

Pacific Aviation Investment Program (PAIP)

Environmental Management Plan - Cassidy International Airport (CXI)
Final Draft



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Environmental Management Plan - Cassidy International Airport (CXI) Final Draft

Client: Ministry of Communications, Transport and Tourism Development

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Prepared by

AECOM New Zealand Limited

8 Mahuhu Crescent, Auckland 1010, PO Box 4241, Auckland 1140, New Zealand
T +64 9 967 9200 F +64 9 967 9201 www.aecom.com

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°C	Degrees Celsius
ACM	Asbestos Containing Material
ADS-B	Auto Dependent Surveillance – Broadcast
ARFF	Airport Rescue and Fire Fighting
ATC (ATCT)	Air Traffic Control (Air Traffic Control Tower)
ATR	Twin-engine turboprop short-haul regional aircraft built by the French-Italian aircraft manufacturer ATR
AWOS	Automatic Weather Observation Station
CAD	Civil Aviation Directorate
Category B	World Bank categorised projects with potential limited adverse social or environmental impacts that are few in number, site specific, largely reversible, and readily addressed through mitigation measures.
CXI	Cassidy International Airport
DME	Distance Measuring Equipment
ECD	Environment Conservation Division of the Ministry of Environment, Land and Agriculture Development
EHS	Environmental, Health and Safety
EMP	Environmental Management Plan
GoK	Government of Kiribati
GoT	Government of Taiwan
HAT	Highest Astronomical Tide
HIV/ AIDS	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome
HNL	Honolulu International Airport (Hawaii)
IATA	International Air Transportation Association
ICAO	International Civil Aviation Organisation
IUCN	International Union for Conservation of Nature
KAIP	Kiribati Aviation Investment Project
KANGO	Kiribati Association of Non-Governmental Organisations
km	kilometre
LED	Light Emitting Diode
m/ m ² / m ³	Metre/ square metres (area)/ cubic metres (volume)
maneaba	A community's central meeting house where communal concerns are discussed, and decisions taken about matters that affect the whole community.
MCTTD	Ministry of Communication, Transport and Tourism Development
MELAD	Ministry of Environment, Land and Agriculture Development
MOWP	Method of Works Plan
MPWU	Ministry of Public Works and Utilities
NAN	Nadi International Airport (Fiji)
NDB	Non-Directional (radio) Beacon

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NGO	Non-Governmental Organisation
NZAid	New Zealand Government's Aid Programme
NZBC	New Zealand Building Code
NZCAA	New Zealand Civil Aviation Authority
OLS	Obstacle Limitation Surface
PAIP	Pacific Aviation Investment Program
PCN	Pavement Classification Number
PIB	Project Information Bulletin
PMU	Project Management Unit
PV	Photovoltaic
PVC	Polyvinyl Chloride (type of plastic)
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SPREP	South Pacific Regional Environmental Program
Stakeholder	Project stakeholders are all people directly or indirectly, negatively or positively impacted by the project; that are important to make the project successful, or that may oppose the project or that have a vested interest.
TFSU	Technical and Fiduciary Services Unit responsible for coordinating implementation across all activities for the PAIP. The TFSU is based at Tonga Airports Ltd and is comprised of fiduciary, procurement and technical staff. The TFSU leads the procurement activities on the PAIP, with inputs from the countries (Kiribati, Tonga and Tuvalu).
TMP	Traffic Management Plan
TOR	Terms of Reference
TRW	Bonriki International Airport
UHF/ VHF	Ultra-High Frequency/ Very High Frequency
WB	World Bank

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Executive Summary

The Kiribati Aviation Investment Project (KAIP) was established to carry out the upgrade activities as identified in the Pacific Aviation Investment Program (PAIP) funding loan from the World Bank (WB). The KAIP aims to improve Kiribati's airport infrastructure, meet International Civil Aviation Organisation (ICAO) standards (for international airports), and to ensure sustainable operation of the civil aviation sector in Kiribati. This Environmental Management Plan (EMP) has been prepared for the Cassidy International Airport (CXI) KAIP project components which are listed below and to meet with funding and Kiribati legislative requirements.

- New terminal
- Upgraded navigational aids and lighting

The Ministry of Communication, Transport and Tourism Development (MCTTD) through the Civil Aviation Directorate (CAD) manage the airport operations and are responsible for compliance with national and international civil aviation requirements.

This EMP looks to outline the potential environmental impacts and the measures needed to prevent, minimise, or mitigate adverse impacts and improve environmental performance for the KAIP project components.

Overall the KAIP is a Category B project under WB environmental and social screening guidelines and requires development of the project EMP. Category B projects have potentially limited adverse social or environmental impacts that are few in number, site specific, largely reversible, and readily addressed through mitigation measures. This EMP is a dynamic document to be updated if there are changes to the project scope, detailed designs, or if further information becomes available as a result of consultation with stakeholders and the community. The objective of the EMP is to provide a framework for managing the airport upgrade works in a manner that incorporates the principles of environment sustainability while minimising potential adverse effects on the local community and the environment.

This EMP includes information on mitigation, monitoring, capacity development and training, and implementation costs (in accordance with WB Operational Policy 4.01 Environmental Assessment). The majority of potential adverse impacts will occur during the construction phase of the KAIP. However given that this primarily involves the rehabilitation of existing infrastructure, mitigation measures should be able to alleviate or lessen any potential negative impacts. The key potential impacts that are being mitigated are:

- Solid waste generation
- Soil erosion through vegetation clearing and excavation
- Hazardous materials handling and storage (including potential asbestos)
- Noise and vibration disturbances from machinery and construction activities
- Air pollution from dust and equipment
- Traffic disruption during construction activities
- Transport of equipment and materials from the port and around Kiritimati
- Disposal of waste materials
- Safety hazards for workers and users of the facilities where upgrades are occurring
- Water demand management for freshwater resources
- Wastewater discharges
- Construction camp establishment and dis-establishment

This EMP is designed to address these issues through:

- Implementation of this EMP through the Contractor's EMP.
- Regular supervision and monitoring of the implementation of the EMP (refer EMP monitoring plan).

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1.0 Introduction

1.1 Background

The Pacific Aviation Investment Program (PAIP) is funded by the World Bank (WB) and has the development objective to (i) improve the safety, security, efficiency, management and environmental sustainability of airports, and (ii) improve regional harmonization of aviation safety standards. Phase I of the Program, for which this Environmental Management Plan (EMP) is prepared, includes Kiribati, Tonga and Tuvalu. This site specific EMP has been developed for project work at Cassidy International Airport (CXI) on Kiritimati.

Air transport is the most efficient mode of transport in Kiribati due to the distance of its islands (stretches some 4,000 km). Kiribati operates two international airports Bonriki International Airport and CXI. The Ministry of Communication, Transport and Tourism Development (MCTTD), through the Civil Aviation Directorate (CAD) is responsible for both the administration and regulation of the civil aviation sector along with operation of the airports.

