Underpass pavement:

- Road sweepers.
- Bitumen sprayer truck.
- Asphalt paving machines.
- Dump trucks.
- Rollers.

Runway/taxiway reconstruction:

- Road sweepers.
- Bitumen sprayer truck.
- Asphalt paving machines.
- Dump trucks.
- Rollers.

Fixed Links & Nodes:

- Cranes
- 40ft and flatbed trucks
- Drilling and concrete cutting / breakout machinery
- MEWPs
- Scaffolding
- Temporary external lifts for construction activities
- HIABs

5 Phasing and Programme

Construction works will be undertaken in a phased manner with the primary aims of minimising risks to aviation and minimising disruption to airport operations. daa has undertaken an initial airfield phasing study (included in planning pack) which examines the technical feasibility of the airfield construction works and identifies measures to:

- Minimise risks to aviation safety.
- Maintain minimal aircraft stand loss during construction.
- Enable as much work as possible to be constructed landside.
- Enable the works to be constructed as effectively and efficiently as possible, in order to reduce costs and minimise construction risks.

Key milestone dates estimated for the project are included in the table below:

Table 5.1 Key Milestone Estimated Dates.

Key Milestone	Estimated Dates
Mobilisation & enabling works.	Q4 2022 – Q1 2023
Construction	Q1 2023 – Q2 2024
Tunnel fit-out	Q3 2024 – Q1 2025
Testing & Handover	Q2 2025 – Q4 2025

The contractor will be required to develop a detailed phasing strategy and programme, to be agreed with daa. It is currently assumed that the project is delivered through a Design & Build process. All dates given above are subject to change during the procurement process.

Refer to the Construction Methodology Report (1100040489-TUN-REP-1017) for further information about phasing and programme.

6 Roles, Responsibilities & Communications

6.1 General

All project stakeholders have a responsibility to protect the environment. Assigned environmental roles and responsibilities are described in the *Airport Direction D-O Environment and Pollution*.

The following section describes the main responsibilities of relevant stakeholders with regards to the development of this Preliminary CEMP. Responsibilities are not limited to the below and each stakeholder is responsible for all their Environmental duties according to the law.

6.2 The Client

The Client (daa) will be responsible for keeping Environmental Policies, general procedures and other organizational process assets, such as templates, up to date and in conformance with the current Environmental legislation. It will also be responsible for communicating effectively any updates and changes proposed to the process of Environmental compliance for projects carried out in the Airport Campus. The client representative will be responsible for checking that the appointed contractor and all sub-contractors and suppliers adhere to the environmental protection measures and best practices outlined in this CEMP, as well as complying with the mitigation measures expressed within the EIAR and planning conditions. An Ecological Clerk of Works (ECoW) will be consulted on any ecological issues.

6.3 Project Owner

The Project Owner (daa representative) will be responsible for managing and overseeing the development of this Preliminary CEMP and making sure it accounts for all information and required inputs from relevant stakeholders. The Project Owner will also be responsible for keeping this document up to date with changes to the project and monitor the development of this live document as it advances through the project life cycle.

6.4 Designers

Designers will be responsible for demonstrating Environmental Due Diligence in their designs and assessing any environmental risks in so far as reasonably practicable with the information available. Design shall be carried out to a level of detail that supports the development of this Preliminary CEMP.

6.5 Contractor

Contractors and sub-contractors are responsible for further developing the CEMP for their works in accordance with this document, the relevant general policies created by daa, daa's standard contract documentation (specifications, appendices and airport directions) and any associated planning conditions imposed to the project.

They will be responsible for implementing all documented procedures within the CEMP and provide resources to monitor and control the implementation.

The contractor's designer will prepare the RWMP in accordance with Section 15.

The contractor's environmental manager will establish and continually review systems, procedures, specifications and approvals to satisfy all stakeholders and effectively implement the CEMP.

6.6 Audits & Inspections

Periodic inspections of the construction works will be conducted to address issues including dust, litter, noise, traffic, surface water, waste management and general housekeeping.

These inspections will be conducted by the appointed contractor (by a project dedicated environmental manager if needed) and shall be documented and provided to the Project Owner on a monthly basis.

daa or its appointed consultants shall also reserve the right to carry out audits, inspections, monitoring and/or spot checks of the Works and any systems being implemented both on-site and off-site in connection with the Works to ascertain whether they comply with the requirements of this document and the contractor's detailed CEMP.

Findings raised as a result of these audits shall be recorded in Corrective Action Requests (CARs). These shall be issued to ensure prompt action is agreed and committed to with a view to the effective resolution of any deviations from the CEMP requirements or any environmental issues.

Key Performance Indicators (KPIs) will be established within the contract documentation. This will include monitoring and reporting data on energy consumption, water usage, waste generation and diversion from landfill to demonstrate responsible environmental management on site. KPIs will be developed by the contractor to feed into the objectives of the detailed CEMP.

6.7 Communications, Liaison and Complaints

daa will appoint a dedicated liaison (e.g., the Project Owner or an alternative stakeholder manager) who will act as coordinator with the contractor and all internal and external stakeholders unless agreed otherwise. This includes liaising with passengers, members of the public and the local community and statutory authorities where relevant.

All communications with stakeholders shall be cleared with daa in advance. The contractor shall provide all necessary information, details and records to facilitate the role of the daa liaison including briefing packs where required.

The contractor shall detail their procedures and timescales for recording, acknowledging, investigating and responding to complaints and who is responsible for the same. The dedicated daa liaison will review the procedure and agree protocols for implementation for these Works.

6.8 Non-Conformances & Non-Compliances

Environmental Observations, Non-Conformances and/or Non-Compliances will be identified through audits and inspections by the contractor, daa or their agents or reports of non-compliance received from enforcement agencies (EPA, Local Authority).

All environmental observations, incidents and near-misses shall be recorded within 1 hour initially by phone or email followed by a preliminary written report within 24hrs and the necessary stakeholders notified accordingly. The timeframe for close-out shall be agreed at the outset of the project between daa and the contractor and full details shall be recorded and any issues suitably addressed within the agreed timeframe. Good practices should also be recorded.

In the event of an emergency incident occurring, the contractor's environmental manager will be required to investigate and provide an incident report to daa including a description of the incident, contributory causes, negative impacts, notification to relevant parties, mitigation measures implemented and recommendations to prevent re-occurrence. daa's dedicated liaison and the contractor's project manager shall be notified immediately in the event of such an incident occurring.

Refer to *daa Construction Contractors Health & Safety and Environmental Rules for Working on daa Infrastructure Manual* for further guidance on this matter.

Further detail on penalty clauses for environmental non-conformances and non-compliances will be included in the construction contract once a contractor is appointed to carry out the works.

6.9 Permits and Licensing

All projects shall have the required permits and licenses identified and planned before the start of the construction works. Refer to *daa Construction Contractors Health & Safety and Environmental Rules for Working on daa Infrastructure Manual* for guidance on some of the work permits required.

6.10 Health & Safety

Health and Safety are at the forefront of daa priorities. Contractors, designers and other construction stakeholders shall comply with all the rules and take on board all recommendations outlined in the *daa Construction Contractors Health & Safety and Environmental Rules for Working on daa Infrastructure Manual*.

daa will ensure that the appointed PSDP has prepared a Preliminary Health and Safety Plan as required by Regulation 12 of the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013), to identify exceptional features of design and construction affecting Safety and Health on daa projects based on information provided by designers, daa and by reference to the contract documentation. The information presented in the Preliminary Health and Safety Plan will assist the PSCS in the further development of the Safety & Health Plan as required by Regulation 16 of the Safety, Health & Welfare at Work (Construction) Regulations 2013, prior to commencement of works on site.

7 Working Hours and Construction Numbers

7.1 Working Hours

Working hours on the Dublin Airport campus will take place 24/7. Work will be carried out on day shifts as far as possible however a considerable part of the works is expected to be undertaken during night shifts to minimise disruption to airport operations. Sunday, Public holidays and night shift working are subject to acceptance in advance by the daa Project Owner and local authority.

A Noise Management plan will be required for all night works including plant details and scheduling of works.

Contractors shall also abide by the Organisation of Working Act Time in relation to working hours.

7.2 Construction Numbers

The total number of construction operatives on-site will vary throughout the duration of the project. Based on preliminary staging, the number of people employed during construction is expected to peak at approximately 178 site operatives. An overview of the peak number of operatives throughout the project timeline is shown in the figure below.

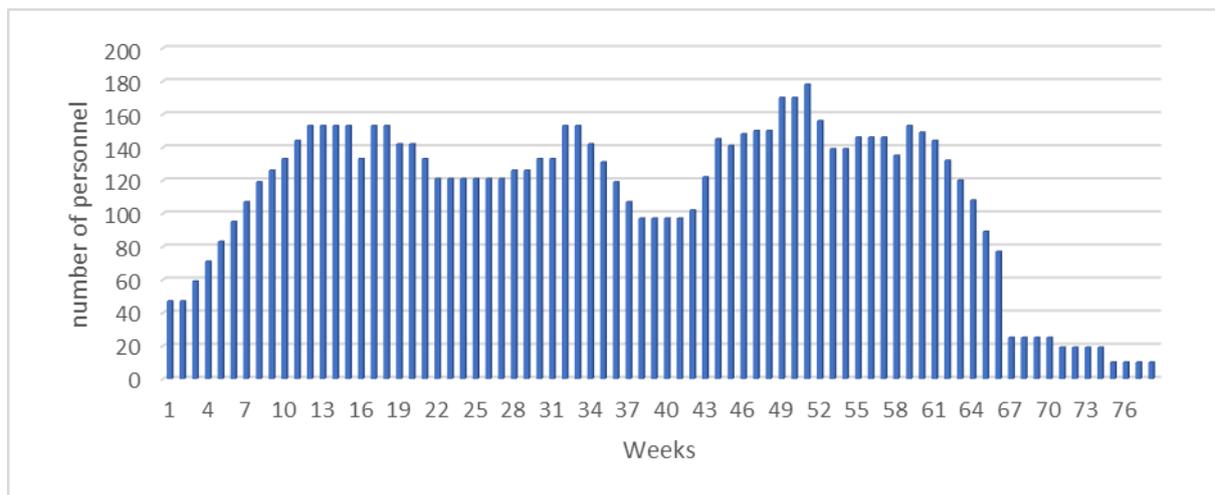


Figure 9 Estimated peak number of daily operatives on site

8 Compound & Material Storage Locations

8.1 Compound Location



Figure 10 Compound locations overview

Proposed construction compound and material storage locations will be developed in coordination with the EIAR Consultant AECOM. Anticipated compound locations are indicated in Figure 10.

The **West Apron Compound** will be where all stockpiling and material processing will take place. Any concrete crushing or batching would take place at this compound. The compound will contain site offices and storage of materials moved in from the Western Compound.

The **Western Compound** is intended to be used for pre-screening of incoming materials which are mostly stored off-site, and for parking for operatives. The **Southern Compound** is intended for use as an additional standing area for vehicles to avoid any queuing on the roads awaiting access to Gate 9.

Where possible construction works should be carried out landside rather than airside for efficiency. However, it is currently assumed that the works for Underpass are undertaken in an airside environment.

9 Ecology & Wildlife Management

9.1 General

Contractors working at Dublin Airport shall comply with the Airport Direction *D-O Wildlife and Habitat Management* and demonstrate in their CEMP how they will comply with the mandates of this document in relation to construction works and control of Wildlife. A wildlife management plan will be required to document how casualties will be avoided. Wildlife hazard management applies to:

- Lands contained within the aerodrome fence.
- Dublin Airport lands which are leased for agricultural purposes.
- Other lands within a thirteen-kilometre (or eight mile) radius of the Aerodrome Reference Point.

The West Apron and Central Area are operational areas of pavement or grass strip and are not considered to be areas of significant habitat.

9.2 Bird Hazards

The Irish Aviation Authority, through the regulatory requirements of the European Aviation Safety Agency (EASA), require the aerodrome operator to establish means and procedures to minimise the risk of collisions between wildlife and aircraft at the aerodrome.

Birds can cause damage to aircraft through bird strikes, therefore the contractor shall take all possible precautions, for the duration of the contract, to avoid the possibility of birds feeding, loafing or roosting on the Works or associated compounds.

The contractor shall take whatever steps are necessary to ensure that all potential edible waste, i.e., food waste, is disposed of in such a way as to completely prevent access by birds. Suitable bird-scaring techniques shall be employed during construction work.

All litter including waste-paper shall be disposed of in the same way. Sources of food such as waste bins and skips are required to be covered to exclude birds and other wildlife.

All construction work shall be managed to limit the period in which bare earth is exposed, with every effort to re-establish grass growth as quickly as possible in disturbed area.

9.3 Noxious Weeds and Non-Native Invasive Plant Species

Early identification and management of noxious weeds and non-native invasive species can significantly reduce the resources needed to minimise the spread of these species.

Most of the lands owned by Dublin Airport are either developed areas dedicated to Airport operations, brownfields or managed greenfields by a dedicated landscape and operations team. These lands have a low probability of presence of noxious weeds and non-native invasive plants. Other lands are leased greenfield sites with a potential risk to having unidentified plants.

To comply with current legislation and prove commitment to the National Biodiversity Plan, Dublin Airport takes a proactive approach to controlling Noxious Weeds and Non-Native Invasive Species.

The figure below shows a location of identified, managed and controlled Japanese knotweed on Dublin Airport lands and surroundings.