The Kiribati Aviation Investment Project (KAIP) was established to implement the PAIP and manage works associated with the airport upgrades. The KAIP aims to improve Kiribati's airport infrastructure, meet International Civil Aviation Organisation (ICAO) standards (for international airports), and to ensure sustainable operation of the civil aviation sector in Kiribati.

In May 2011 an overarching EMP (AECOM, 2011. *Kiribati Aviation Infrastructure Investment Environmental Management Plan*) was published for all components of the KAIP. The overarching EMP is in compliance with WB Policy OP/BP 4.01 Environmental Assessment and national legislation, and provides a framework for mitigation of the projects' impacts and development of a site specific EMP incorporating the detailed design, construction and operational stages. Consultation and public disclosure was undertaken during the project preparation phase with details of stakeholders and outcomes included in the National Task Force report titled Consultation Report Pacific Aviation Investment Program – Kiribati dated 8 September 2011. This EMP builds on the overarching EMP and details environmental impacts and mitigation measures specifically for CXI and incorporates details of the final detailed designs.

1.2 KAIP Objective

The KAIP aims to improve Kiribati's airport infrastructure, meet International Civil Aviation Organisation (ICAO) standards (for international airports), and to ensure sustainable operation of the civil aviation sector in Kiribati.

1.3 Environmental Management Plan Objectives and Scope

The KAIP is a category B project under WB environmental and social screening guidelines and requires development of the project EMP. Due to the nature of the project it is expected that environmental impacts will be site specific, few if any are irreversible, and mitigation measures can be readily designed and implemented.

This EMP is a dynamic document to be updated if there are changes to the project scope, detailed designs, or if further information becomes available as a result of consultation with stakeholders and the general public. The objective of the EMP is to provide a framework for managing the airport upgrade works in manner that incorporates the principles of environment sustainability while minimising potential adverse effects on the local community and the environment.

To achieve this objective the EMP outlines the mitigation measures required for avoiding or minimising the potential impacts of the works and provides a monitoring program to confirm effectiveness of the required mitigation measures. Roles and responsibilities are clearly defined for all stages of the project works and their execution. The EMP also provides the details of how the community and stakeholders are to be engaged and the mechanisms for ongoing consultation and communication.

This EMP is limited to the scope of works as described in Section 2 of this document and addresses impacts and mitigation measures identified at each stage of the project's execution, namely detailed design, construction and operation. This EMP builds on the impacts and mitigation measures as identified in the overarching EMP and includes outcomes of the consultation undertaken to date. This EMP will be included in the bidding documents for construction contractors and form the basis of the Contractors' EMP.

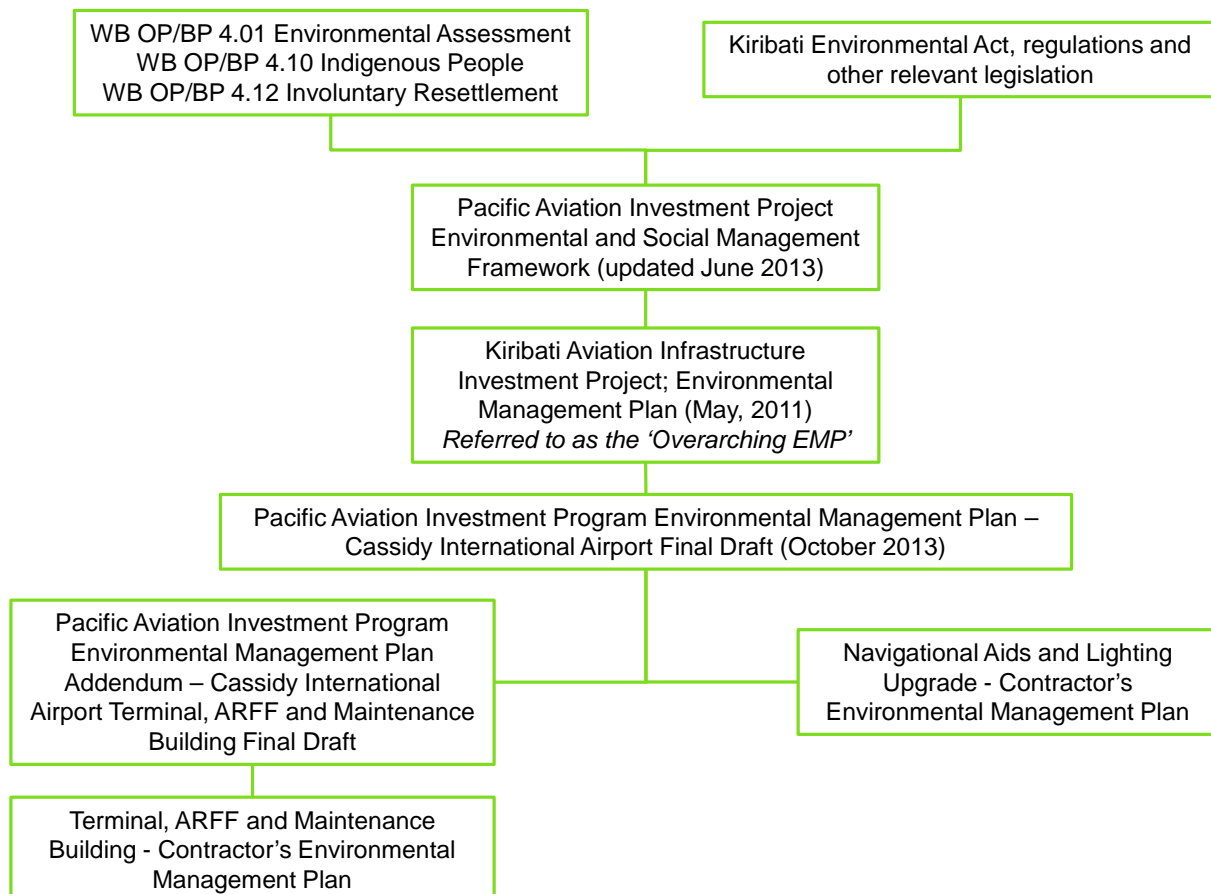
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1.3.1 Environmental Safeguards Document Hierarchy and Development

The PAIP has an Environmental and Social Management Framework (ESMF) which outlines the key steps and procedures in screening and assessment of environmental and social issues related to the PAIP (generally). The ESMF sets out the principles, rules, guidelines and procedures to assess the environmental and social impacts. It contains measures and plans to reduce, mitigate and/or offset adverse impacts and enhance positive impacts, provisions for estimating and budgeting the costs of such measures, and information on the agency or agencies responsible for addressing project impacts. It defines roles and responsibilities, and provides guidance for the Implementing Agency (IA), Executing Agencies (EA) (respective country's ministries) and the respective countries Civil Aviation Authorities for developing the environmental and social safeguards documents in compliance with respective WB operational policies (namely OP/BP4.01, OP/BP4.12, OP/BP4.10) and respective country environmental requirements.