Figure 11 Identified, managed and controlled Japanese knotweed on Dublin Airport lands and surroundings

If the construction site is classified as having a potential risk for the presence of Noxious Weeds and Non-Native Invasive Species, the appointed contractor will be asked to carry out a habitat mapping exercise of the site. If the potential risk still exists, the contractor will plan an effective control or eradication program by following the steps outlined by Invasive Species Ireland “Invasive Plant Management” (<http://invasivespeciesireland.com/invasive-plant-management/>). Contractors shall consult with the National Parks and Wildlife Service in advance of undertaking any treatments for such plant species.

10 Construction Traffic

10.1 General Requirements

Movement of excavated material from site, and deliveries of construction materials to site have the potential to generate large numbers of lorry movements that will cause disruption to the local communities and businesses. Construction Traffic on daa sites shall be managed following the rules and recommendations included in:

- Daa Construction Contractors Health & Safety and Environmental Rules for Working on daa Infrastructure Manual.

The contractor shall develop the Construction Traffic Management Plan (CTMP) to minimise the risk that people are negatively affected by construction traffic and/or traffic diversions during the construction of these works.

The contractor is particularly required to prepare traffic management plans for the following situations:

- Large/high volume deliveries and removal of materials.
- Construction works requiring traffic management to facilitate utility/drainage connections.
- Construction phases which re-configure existing traffic flows to facilitate the Works.
- Where necessary to facilitate crane lifts and swings.

Given the context of the works within the airfield, the first situation listed above is considered to be the most significant impact of the Underpass works on the public road network.

10.2 Site Access Routes

During construction, access to the compounds and construction zones will be via existing access gates at the airfield. The proposed access points are shown for each phase in the figures below.



Figure 12 Site Access & Haul Routes Phase 1 (Pre-closure of Runway 16/34)



Figure 13 Site Access & Haul Routes Phase 2 (During closure of Runway 16/34)



Figure 14 Site Access & Haul Routes Phase 3 (Post closure of Runway 16/34)

Given the importance of these roads to Dublin Airport the contractor will need to coordinate all deliveries with appointed daa liaison so as not to delay passenger journeys.

The contractor shall note that Dublin Airport operates 24 hours/day, 365 days/year, and that there will be ongoing live airport operations around the Works at all times. No interruption or disruption to Dublin Airport's operation or impact on passengers' travel journey will be permitted unless expressly agreed with daa in advance. Dilapidation surveys will be undertaken on all construction access routes.

10.3 Construction Traffic Generation

HGV traffic is expected to peak at around 1900 vehicles/week.

The majority of excavation and casting works is expected to take place outside of the airport's daily operational hours. Construction traffic generation is expected to intensify during the night.

Construction traffic will vary throughout the project. Estimated total truck movements in each week are shown in the figure below.

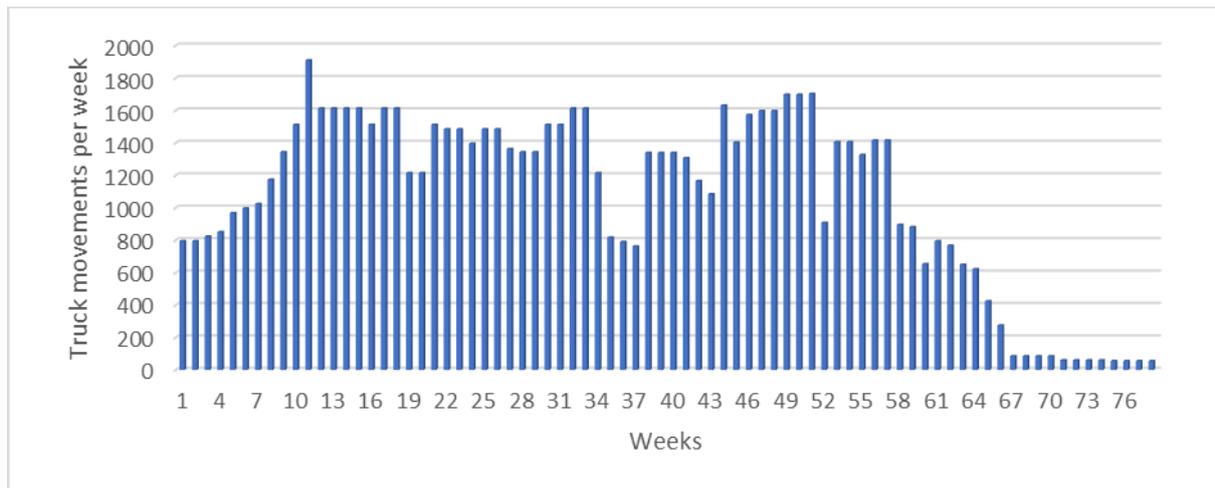


Figure 15 Estimated weekly truck movements

The contractor shall agree all deliveries with daa and implement any timing restrictions or measures to ensure no impact on the operations of Dublin Airport.

10.4 Traffic Management

All Traffic Management at Dublin Airport shall comply with the following general procedures:

- DAA Temporary Traffic Management Requirements Specification Covering High Risk Works.
- DAA Standard Traffic Management Plans Covering Low and Medium Risk Works Requiring Traffic Management.

All traffic management plans shall be designed by a competent person and installed in accordance with the latest edition of Chapter 8 of the Traffic Signs Manual as published by the Department of Transport.

Prior to implementation of any traffic management within Dublin Airport, the traffic management plan is to be submitted in accordance with the Permit to Work system to daa for approval.

The traffic management system, when approved, is to be implemented and supervised by a competent person holding a CSCS card for Signing, Lighting and Guarding (SLG) at Roadworks and when this person is not on site there shall be at least one person who has completed the Health and Safety at Roadworks Construction Skills Certification Scheme.

Regular audits of the installed traffic management are to be carried out by the designer and the SLG operative.

From the beginning of construction works, the contractor will be responsible for the provision of competent traffic marshals for the safe management of sub-contractor deliveries and to limit disruption to the general public and surrounding properties. They will wear full and distinctive high-visibility suits and have attended an appropriate training course for this activity.

The contractor shall have undertaken consideration of the six primary issues that affect traffic and road movements, these being:

- Maintaining a good neighbour policy.
- Maintaining site security.
- Vehicle- pedestrian segregation and manoeuvring of vehicles.
- Delivery co-ordination.
- Loading and storage.
- Delivery times.

11 Site Access Control and Security

Site access control and security shall be managed as specified in the *daa Construction Contractors Health & Safety and Environmental Rules for Working on daa Infrastructure Manual*.

The contractor will be required to provide the following site access and control measures:

- Employees to receive induction for working at the airport.
- Security/gatemen on all access points to the works and associated compounds to prevent unauthorised entry.
- All employees to have a unique identification badge with photograph and register to be maintained of all employees actively working on this site.
- A record of all deliveries to and removals from the site to be maintained and made available to daa on request.
- Access to the site will be managed by the deployment of Security Officers at key access points situated around the perimeter of the site with the assistance of an access control system utilizing turnstiles and barriers/bollards.
- A traffic marshal will be located at the delivery vehicle entrance to control the movement of vehicles coming in from the site access points.
- Note, the contractor will be responsible for cleaning and where necessary remediation arising from any deliveries to or plant/trucks leaving the works which occur on airport or public roads. The contractor will be required to issue a detailed Site Waste Management Plan (SWMP) in line with the daa SWMP and will cover the protocol for all spills and environmental incidents.

12 Noise & Vibration Management Plan

12.1 General Requirements

The contractor shall comply with the contents and recommendations outlined in the *daa Construction Contractors Health & Safety and Environmental Rules for Working on daa Infrastructure Manual* in relation to noise and vibration.

The contractor shall comply with the contents and recommendations of BS 5228 – 1:2009 + A1:2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise & Part 2: Vibration.

The contractor shall develop the CEMP that demonstrates how they comply with the above and how they suggest to minimise the risk that people and wildlife are negatively affected by noise and/or vibration during the construction of these works. This section should be read in conjunction with relevant chapter of the EIAR when applicable.

12.2 Noise

The contractor shall ensure that each item of equipment complies with the noise limits quoted in the European Commission Directive 2000/14/EC. All plant used on the works shall be the quietest of its type, practical for carrying out the work required and shall be maintained in good condition with regard to minimising noise output. All plant shall be operated and maintained in accordance with the manufacturer's recommendations including the use and maintenance of any specific noise reduction measures.

The contractor shall employ all necessary measures to control noise (and vibration) including, but not limited to:

- Programming of particularly noisy activities to less sensitive times of the day such as late morning or early afternoon, with planned respite breaks.
- The use of mufflers / silencers on pneumatic tools.
- The use of effective exhaust silencers on all items of plant, all diesel engine powered plant shall be fitted with effective air intake silences.
- The use of non-reciprocating plant.
- Machines which are used intermittently shall be shut down or throttled back to a minimum during those periods when they are not in use.

-
- Locate equipment liable to create noise and/or vibration whilst in operation away from sensitive receptors and use acoustic barriers to absorb and/or deflect noise away from noise sensitive areas.
 - The contractor shall not operate any defective equipment or items fitted with noise control equipment until repaired.
 - The contractor shall give preference to fixed items of construction equipment that are electrically powered rather than diesel or petrol driven.
 - The contractor shall house static noise emitting equipment operating continuously within suitable acoustic enclosure.
 - The contractor shall use the 'drill & burst' (coring holes followed by breaking up area with hydraulic splitters) method of breaking out concrete/asphalt/hard stands where practicably possible. Use of a Vacuum Excavator (Vac-Ex) is also favoured over traditional excavation methods.
 - Compressors shall be of the 'sound reduced' models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use.
 - The contractor may be required to install noise shielding around particularly noisy tasks or between the works and sensitive receptors.

The contractor shall regularly inspect the works to ensure that all necessary measures are taken to mitigate and control construction noise and vibration. The contractor shall submit weekly inspection sheets to daa for review.

The contractor shall be responsible for the measurement and control of the noise levels on and adjacent to the Works. The contractor shall supply, construct, maintain, move or remove such equipment or structures as may be necessary to enable the 24-hour measurement of noise levels on or adjacent to the site and to comply with the noise limits given in Table E.1. The noise levels in Table E.1 are the maximum permissible noise levels at dwellings / noise sensitive receptors during construction. Control stations shall be established as a minimum in the vicinity of noise sensitive buildings. The contractor shall liaise with daa for their requirements in this regard and the frequency of accessing and reporting this data, which may also be required as a planning condition. The location of the control stations shall generally be outside the Works and within the airport boundary fence and the contractor shall obtain all necessary permissions from the daa liaison for such stations.

In circumstances when the existing noise levels experienced at receptors exceed the values in Table E.1 a baseline noise level will need to be established. Baseline noise measurements shall be undertaken to establish ambient noise levels. Unattended baseline monitoring should be completed prior to any works being undertaken at sensitive receptors to establish a threshold for significant effect according to the BS 5228 ABC Assessment. This threshold will then supersede Table E.1 and will be the noise level that cannot be breached unless agreed with daa in advance.

Assessment category and threshold value period	Threshold value, in decibels (dB) L_{A1} ($L_{Aeq,T}$) L_{A1}		
	Category A ^{A)}	Category B ^{B)}	Category C ^{C)}
Night-time (23.00–07.00)	45	50	55
Evenings and weekends ^{D)}	55	60	65
Daytime (07.00–19.00) and Saturdays (07.00–13.00)	65	70	75

L_{A1} NOTE 1 A potential significant effect is indicated if the $L_{Aeq,T}$ noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level.

NOTE 2 If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due to site noise. L_{A1}

NOTE 3 Applied to residential receptors only.

^{A)} Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

^{B)} Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

^{C)} Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

^{D)} 19.00–23.00 weekdays, 13.00–23.00 Saturdays and 07.00–23.00 Sundays.

Figure 16 Example noise thresholds and their impacts on buildings

Following the above survey, the contractor together with daa shall identify potential sensitive receptor locations. The contractor shall develop a noise monitoring programme taking the above into account, including; monitoring locations, whether attended (and frequency for same) or unattended (continuous) monitoring, define how data will be presented, how comparisons with thresholds will be provided and timescales for the provision of reports. Reports are to be submitted within two (2) days of a request and with seven (7) days of the end of the related works. A reporting template should be provided as an appendix to the Noise Monitoring Report. The contractor shall submit their monitoring programme to daa for acceptance as part of the CEMP.

All measurements shall be carried out using current best practice and shall adhere to the relevant guidance on monitoring set out in the Annex G of BS 5228-1 [1].

The contractor shall:

- Retain all noise monitoring results (tabulated in electronic format) for at least 6 months after the contract end date; and provide data to daa within two (2) days of a request and within seven (7) days of the end of the related works.
- Maintain an inventory of all noise and vibration monitoring equipment.

Measurements of noise levels shall be undertaken with sound level measuring equipment conforming to BS EN 61672-1:2013 (IEC 61672-1), Class 1. Equipment should be periodically tested in accordance with BS EN 61672-3:2013. The sound level meter shall be capable of real-time analysis giving statistical levels measurements and measure LAeq, LAm_{ax} and LA90 as a minimum. All monitoring equipment shall be calibrated by a UKAS approved (or equivalent) test laboratory every twelve (12) months and have test certificates available.