The EMP is a dynamic document which is updated as and when project scope, detailed designs or further information becomes available, thus creating a hierarchy of documents as the project progresses. The diagram below shows the hierarchy and development of these documents culminating in the development of the contractor's EMP which specifically details how the contractor will implement requirements of the EMP. Issues, impacts and mitigation measures identified in superseded EMPs are incorporated into subsequent versions unless they have been addressed through design or other means, in which case this is identified in the EMP. Only those documents in the diagram below showing a date have been drafted, all others are either in progress or are yet to start.

Figure 1 Environmental safeguard document hierarchy



In order to finalise this EMP for inclusion with the navigational aids and lighting contractor procurement bid documents for the KAIP, the information pertaining to the terminal, and Airport Rescue and Fire Fighting (ARFF) and maintenance building have been left at the draft detailed design stage. An addendum to this EMP specifically addressing the final detailed design of the terminal, and ARFF and maintenance building will follow when the detailed design phase is finalised and confirmed by MCTTD.

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1.4 EMP Methodology

The methodology used to develop this EMP is as follows:

- Review the ESMF and overarching EMP including consultation outcomes to inform the Design and Supervision team of specific issues or items for detailed design.
- Prepare for field survey and organise site visits, inclusive of specific requirements as identified in the overarching EMP, consultation reports, and ESMF.
- Conduct field survey using the overarching EMP and an environmental screening checklist as a basis for assessment.
- Liaise with the Design and Supervision teams regarding any findings which may influence detailed design.
- Draft the CXI EMP based on overarching EMP framework and consultation outcomes and update with information obtained from the field survey and detailed designs.
- Submit to the Technical and Fiduciary Services Unit (TFSU) and MCTTD/Environment Conservation Division (ECD) for review prior to consultation. Update according to comments and feedback from TFSU and MCTTD/ECD.
- MCTTD to undertake consultation at CXI with this site specific EMP available in hard copy and posted online. Incorporate outcomes as required from consultation into final CXI EMP to be included in bidding documents.
- Submit to TFSU and MCTTD/ECD for final review.

A number of PAIP concept design, detailed design and supporting assessment reports have also been reviewed in compiling information regarding the scope of the project and identifying potential effects and mitigation measures. Some of these reports are still in draft form and changes may impact on the type and scale of potential effects and opportunities to avoid these impacts or potential mitigation measures that may need to be implemented. Any changes in these documents should prompt a review of this EMP and be updated accordingly. The documents are listed as follows at the stage of development at the time of writing this version of the EMP.

- Obstacle Limitation Surface (OLS) Survey and Operational Review Report, Cassidy International Airport (CXI) – Kiribati (D-V2-1), 2 July 2013
- Pacific Aviation Investment Program (PAIP) – Kiribati Runway Lighting & Air Navigation Aids Final Detailed Design Report – Kiribati (D-12) (Version B – with final amendments), 5 August 2013
- Pacific Aviation Investment Program (PAIP) – Kiribati, Draft Final Design Report – Airport Terminals & Security (D-5), 10 September 2013

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2.0 CXI Upgrade Description of Works

2.1 Overview of Works

The KAIP at CXI consists of two primary tasks:

- Airport terminal, ARFF and maintenance building, and security
- Airport runway lighting and navigational aids

Runway pavement works were completed in 2012.

2.1.1 Terminal, ARFF and Maintenance Building

AN ADDENDUM TO THIS EMP WILL FOLLOW ADDRESSING SPECIFIC IMPACTS AND MITIGATION MEASURES ASSOCIATED WITH THE FINAL TERMINAL DETAILED DESIGN

The existing departures and arrivals terminal buildings are undersized for the existing Peak Hour. The departure building is too small to process and accommodate US bound transit passengers and originating departing passengers. The timber structure and cladding of both buildings is in very poor condition. It is considered that the existing terminal buildings should be demolished to make way for the construction of a new terminal.

The CXI Stage 1 forecast international departure and arrival Peak Hour is based on the existing weekly Fiji Airways NAN-CXI-HNL-CXI-NAN Boeing circuit. The majority of arriving international passengers on the Fiji Airways flight transit through CXI and continue on to HNL/NAN. A Stage 1 Peak Hour of 40 departing and arriving passengers has been assumed as the basis for the Stage 1 terminal design. The requirement for US bound transit passengers to deplane at CXI was introduced in 2012. For the US bound flight, the Stage 1 terminal departure lounge is required to accommodate approximately 90 HNL (US) bound transit passengers in addition to the forecast 40 originating passengers. Due to budgetary constraints, a staged process has been proposed in developing the Terminal and meeting all design objectives. Through a series of design workshops and iterative design process (as detailed in the Kiribati Draft Final Design Report – Airport Terminals & Security, 10 September 2013) a number of options were developed with Option 4 selected as the final stage 1 terminal design option. The Recommended Option 4 Final Stage 1 Terminal Design is based on the following design strategies:

- Provide IATA LOS C space standards for a Peak Hour of forty (40) arriving and forty (40) departing passengers at an average 80% Load Factor.
- Set aside reserved Terminal expansion zones at both ends of the Terminal. This provides the flexibility to extend the Terminal length to cater for future growth in Peak Hour demand
- Provide manual bag search for the Hold Bag Screening (HBS) and Passenger and Bag Security Screening functions.
- Access to the Check-in Hall is limited to ticketed passengers to reduce the check-in hall area requirement and cater for HBS manual bag search.
- The provision of covered landside public areas is reduced and there is no public access to the Terminal

The Terminal and Apron Precinct Constraints Plan (Figure 1) shows the main constraints (including buildings and airside operational areas) to be considered in the design of the Stage 1 Terminal Design. The potential terminal and apron site is relatively unconstrained and is remotely situated outside the main town centres on Kiritimati Island.

To accommodate the new terminal, three existing buildings (shown in red in Figure 1) will need to be demolished:

- 1) The Airport Terminal arrival building.
- 2) The Airport Terminal departure building.
- 3) The Portacom buildings over the sewerage tanks.

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Figure 2 CXI Terminal and Apron Precinct Constraints Plan

Given the airport constraints outlined above, the CXI Terminal Concept designs are based on accommodating the new terminal south of the existing terminal buildings. The new car park will be located further south of the terminal, connecting to the existing road. Additional land may need to be acquired for the terminal and car park development, subject to confirmation of the airport boundary.

Rain water for domestic water requirements will be stored in two above ground water storage tanks. At one storage tank location a pump set will be provided consisting of duty/standby pumps, a small pressurisation tank, filter, piping to a header tank and controls as required to fill a header tank to be located at high level in the terminal. Weather protection of the pump set will be required.

Due to the location of the airport within the water catchment reserve (and potential groundwater contamination) and availability of resources and or equipment to collect sludge from a sanitary waste collection system, the final sanitary waste treatment system is yet to be confirmed.