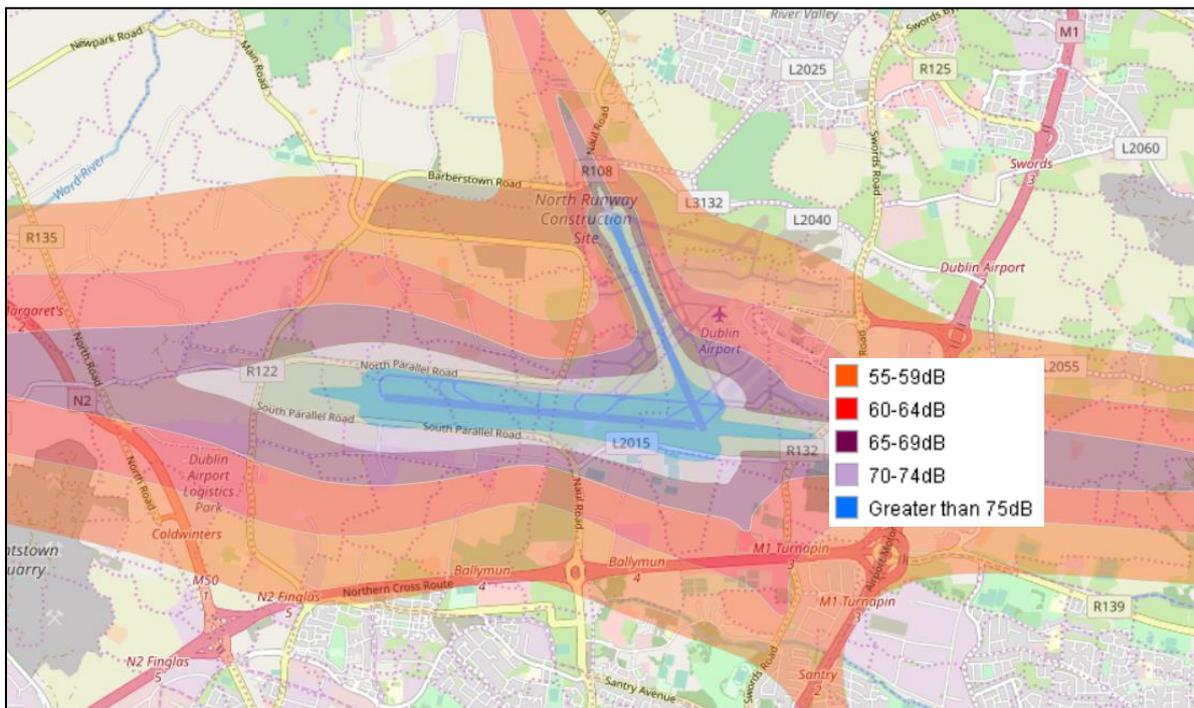


Figure 17 Dublin Airport Noise Round 3 Airport – Lden. source: <https://gis.epa.ie/EPAMaps/>

12.3 Vibration

Vibration generated by the contractor's activities shall not adversely affect the structural integrity and serviceability of any building, wall or structure. The nearest receptor, most susceptible to vibration, is the Pier 3 building.

The contractor shall employ the best practical means to minimise vibration produced by his activities, including plant selection and maintenance.

If requested by daa the contractor shall monitor ground vibrations using a digital seismograph at selected locations during the course of the Works. Each vibrograph shall be certified as being in proper working order and shall record vibrations in three directions simultaneously with a print-out showing the amplitude and frequency of the vibrations.

The contractor shall also implement the following vibration mitigation measures:

- Selection of construction plant with low inherent potential for generation of vibration as per the European Commission Directive 2000/14/EC.
- Contractors will highlight in their method statement and/or risk assessment specific activities that will create significant vibration levels. In addition to this, contractors will demonstrate how they will mitigate/manage these emissions. Where significant vibration levels are expected, the appointed contractor will inform the daa Liaison Officer.

The contractor shall not communicate directly with any property owners and occupiers who may be affected by noise and vibration from the works. All communications with the owners and occupiers of the properties shall be managed through the daa liaison.

If requested by daa, the contractor shall cease works giving rise to noise and vibration until directed by daa that it is acceptable to re-commence such activities.

13 Surface Water Management

Contractors shall comply with the rules and take on board the recommendations outlined in the *daa Construction Contractors Health & Safety and Environmental Rules for Working on daa Infrastructure Manual* in relation to Surface Water Management.

The contractor shall develop the CEMP and provide standard construction management measures to minimise the risk that surface or ground waters are negatively affected by the construction of these works either directly or via the existing drainage infrastructure. This section should be read in conjunction with relevant chapter of the EIAR and planning conditions when applicable.

The Airfield Trunk Culvert as well as all other watercourse on the Airport lands, connect to the SACs and SPAs along the eastern coastline. These are Nature2000 sites and covered by the Habitats Directive and associated legislation.

Measures to be taken shall include the following:

- No water, groundwater or surface runoff can be discharged into the storm drains. All groundwater must be tested to establish how it can be discharged. Retention of water may be required pending testing. Written approval from the Environment Department is required before anything can enter the storm drains.
- The contractor will identify and risk assess existing drainage systems and put in place measures to prevent possible contamination from surface run-off emanating from the works. Alternatives to the storm drains, for disposal of water may need to be sought.
- The contractor shall provide suitable pumps, settlement tanks and filters to filter all water being pumped/discharged from excavations into existing drains. The contractor shall also take measures to ensure that runoff from open excavations does not enter the surrounding drainage system without being treated. Depending on the contamination, onsite treatment may not be an option and therefore offsite disposal would be required.
- All plant and equipment brought to site shall be in good working order with no leaks and maintained as such during the course of the Works.
- Fuelling of plant and equipment is to be carried out within compound and material storage areas only (unless agreed otherwise with daa – which may be necessary in

the case of mobile task lighting or generators) by a trained operative using double skinned bowsers with a designated fuelling area and bunded fuel storage.

- Drip trays to be used during all fuelling operations and a fully maintained spill kit located within the designated fuelling area. Drip trays are required under all generators and portable lighting at all times.
- All fuels, chemicals or liquids will be stored in a lockable cabinet that will be located within a bunded area.
- The contractor shall comply with all national laws and regulations controlling pollution of the environment. Necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, bitumen's, chemicals, or other harmful materials shall be taken.
- Ditches and water streams will be clearly identified on site and shown on method statements and site plans, including underground watercourses and culverts.
- Storage of materials will be located at least 4 metres away from water bodies, within designated and bunded areas.
- Where required, silt fencing will be deployed at the base of stockpiles when storing fine material to prevent runoff outside the designated area.
- All discharged water (rainwater and groundwater) from pumping will be treated and tested before re-infiltration. Such water will be disposed of as construction site run-off having first passed through a settlement tank or filtration system where appropriate. Depending on the contamination, onsite treatment may not be an option and therefore offsite disposal would be required.

14 Dust Management

The contractor shall take all necessary steps to control dust caused during construction of the Works either by construction activities and/or construction traffic including deliveries to and plant departing the site. This section should be read in conjunction with relevant chapter of the EIAR.

Dust is likely to be generated during removal of pavements and bulk excavation works. Dust shall be controlled by the use of water spray during the works. Wheel washing at site exits will reduce dirt on the local roads.

Contractors shall comply with the rules and take on board the recommendations outlined in the *daa Construction Contractors Health & Safety and Environmental Rules for Working on daa Infrastructure Manual* in relation to Dust Management.

Dust control measures shall be used to reduce the potential for dust on site. These will include but not be limited to:

Activity	Dust Control Methods
Communication	<ul style="list-style-type: none">• Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary;• Display the head or regional office contact information; and• Develop and implement a Dust Management Plan (DMP).
Site Management	<ul style="list-style-type: none">• Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner and record the measures taken;• Make the complaints log available to the local authority when asked; and• Record any exceptional incidents that cause dust and/or air emissions, either on or off Site and the action taken to resolve the situation in the log book.
Monitoring	<ul style="list-style-type: none">• Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results and make the log available to the local authority when asked;• Increase the frequency of site inspections by the person accountable for air quality and dust issues on Site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions; and• Carry out regular site inspections by the person accountable for air quality and dust issues on Site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.• Dust gauges will be installed and results will be reviewed at least monthly and kept on site.• A Non-Road Mobile Machinery (NRMM) register will be maintained to record off road emissions.
Preparing and maintaining the site	<ul style="list-style-type: none">• Plan site layout so that machinery and dust causing activities are located away from receptors as far as possible;• Erect solid screens or barriers around dusty activities that are at least as high as any stockpiles on Site;

Activity	Dust Control Methods
	<ul style="list-style-type: none"> • Fully enclose Site or specific operations where there is a high potential for dust production and the site is active for an extensive period; • Remove materials that have a potential to produce dust from Site as soon as possible unless being re-used on Site; • Cover, seed or fence stockpiles to prevent wind whipping; • Avoid Site run-off of water or mud; and • Keep Site fencing, barriers and scaffolding clean using wet methods. • Unsurfaced areas of the site will be regularly dampened down during periods of dry and/or windy conditions.
Operating vehicle/machinery and sustainable travel	<ul style="list-style-type: none"> • Ensure all vehicles switch off engines when stationary – no idling vehicles; • Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable; • Impose and signpost a maximum speed limit of 25 kph on surfaced and 15 kph on unsurfaced haul roads and work area. • Plant will be fitted with appropriate dust control measures, such as enclosed conveyors, rubber chutes and water suppression, where reasonably practicable, to reduce potential dust emissions. • Plant and equipment will be regularly maintained to ensure emissions are kept to a minimum. • Public roads and access routes adjacent to the site will be regularly cleaned using wet sweeping methods. Sweepings and cleanings shall be immediately removed and disposed of offsite to a suitably licensed waste management facility.
Operations	<ul style="list-style-type: none"> • Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction; • Ensure an adequate water supply on the Site for effective dust/particulate matter suppression/mitigation; • Use enclosed chutes and conveyors and covered skips; • Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and • Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. • Handling large quantities of potentially dusty material will be done in an enclosed or shielded environment. • Manipulation of fine materials, such as the mixing of cement, will take place in an enclosed area that is remote from the site boundary and potentially sensitive receptors. • Bulk cement and other fine powder materials will be delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent the escape of material and overfilling during delivery.
Waste Management	<ul style="list-style-type: none"> • Avoid bonfires and burning of waste materials.
Earthworks	<ul style="list-style-type: none"> • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. • Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover the topsoil as soon as practicable; and • Stockpiles of materials will be sited and shaped to prevent dust arisings. If necessary, these will be treated with a 'dustbuster' or similar or using sheeting. • Handling of materials, such as soils, will be kept to a minimum and materials shall be deposited onto the stockpile at a minimum practicable

Activity	Dust Control Methods
	<p>height (2m height is recommended for topsoil to prevent the soil compressing under its own weight). All other stockpiles will not exceed 10m in height and will be suitably graded.</p> <ul style="list-style-type: none"> • Carrying out earthworks in close proximity to sensitive receptors during dry and/or windy conditions will be avoided if reasonably practicable, having regard to programme and contracting arrangements for the relevant works. Where this is unavoidable, appropriate water suppression to control dust will be used. • Spoil materials extracted from the site will be recycled elsewhere on site, when and where appropriate. • The storing of potentially dusty materials will be undertaken away from site boundaries and/or potentially sensitive receptors. • Spoil materials will be removed away from site as soon as is practicable, minimising the need to stockpile potentially dusty material. • If unavoidable, spoil stockpiles will be regularly dampened down, sheeted or sealed before being removed from site at the earliest opportunity. • Slopes on stockpiles will be no steeper than the natural angle of repose of the material and will maintain a smooth profile.
Construction	<ul style="list-style-type: none"> • Avoid scabbling, if possible; and • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out; and • Minimising delivery volumes through use of off-site prefabricated materials. • Designed/prefabricated materials will be used where reasonably practical to reduce the need for grinding, sawing and cutting on site. • Where cutting, grinding or sawing equipment is required, this will be done in conjunction with suitable dust suppression techniques, such as water sprays or local extraction, and where possible undertaken in an area that is away from the sensitive receptors identified.
Track out	<ul style="list-style-type: none"> • Use water assisted dust sweeper(s) on the access and local roads, to remove, as necessary any material tracked out of the Site; • Avoid dry sweeping of large areas; • Ensure vehicles entering and leaving the Site are covered to prevent escape of materials during transport; • Record all inspections of haul routes and any subsequent action in a Site log book; • Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned; • Implement a wheel washing system. • Mitigating measures including cleaning of areas and vehicles in the event of dust pollution.

15 Preliminary Resource & Waste Management Plan

15.1 General Requirements

Contractors shall comply with the contents and recommendations regarding waste management outlined in:

- the *daa Construction Contractors Health & Safety and Environmental Rules for Working on daa Infrastructure Manual*
- the *Airport Direction D-O Environment and Pollution*.

15.2 Resource & Waste Management Plan

The contractor shall be required to prepare a Construction and Demolition Resource Waste Management Plan (RWMP) as set out in the Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for C&D Projects (2021) including demonstration of proposals to adhere to best practice and protocols. The RWMP shall also comply with the client's documents mentioned above and is developed as the project progresses from design through to construction.

The RWMP shall include specific proposals as to how the RWMP will be measured and monitored for effectiveness and reported. The RWMP will help manage waste generation and diversion from landfill to ensure targets agreed between daa and the contractor are met.