The Recommended Option 4 incorporates Environmentally Sustainable Design (ESD) as outlined below:

- Rainwater collection
- Solar power generation (not included at this stage of the terminal development however structurally the terminal design will support photovoltaic solar panels)
- Passive solar design – open pavilion design
- Natural ventilation

2.1.1.1 ARFF and Maintenance Building

The ARFF and maintenance building shall be a low-cost structure procured from a design and construct building supplier. An Air Traffic Control room, combined with a training room, was also added to the Design Brief. The ARFF design includes:

- Two (2) bays to accommodate the ARFF vehicles – CXI is an ICAO Category 6 Aerodrome, so two ARFF vehicles are required.
- Dry chemical storage with a low bund wall to prevent chemical spill.
- Storage for maintenance equipment, parts and tools.

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- Two 'Rotomould' surface water tanks for the ARFF vehicles.
- Chain operated roller doors, i.e. manually operated.
- Audible emergency/incident alarm to comply with ARFF Regulations.
- An electrical and communications cupboard.
- Services provision such as lighting, power, fire detection, telephone, communications, water collection and storage, and water reticulation.
- Provide natural ventilation (no insulation or ceilings).
- Include an Air Traffic Control (ATC) room within the Training room, adjacent to the watch room.

Provide a small lean-to on the side of the ARFF building to store a 60HP tractor. A provisional site for the ARFF and Maintenance building was identified in the Airport Master Plan (2013), prepared by a separate consultant. It is understood that the ARFF building site location will be confirmed in the Final Airport Master Plan. It is recommended that live trials, to check that actual ARFF vehicle response times comply with the ICAO SARP for the proposed ARFF site, should be conducted prior to final site selection.

A number of design options were developed with Option 5 being the final ARFF and maintenance building design. The key objective of the final recommended Option 5 ARFF building design is to provide secure shelter for the ARFF vehicles to increase longevity of the ARFF vehicles and airport equipment.

2.1.2 Airfield Lighting and Navigational Aids

CXI navigation aids and Airfield Ground Lighting (AGL) are to be upgraded for compliance with international standards (e.g. ICAO) and to replace old, poor performing existing installations. The new AGL will include:

- 1) New Simple Approach Lighting System (SALS) both runway ends including new Runway Threshold Illumination Lights (RTILs).
- 2) New 26 approach PAPI installation.
- 3) Refurbish the 08 PAPI system.

In addition, recent discussions have highlighted a need for a new Aerodrome Beacon assembly; AECOM have included this item in the bill of quantities for procurement.

Replacement of the Air Navigation Aids will include new installations for:

- 1) Non-Directional Beacon (NDB) - The new aerial is to be positioned in the existing location (and hence air navigational procedures will not require amendments).
- 2) Automatic Weather Station (AWS).
- 3) Automatic Dependent Surveillance-Broadcast (ADS-B) - Currently on hold pending independent review by the funding provider.
- 4) New Air Traffic Control (ATC) radio installations.

At the time of writing, the position of the ATC facility is not confirmed; all new systems are recommended to be reticulated into an airfield electrical equipment room (AEER) housed in a fitted out shipping container, subject to MCTTD's approval. Future control cabling can be onward ducted to the new ATC facility when it is completed. In the interim the facility can be operated from the equipment container.

A new pit and duct system will need to be provided for the new AGL and navigation aids as described above. The pit and duct system will require small scale excavation physical works (total length of ducting and trenching is 9km). The duct system will run from the new AEER to the runway, around the runway and along the taxiway and apron edges. The system is to be run along the runway at 76 m off the runway centreline (outside the runway graded strip) and will be used for AWS power and communications cables, and AGL primary cable (and possible future use). Draw-in pits and change of direction pits will be outside the runway grade strip and will be Series Inline Transformer (SIT) pits and 0.9 m x 0.9 m x 1.0 m pits with Class D lids. Large pits will be provided at the end of duct banks under the taxiway and at the ends of the runway. Draw-in pits will be provided at intervals of no more than 180 m along straight runs. Duct tranches will be provided with minimum 750 mm cover. Newly installed duct crossing under the taxiway will be reused wherever possible.

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A new dual unit diesel generator, configured in an alternating duty and standby configuration will be installed as the primary and secondary airport supply. This should be located close to and reticulated into the new AEER facility. The Diesel Generators will be housed in a new shipping container specifically setup for this usage.

The Power Facility will include:

- 1) Twin Diesel generators and fuel supply tank (refillable from the exterior of the container).
- 2) Provided with standard end access doors and suitable second access door mounted in the centre of the side wall of the unit.
- 3) Provided with internal and external lighting.
- 4) Provided with power distribution board.
- 5) To be located adjacent to new AEER Facility.

The existing approach runway 08 PAPI is in sound working condition, new control and power cabling is to be provided and incorporated into the new AGL duct and pit reticulation system. A new four box PAPI installation is required for the 26 approach runway. New control and power cabling is to be provided and incorporated into the new AGL duct and pit reticulation system.

2.1.3 Alternatives

The airport is existing infrastructure which requires maintenance work to ensure continued operation and improved passenger experience. Alternatives regarding design approach and methodology were explored however budgets and constraints around land and natural resource availability limited the selection of design and construction methodology. The designs and proposed construction methodology have been selected based on the most effective use of natural resources, labour, ease of ongoing maintenance, effects on the local environment and community and in the case of the Terminal ability to build onto the design at a later date as and when funds are available.

The option to not do any rehabilitation work at CXI would mean that the navigation aids and lighting would be insufficient or non-compliant for current aircraft operations.

Emergency repairs to the runway surface were implemented in early 2012 to address the areas of badly deteriorated surfacing. The second stage is to upgrade the other airport facilities to meet current international operational standards (ICAO and NZCAA).

2.2 Construction Methodology

The runway lighting and navigation aids will most likely be the first component of the CXI KAIP to be started followed by construction of the terminal, and ARFF and maintenance building. The contracts for the physical works for each component have yet to be awarded so the precise construction methodology is unknown. However the conceptual and detailed designs provide an indication of the nature of the work. The Contractor's implementation EMP will address specific methodological measures or impacts.

2.2.1 MOWP

The Method of Works Plan (MOWP) is a required document for any major construction works within the boundaries of an airport. The MOWP sets out the operational requirements for maintaining a functioning airport throughout the construction process. It includes the concessions and alternative arrangements that may need to be made (e.g. alternative aircraft parking apron) and staging of the construction process while ensuring the safety and security of all personnel, the community and aircraft and continued operation of the airport throughout construction works.

2.2.2 Materials and Equipment

All materials and equipment for each component of the KAIP will need to be imported. All cargo whether air or ship will need to be processed in accordance with Kiribati quarantine and customs laws which require fumigation (proof of) of materials and equipment and declarations by personnel (specifically regarding communicable diseases).

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2.2.3 Aggregate Supply

Small amounts of aggregate will be required for backfilling and concrete production. The lighting and navigational aids component of the work will re-use material from localised excavations for trenching, pits and foundation pads for navigation aids or lighting. Additional material for large scale concrete production (e.g. terminal floor) will be imported with other material. No local sources of sand or gravel will be used.