Consideration shall be given to whether materials produced during the construction works can meet all conditions under Article 27 or Article 28 of the European Union (Waste Directive) Regulations 2011–2020 and can therefore be notified as a by-product rather than a waste or a recovered or recycled product which can be deemed to be no longer a waste.

The contractor will identify all likely waste streams arising from these works and put in place an appropriate plan for the management of each, including details of proposed licensed waste hauliers and licensed waste disposal facilities as well as their permits to accept particular waste stream.

The volume of demolition materials will be determined through demolition surveys.

A dedicated waste segregation area will be established on site to ensure waste streams are clearly segregated prior to removal from site. All waste skips and containers will be suitably labelled.

The RWMP will provide an estimate of expected volumes for each waste stream, reductions following above approach and on completion final tally for each waste stream.

The RWMP should include the following as a minimum:

- Names, roles, responsibilities and authority of key personnel involved in waste management on site and in the design team.
- Waste management objectives for the Works.
- Identification and categorisation of waste arisings / material surpluses.
- Proposals for the minimisation, re-use and recycling of wastes.
- Material handling procedures.
- Demolition plan.
- Waste record-keeping procedures.
- Details of authorised waste haulers with appropriate and up-to-date Waste Collection Permits.
- Details of permitted or licensed recovery/disposal facilities where waste materials will be sent, including copies of permits/ licenses.
- The identification of measures to prevent nuisance etc.
- The identification of the amounts intended to be stored temporarily on site and the location of such storage.
- Waste auditing protocols.
- Proposals for training / maintaining awareness and designation of responsibilities.
- Procedures for controlling sub-contractors.
- Designation of separate storage areas for different types of waste materials in order to maximise their re-use and recycling potential.

15.3 Main Construction and Demolition Waste Categories and Estimates

Numerous types of waste will be generated throughout the phases of the project element. Key waste types from construction and demolition activities are included below. Each waste type will be segregated and removed via licensed hauliers to licensed facilities.

The potential management route for each waste type will be considered in accordance with the waste hierarchy. Good working practices and takeback schemes etc. will be used to reduce the amount of waste generated as an initial step.

The waste management route for each waste stream will be recorded in the Resource & Waste Management Plan, with a high target for diversion from landfill to be achieved in accordance with daa policy.

The tables below were produced to support the development of the EIAR and estimate the maximum amount of waste produced during construction. These categories and quantities will be further developed during the contractor’s design process. Demolished material will be, to the extent practicable, re-used as backfill or in pavements. The extent of re-use will be determined and agreed with daa prior to implementation. To meet daa Sustainability Targets and Carbon Reduction Goals, all materials arising from site should look to be reused especially, soil, stone, concrete, asphalt planings, possibly on another airport project. Any material for potential re-use will be tested to ensure it is ‘clean’ and meets all relevant requirements.

Table 15.1 European Waste Classification

Waste Material	EWCode
Non-Hazardous	
Soil & stones	17 05 04
Concrete	17 01
Asphalt	17 03
Hazardous	
Soil & stones containing hazardous materials	17 05 03

Table 15.2 Construction and Demolition Waste Estimates

EWC Code	Waste Description	Source of Waste (Construction Activity)	Estimated quantity	UoM	Potential Management Route
17 01 01	Concrete	Demolition	10,950	m3	Reuse/Disposal
17 05 04	Granular fill	Demolition	7,300	m3	Reuse/Disposal
17 05 04	Soils	Demolition	105.000	m3	Reuse/Disposal
17 05 04	Soils	Demolition	211,000	m3	Disposal/Recycling
17 03	Asphalt	Demolition	8,700	m3	Reuse/Disposal

15.4 Waste Management Procedures

The contractor shall supply all waste containers/skips as required for each of the identified waste streams, locations should be close to relevant works and as agreed with daa. It is the responsibility of the contractor to gather and remove all waste and spoil including that created by sub-contractors. All waste containers are to be emptied on a regular basis and at a minimum before they are full. Overflowing containers will not be acceptable.

The contractor shall remove all waste containers/skips from airport property on completion of the contract.

All waste containers shall be enclosed and lockable to prevent FOD (Foreign Objects Debris). Each container shall have a temporary nameplate attached identifying the waste stream and bearing the contractor's name.

A secure, lockable and controlled store (in the compound and materials storage area unless agreed otherwise) shall be provided for the storage of chemicals and other hazardous materials to be used in the Works.

A record of all waste leaving site, who is hauling it and receiving waste disposal facility shall be maintained and provided to daa regularly during the Works.

- All sub-contractors should provide a waste forecast for waste types and quantities expected to be generated.
- Waste generation should be reduced as much as possible. Offcuts, surplus materials and packaging should be returned to suppliers for closed loop recycling where possible.

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- Single-use plastics should be avoided where possible.
 - Re-use materials where possible.
 - Avoid waste generation from incorrect storage of materials causing damage and contamination.
 - Cover skips to prevent dust, wind-blown litter and rainwater accumulation where possible.
 - All waste emanating from site will be controlled, recorded, transferred and disposed of in accordance with the Waste Management Act 1996 (S.I. No. 10 of 1996) and Waste Management (Amendment) Act 2001 and associated regulations.
 - Licence documentation for all waste carriers removing waste and for all waste destinations receiving waste shall be held on file. Waste consignment notes (for a minimum 3 years) for hazardous waste and Waste transfer notes (for a minimum 2 years) for non-hazardous waste shall be held on file and readily available for inspection and auditing purposes.

15.5 Risk of Asbestos

Asbestos Containing Materials (ACM) were widely used in the building and construction industry up until 1999. daa always wishes to ensure that all staff and contractors are protected from the health risks associated with ACM in the workplace, and thus has a general policy that applies to all works carried out at Dublin Airport.

It is mandatory that all parties involved in the project element follow daa's internal framework described in the "Asbestos Management Policy" for the management of ACMs.

No demolitions of existing buildings are proposed within the development. Asbestos is potentially present in Made Ground.

15.6 Foreign Object Debris (FOD)

The following risk is specifically identified because strict management of waste is required to mitigate against it. This section should be read in conjunction with relevant chapter of the EIAR, when applicable.

Airside works shall comply with all the rules and recommendations included in the *Airport Direction D-O Construction Projects*.

FOD (Foreign Object Debris) is a particular risk at an airport where materials or debris could cause damage to aircraft, and regardless of specific works locations there exists the possibility that windblown materials could present an issue if materials/waste is not properly secured or contained within securely covered containers. The contractor shall provide details of proposed measures to mitigate against this risk and windblown materials in general.

These measures should include the following;

- Provision of facilities for the collection and disposal of FOD such as FOD bins and compactors.
- FOD hazard and control process implemented by contractor.
- Removal of any FOD observed.
- Fix and store objects that may cause a FOD hazard if blown.