2.2.4 Construction Lay Down Areas

The construction lay down area will be utilised by both project Contractors (building and navigational aids) at differing times so the scale of the camp will vary. The proposed location for the construction lay down area is the same area used for the runway resurfacing project, a paved disused apron running north west to south east on the southern side of the runway, east of the terminal. This paved area of the airport is not within the area of operation for the runway.

The exact details of the location, size and site management (health and safety, solid waste management, water management and wastewater management) will need to be decided by the Contractors in consultation with MCTTD. Final approval of these details will be required by MCTTD before the construction lay down area can be set up and documented in the contractors' EMP. The following elements must be considered when developing the construction lay down area.

Construction lay down area size should be kept to a minimum, be fenced and materials and equipment kept secure to prevent access and use by non-authorised personnel. It is unlikely that additional hard stand areas will be required so no additional vegetation clearance will be necessary. The hard stand area will need to contain all stockpiles and storage of hazardous substances within bunded areas (110 percent of the largest tank/container or 25 percent of the combined tank volumes in areas with a total storage volume equal or greater than 1,000 litres¹).

Transport to and from the construction lay down area, particularly of materials and equipment, must occur on the existing road network and measures undertaken to prevent dust, noise and vibration nuisance (e.g. wheel wash, covering of loads, servicing of vehicles). If the transport of material or equipment is likely to impact on normal pedestrian and vehicle traffic or pose an increased safety hazard, consideration should be given to moving these items during off peak times. Hard stand areas must be available for storage of hazardous substances and other equipment that poses a potential risk to the environment (e.g. leaking lubricant from machinery). Runoff from hard stand areas used to store machinery will need to be collected and treated (e.g. oil water separator) to prevent contamination of soil or water bodies (surface and underground). Hazardous substances (e.g. fuel, lubricants or oil) must be stored in a bunded area. Solid waste and wastewater must be managed in such a way to prevent the spread of vector-borne diseases and contamination of soil and water bodies. Solid waste is difficult to manage on Kiritimati so all solid waste not able to be re-used either by the project or community must be removed from island at completion of the project works, including all equipment. Temporary toilets and disposal or treatment of wastewater will need to be in accordance with the MPWU and ECD's advice (for example construction and training in use of composting toilet facilities) as CXI is located within a water reserve protection area.

All occupational health and safety requirements must be in place and workers trained in necessary procedures (e.g. spill response plan). Personal protection equipment (PPE) needs to be available to workers as required (e.g. high visibility vest, safety boots) and processes in place for obtaining relevant PPE.

Temporary equipment parking and small scale material storage may be required to reduce the need to move equipment and supplies from the construction lay down area throughout the day. All temporary stockpiles must be kept small (no higher than 2m) and bunded (earth bund) to prevent dust and sediment laden runoff being generated. If need be the stockpiles should be wetted or covered to prevent dust. Lay down areas should not be sited near the infiltration galleries of the water reserve (refer to section 4.1.5) nor the coast. Any land required for a temporary lay down area will need to be negotiated with Airport Management and MCTTD.

2.2.5 Duration and Timing of Construction Activities

Two separate contracts will probably be awarded for the types of work, namely, terminal and building construction, and installation of lighting and navigational aids. As the contractors have yet to be appointed the exact duration of each component is not yet known, however indicative time scales are as follows in probable order of commencement.

¹ International Finance Corporation and World Bank Environmental, Health and Safety (EHS) Guidelines, Section 1.5 Hazardous Materials Management, Control Measures

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Navigational aids – 17 weeks (To be confirmed)

Terminal and buildings construction – To be confirmed

Normal working hours are Monday to Friday, 8am to 6pm. Works outside of these hours will require permission from MCTTD and notice to affected parties and the public at least 24 hours prior to work commencing. It is likely the runway pavement works will need to work in addition to the normal working hours in order to work around flight schedules to ensure safe operations of the airstrip for incoming and outgoing aircraft.

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3.0 Policy, Legal and Administration Framework

3.1 National Requirements

Kiribati is a republic with a constitution that was promulgated on 12 July 1979. There are a number of legislative acts and regulations which pertain to the upgrade works at the airport. The more relevant pieces of legislation are described below, this list is not exhaustive.

The Environment Act 1999 (2007 Amendments) is the primary environmental legislation of Kiribati which provides for the protection, restoration and enhancement of Kiribati's natural, social and cultural environment. The Act also gives power to the ECD for the administration of the environment including providing for sustainable development and implementing the Environment Regulations (2009). The Act outlines requirements for impact assessment and statements relating to development. Applications are to be made to the Principal Environment Officer (PEO) for development approvals. This EMP addresses requirements of an Environmental Impact Assessment (EIA) required under the Environment Act 1999 (Part III). The completed Environment License application is included in Appendix F. At this stage the contractors for the different components of work have yet to be appointed. The detailed designs for the navigational aids are complete and are described in Section 2.0.

Section 49 of the Environment Act 1999 (2007 amendments) empowers environment officers as Environment Inspectors to implement and enforce the Environment Act in Kiribati especially on South Tarawa. The Environment Inspectors carry out patrols on illegal activities such as sand and gravel mining and dumping of waste. They are also responsible for review and inspection of proposed and ongoing development projects, including the airport upgrades.

The Aerodromes and Air Navigation Aids Ordinance (1977) applies to: (a) all aerodromes (areas of land or water for the landing and taking off of aircraft) licensed under the Air Navigation (Overseas Territories) Order 1977, and all Government aerodromes; (b) all air navigation aids established under section 4, and the sites upon which such aids are situated; and (c) all aerodromes, air navigation aids and the sites thereof to which the Minister may by notice apply the provisions of this Ordinance. It allows for the Government to declare controlled areas for security and safety around aerodromes and navigational aids and conduct maintenance as and when required. The Civil Aviation Act 2004 (based on New Zealand legislation) provides for the administration and management of the civil aviation sector in Kiribati including delegations of authority, functions, rules, licensing and security.

The Mineral Development Licensing Ordinance 1977 makes provision for the licensing and development of activities relating to the utilisation of Kiribati's mineral resources. Any developments requiring minerals to be sourced within Kiribati must apply for a Mining License and will need a Quarry Management Plan in support of the Mining License application. The volumes of mineral material (e.g. aggregate) required for CXI are small and will be imported by the contractor (and subject to quarantine and import regulations).

The Wildlife Conservation Ordinance (1977) allows the Minister to declare areas as wildlife sanctuaries and protection of specific animal and bird species. Within a wildlife sanctuary no person shall hunt, kill or capture any bird or other animal (other than a fish) or search for, take or wilfully destroy, break or damage the eggs or nest of any bird or other animal. "Closed areas" are wildlife sanctuary areas which are only accessible by license holders, wildlife wardens and public officers.