It is the direct responsibility of all contractors working at the airport to ensure that a FOD free environment is maintained. All companies shall have staff training and procedures that reflect these responsibilities.

Vehicles and equipment airside should be maintained in a clean and serviceable condition, not only for reasons of safe vehicle operation but also to minimise the leakage of fluids and depositing of FOD from these vehicles.

Before proceeding from one part of the airport to another via a route that crosses the airfield, all vehicles shall be inspected to ensure that anything carried in or on the vehicle is secured. All doors and tail or side boards shall be securely shut, and no part of the vehicle or trailer is loose and likely to become detached.

16 Environmental Incident Response

16.1 General Requirements

In the event of an environmental incident occurring, despite the preventative measures and mitigations in place as identified in this Preliminary CEMP and to be further developed by the contractor, then the CEMP shall include proposals for the management of those incidents to minimise their potential effects on people, flora and fauna as relevant to the particular incident. This section should be read in conjunction with relevant chapter of the EIAR, when applicable.

Emergency incidents are those occurrences that give rise to significant negative environmental effects including but not limited to the following:

- Any malfunction of any mitigation measure and/or environmental protection system.
- Any emission that does not comply with the requirements of the contract and relevant licenses.
- Any circumstance with the potential for environmental pollution.
- An unexpected discovery e.g., sub-surface contamination.
- Any emergency that may give rise to environmental effects (e.g., significant spillages or fire outbreak).

Emergency incident management for airside sites shall comply with all the rules and recommendations included in the *Airport Direction D-E Emergency Response*.

The reporting of environmental incidents is vital in order to ensure they are dealt with correctly, adverse effects negated or minimised and that valuable lessons are learnt. Where environmental incidents are reported, actions can be formally completed that ensure control measures are put in place to avoid any future recurrence on site and, where relevant, across the company.

A list of Environmental Incident Classifications is given below.

Table 16.1 Environmental Incident Classification

Environmental Emergency	An environmental incident which requires immediate attention and is potentially at such a scale that senior management or outside parties (i.e., Fire Brigade for spills) are required to manage or be informed without delay.
Environmental Incident	A breakdown in the implementation of controls which may cause or lead to pollution of water, air, land or environmental damage. This could be: <ul style="list-style-type: none"> ○ An unplanned event that has caused serious environmental damage or loss, pollution or contamination ○ A breach of legal requirements including a breach of a consent, condition or receipt of a notice from a statutory authority. ○ A breach of contractual environmental conditions without permission from the client.
Near miss	An environmental incident that was narrowly avoided.
Observation	A relatively minor incident/occurrence but if not remedied could amount to a more severe outcome. A “satisfactory” observation can also be used to document “best-practice”.
Action	Specific requirements to be undertaken to prevent a near miss or incident. Usually required for items of relatively minor severity. An Action will be attributed to an individual either as result of an “unsatisfactory” observation or an environmental incident / near miss.

16.2 Spill Control

Spill control will be planned and managed according to the *daa Construction Contractors Health & Safety and Environmental Rules for Working on daa Infrastructure Manual*. The contractor’s CEMP shall set out site specific procedures outlining how spillages should be dealt with and emergency responses.

The following steps provide an indicative procedure to be followed in the event of an oil/fuel spill occurring on site:

- Staff should receive training on spill procedures on a regular basis.
- Spill kit equipment shall be stored on site and located strategically throughout the site to reflect activities which occur in these areas.
- Spill kits shall be inspected and maintained at least bi-annually or after an incident and should contain absorbent material, drain covers and absorbent booms.

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- Identify and stop the source of the spill and alert people working in the vicinity.
 - Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
 - If applicable and safe to do so, eliminate any sources of ignition in the immediate vicinity of the incident.
 - Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
 - If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses and/or sensitive habitats.
 - If possible, clean up as much as possible using the spill control materials.
 - Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
 - The Environmental Manager shall inspect the site as soon as practicable and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
 - The Environmental Manager will notify daa and the appropriate stakeholders.

Sufficient types and quantities of spill response equipment should be available on site and should be kept where spills may occur. The quantity of spill response equipment should be sufficient to contain any likely spill that may occur on site.

Particular care will be taken in the vicinity of the Airfield Trunk Culvert which has been identified as a sensitive receptor.

16.3 Emergency Incident Response Plan

The detailed CEMP shall include an Emergency Incident Response Plan which will contain emergency phone numbers and the method of notifying daa, local authorities, statutory authorities and stakeholders. Contact numbers for key personnel of the contractor shall also be included therein. Contractors will be required to adhere to and implement these procedures and ensure that all staff and personnel on site are familiar with the emergency arrangements.

The Emergency Incident Response Plan shall be developed considering all the rules and recommendations included in the *daa Construction Contractors Health & Safety and Environmental Rules for Working on daa Infrastructure Manual*.

It is the responsibility of the Project Owner or his nominee to ensure that the emergency procedure is periodically tested to ensure it is effective. Frequency for testing should be determined by the level of risk for a particular project, however, it is recommended that this be carried out at least once per year or once during the project lifetime where project duration is less than one year.

The test should be logged as good practice on the reporting system. The test should be reviewed to determine the effectiveness of the procedure and the need to amend the requirements if necessary.

16.4 Reporting

In the event of an emergency incident occurring, the Environmental Manager will be required to investigate and provide a report to daa including the following, as a minimum:

- A description of the incident, including location, the type and quantity of contaminant and the likely receptor(s).
- Contributory causes.
- Negative effects.
- Notification to relevant statutory authorities and relevant parties.
- Consultation with appropriate environmental specialists when relevant.
- Measures implemented to mitigate adverse effects.
- Any recommendations to reduce the risk of similar incidents occurring.

Note, the daa liaison shall be notified immediately (or as soon as reasonably practical within 1 hour) in the event of such an incident occurring.

The cause of any incident shall be determined by those involved when the incident or emergency occurred and those involved in the clean-up procedure. The appropriate corrective actions shall be implemented as soon as possible on detection of the incident. All incidents shall be reported on the reporting system. Where there has been direct damage to the

environment it may be necessary to report this to the Regulator (Environmental Protection Agency). daa shall be informed as soon as an incident has occurred and any contact to the Regulator coordinated through daa.

For larger incidents the project environmental coordinator / Project Owner shall complete an Environmental Incident Report with the Sustainability Manager, fully detailing actions undertaken and review to prevent recurrence.

Note, if any person is injured as a result of an environmental incident, this shall also be reported as detailed in the Company Health & Safety Management Strategy document (Accident/Dangerous Occurrence Reporting Procedure).

All incidents and near-misses shall be logged on the reporting system and appropriate actions shall be assigned to relevant persons.

All observations, both satisfactory and unsatisfactory, shall be recorded on the reporting system with actions assigned where appropriate.