Land put aside for reserves has three main pieces of legislation. The Recreational Reserves Act 1996 allows for land owned or leased by the Government to be reserved for recreational purposes for the use and enjoyment of the people of Kiribati. The Prohibited Areas Ordinance 1957 provides for certain islands and their territorial waters to be prohibited areas, set aside for conservation purposes. The Closed Districts Act 1990 allows for parts of islands to be declared for conservation purposes.

The Land Planning Ordinance (Cap.48, 1977) is the legal instrument that allows for the designations of land for specific purposes (e.g. water reserve protection) and defines a general land use plan as "indicating the use or class of use to which every part of the land depicted thereon maybe permitted to be put on for development or redevelopment".

3.1.1 Environment License

The airport developments, and any construction work designed to enable the airport developments, are environmentally significant activities (ESA) as defined in the Schedule of Environmentally Significant Activities (Section 14.0) of the Environment Act 1999. Therefore an environment license is required in order to carry out the developments as described in Section 2.0 of this CXI EMP. Initial meetings with the ECD (responsible for

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administering the environmental license application process) have indicated that a comprehensive EIA would be required for the upgrade works proposed under the KAIP. The required contents of a comprehensive EIA have been provided and are presented in Appendix E. The table in Appendix E also provides references and comments as to where information requested in a comprehensive EIA has been addressed in this CXI EMP.

The steps and likely timeframes for environment license applications which require a comprehensive EIA are identified below.

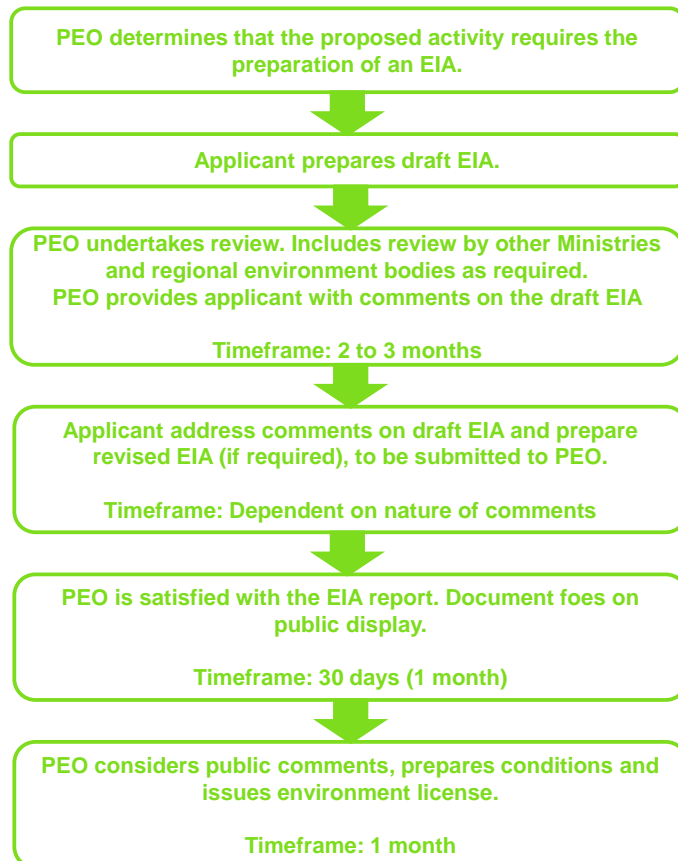


Figure 3 Steps and likely timeframes of the environment license application process for ESAs (Source: Environment License Application Guideline, Version 2 issued 2 September 2011)

As stated in section 3.1 the completed Environment License application is included in Appendix F. At this stage the contractors for the different components of work have yet to be appointed. The detailed designs for the navigational aids are complete and are described in Section 2.0.

3.2 International Obligations

Kiribati is also a signatory to a number of international agreements. Listed below are some of the more applicable agreements to the type of activities of the KAIP. This list is not exhaustive.

- Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Waste and to Control the Transboundary Movement and Management of Hazardous Waste within the South Pacific region. (Adopted at Waigani, PNG on 16 September 1995)
- Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Adopted at Noumea, New Caledonia on 24 November 1986) and the —
Protocol concerning Cooperation in Combating Pollution Emergencies in the South Pacific Region
Protocol for the Prevention of Pollution of the South Pacific Region by Dumping
- Agreement Establishing the South Pacific Regional Environment Program (SPREP Convention)
- Stockholm Convention on Persistent Organic Pollutants (Adopted at Stockholm on 23 May 2001)

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There are also a number of international standards and operating procedures that the airport operations must comply with (e.g. ICAO and CAANZ).

Due to the problems regarding solid waste in Kiribati and the need to export all non-recyclable or reusable waste from the project the Waigani Convention and Basel Convention are particularly relevant and will need to be adhered to in preparing hazardous substances (e.g. waste oil, lubricants, articles containing polychlorinated biphenyls) for shipping and final disposal at acceptable and licensed waste facilities. The conventions outline the necessary information required for documents (notification and movement) and agreements that need to be in place with the receiving territory.

3.3 World Bank Policy

The KAIP is a category B project under WB environmental and social screening guidelines and requires development of the project specific EMP. Due to the nature of the project it is expected that environmental impacts will be site specific, few if any are irreversible, and mitigation measures can be readily designed and implemented. In accordance with the WB Operational Policy 4.01 Environmental Assessment this EMP includes information on mitigation, monitoring, capacity development and training, and implementation costs. The EMP outlines the potential environmental impacts and the measures needed to prevent, minimise, mitigate or compensate for adverse impacts and improve environmental performance of the project.

The EMP is a dynamic document which must be updated as consultation and detailed designs of the project components are finalised to ensure currently unanticipated impacts and revised mitigation measures are addressed. Effective implementation of the EMP is a requirement of the funding agencies and local legislation so monitoring is an integral component of implementation. A Monitoring Plan is included in Section 7 (and Appendix C) of this EMP. This EMP is to form part of the bidding documents for contract(s) awarded under the KAIP and will form the basis of the contractor's EMP.

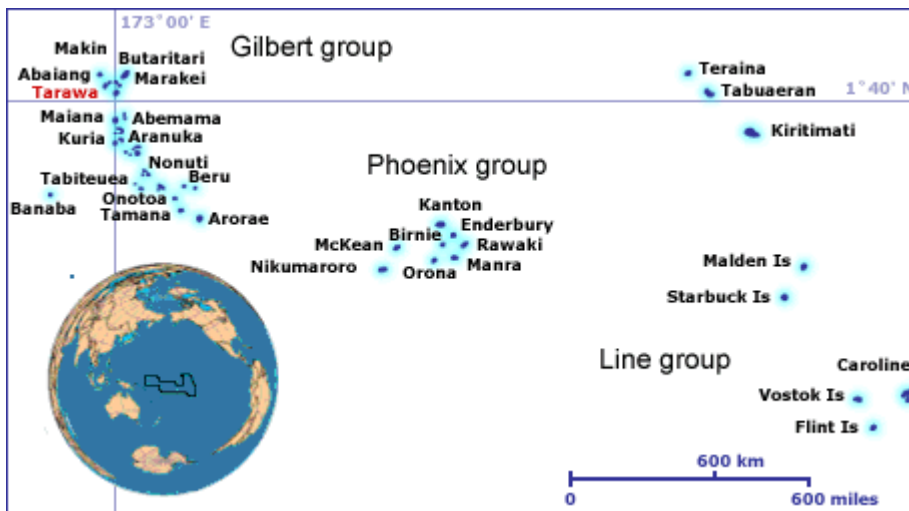
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4.0 Environmental and Social Environment

4.1 Physical Environment

4.1.1 Location and Geography

Kiribati is scattered over three island groups, the Gilbert Group, the Phoenix Group, and the Line Group and stretches some 4,000km located between Longitude 170 degrees East and 150 degrees West in the Central Pacific Ocean, on either side of the equator. See Figure 4 for the general location of Kiribati and a map of the islands. The three groups of islands are coral atolls with the exception of Banaba which is a raised limestone island. Of the 33 islands comprising the Kiribati only 21 are inhabited. The country has two international airports, operating from Tarawa Island (Bonriki International Airport) and Kiritimati Island (Cassidy International Airport).



Source: Kiribati Tourism (<http://www.kiribatitourism.gov.ki/index.php/aboutkiribati/maps>)

Figure 4 Kiribati location map and Islands

Kiribati's exclusive economic zone (area of the ocean in which it controls fishing and other rights) covers more than 3 million km².

The Line Group which is comprised of 11 atolls has a total land area of 503 km². Kiritimati, an atoll in this group, has the largest land area of any coral atoll in the world and measures 384 km². The atoll rises to approximately 13 m above sea level on the southeast peninsula (shown in Figure 6).

4.1.2 Land Use

Land at CXI is Government owned and is remote. The nearest settlement is approximately 1.5 km to the west. There are no accessible settlements east of the airport.

The airport is located within a designated water reserve protection area approximately 400 m from the coast at the nearest point (eastern runway end).

4.1.3 Climate

Kiritimati has a tropical climate which is hot and humid and moderated by trade winds, most common are the north easterlies and easterlies. The average temperature varies between 26 °C and 29 °C. Average rainfall in Kiritimati is 975 mm. Rainfall is usually higher from December through to April, with September and October being the driest months. Kiritimati regularly experiences droughts during La Nina conditions.

4.1.4 Soils and Geology

Like other coral atolls and islands, the nature of the soil is derived from limestone which has been formed as a result of coral formation over thousands of years. The poor and infertile nature of the soil is due to its alkalinity, porosity and lack of essential elements which limits its ability to support plant life. Consequently, it is incapable of supporting intensive agricultural activities.

The topsoil is thinly spread over most of the area with plant cover and other areas covered with wild bushes. Due to their ability to withstand the harsh atoll conditions the predominant plants species that survive are coconuts

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(*Cocos nucifera*), pandanus or screw pine (*Pandanus tectorius*), salt bush (*Scaevola sericea*), and other tolerant indigenous plants and trees.

4.1.5 Water Resources

Freshwater resources in Kiritimati are extremely vulnerable to over extraction and contamination from pollution and salt water intrusion. Groundwater in the form of freshwater lenses overlying seawater, are the primary source of water on the island. The upper surface (groundwater table) of a freshwater lens is typically about 1.5 to 3 m below ground and varies with the tide and rainfall. Rainwater harvesting is increasing but is not yet widely practiced. The high porosity of the soils means that there are no surface freshwater resources. The freshwater lenses on Kiritimati Island are listed in Table 1 below and shown in Figure 5.

Table 1 List of major and minor freshwater lenses on Kiritimati Island

Major Freshwater Lenses	Minor Freshwater Lenses
Decca	Tabwakea (formerly known as Lease village)*
Four Wells	North West Point*
Main Camp	Poland village
Banana*	Area between Poland and Paris
New Zealand Airfield	

* Lense located under the CXI site
Source: Falkland and White, 2007²



Figure 5 Approximate boundaries of major and minor freshwater lenses along the road rehabilitation route (adapted from Falkland and White, 2007)

Water reserve protection areas are designated over the main water lenses on Kiritimati. However there are no regulations in place on Kiritimati protecting these water reserve protection areas. Urban areas are placing higher demands on water supply and any development needs to consider water demand and sanitation carefully both during construction and operation. Figure 6 shows a general land use plan of Kiritimati including conservation areas and water reserves. CXI is located within a water reserve protection area.

² Falkland, T. and White, I. (2007). *Kiribati Preparing the Outer Island Growth Centre Project – Phase 2 (Water Supply and Sanitation)*. Working Paper No.1: Hydrology. Sinclair Knight Mertz of Melbourne, Australia, for ADB TA No. 4456-KIR, December 2007.

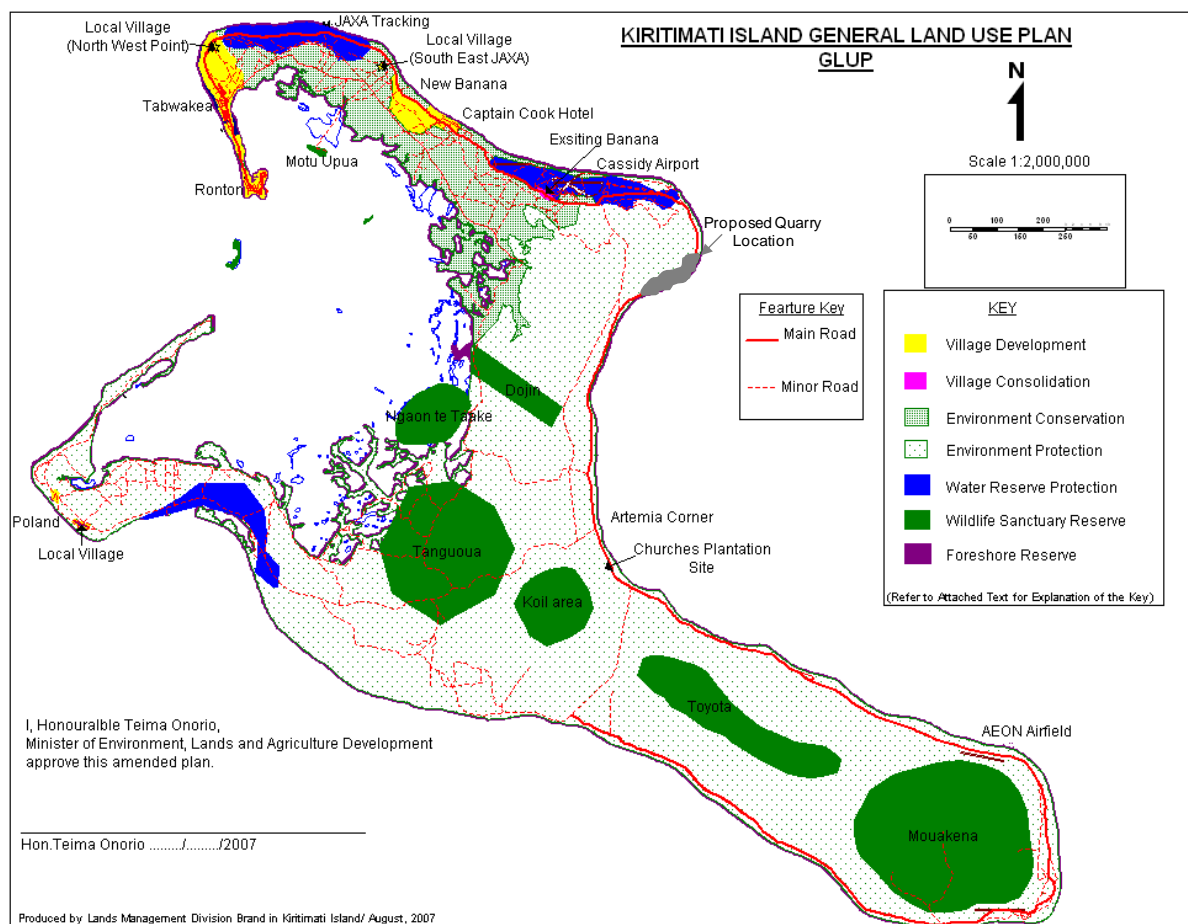
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Figure 6 Kiritimati Island land use plan showing investment sites and proposed quarry.

Due to supply and water quality pressures on Kiritimati's freshwater resources water efficiency measures and rainwater harvesting are to be incorporated into the terminal design. During the construction phase the Contractor will be responsible for securing a water supply which does not adversely affect the community's freshwater reserves (e.g. their own mobile desalination plant and additional rainwater harvesting).

4.2 Biological Environment

4.2.1 Marine Biodiversity

The coastal areas of Kiritimati are characterized by white sandy beaches, reef flats, reef patches, lagoons, mangrove forests, extensive reef mud flats and sea grass beds. These areas contain a variety of habitats, numerous ecosystems and marine organisms. The coastal areas support fishing, recreation, trade and communication. The marine environment is a critical and strategic resource for Kiribati as it provides the mainstay for subsistence.

Mangrove forests do exist on the lagoon foreshore. Replanting efforts are also underway to re-establish mangroves along the airport causeway road. Mangrove rehabilitation is undertaken by the Government under the World Bank funded project, Kiribati Adaptation Project (KAP). It includes planting of mangrove in selected areas prone to coastal erosion and in areas to protect causeways. Several types of the mangroves are found in Kiribati namely the white mangroves (*Sonneratio alba*), the tongo buangu (*Bruguiera gymnorhiza*), te aitoa (*Lumnitzera littorea*), and the red mangrove (*Rhizophora stylosa*). While the airport site is located close to the lagoon in some places (less than 50 m) there should be no impact on the lagoon mangrove forests or replanting. Wastewater from site activities will be captured for discharge to land (or treatment) and will not be allowed to flow directly into the lagoon or ocean.

Ministry of Fisheries and Marine Resources is responsible for the management of marine resources including production of aggregates and sand from the coastal areas. Preventing the destruction of marine resources

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including coral reefs is necessary. Therefore, all material to be used for the KAIP shall be sourced from approved overseas quarries or borrow pits.

4.2.2 Terrestrial Biodiversity

Kiritimati Island is vegetated by low shrubland and grassland. The only woodland is open coconut palm (*Cocos nucifera*) plantations with small groves of Catchbird Trees (*Pisonia grandis*), at Southeast Point, Northwest Point, and on Motu Tabu. There are approximately 50 introduced plant species found mostly around settlements, former military sites and roads. The only vegetation clearance associated with the CXI upgrade will be in the vicinity of new buildings (locations to be decided) and for trenches and foundations pads associated with the navigation aids and lighting installations.

Beach Naupaka (*Scaevola taccada*) is the most common shrub and dominates the vegetation on much of the island, either as pure stands or interspersed with Tree Heliotrope (*Heliotropium foertherianum*) and Bay Cedar (*Suriana maritima*). Bay Cedar is dominant on the drier parts of the lagoon flats where it grows up to 2m tall, and Tree Heliotrope is found slightly inland from the sea or lagoon shore. The wetter parts of the lagoon shore are often covered by abundant growth of Shoreline Purslane (*Sesuvium portulacastrum*).

4.2.3 Rare or Endangered Species

The 2008 International Union for Conservation of Nature (IUCN) Red List identified a total of 88 species in Kiribati which are threatened. None of the species identified as threatened are endemic and no species have been identified as extinct. A total of 488 species were assessed and 6 bird, 1 mammal, 7 fish, 73 invertebrates and 1 reptile species were identified as being threatened. The IUCN regard the threatened status of animals and plants as one of the most useful signs for assessing the condition of an ecosystem and its biodiversity. The IUCN Red List of Threatened Species™ (IUCN Red List) is widely recognized as the most comprehensive, apolitical approach for assessing and monitoring the status of biodiversity. The green sea turtle, hawksbill turtle, bay shark, and the leatherback turtle are endangered.

The location of the airport is not near any conservation areas and is located within a remote area of the island. There is potential for activities carried out in relation to this project to encounter a threatened species. Mitigation measures to deal with these encounters have been identified in section 7 of this EMP.

4.3 Socio-economic Conditions

4.3.1 Population and Demographics

The original inhabitants of Kiribati are Gilbertese, a Micronesian people. Approximately 90% of the population of Kiribati lives on the atolls of the Gilbert Islands. Owing to overcrowding in the capital on South Tarawa, in the 1990s, a program of directed migration moved nearly 5,000 inhabitants to outlying atolls, mainly in the Line Islands.

The total population of Kiribati is 103,058 people (2010 Census). Kiritimati has an official land area of 388.4 km² and a population of 5,586 (49% female), giving a population density of 14 people per km² however settlements are limited to four villages.

Table 2 Kiritimati village population (2010 Census)

Village	Population (2010)
London	1,879
Tabwakea	2,311
Banana **	955
Poland	441

** This village is adjacent to the airport

4.3.2 Education and Health

Kiritimati has three schools on the island:

- St. Francis School in Tabwakea village
- Junior Secondary School between Tabwakea and London villages

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- Tennessee School between Tabwakea and London villages

The hospital is in London village, approximately 25 km from the airport.

Kiribati has an extremely high incidence of water-borne diseases with an infant mortality rate amongst the highest in the Pacific at 46 per 1,000 live births, which is attributed to infantile diarrhoea. The World Health Organization (WHO) and health officials report an average of three outbreaks of diarrhoea annually directly linked to poor water supplies, inadequate sanitation, unsafe practices and poor public hygiene.

4.3.3 Livelihoods and Economic Activities

The primary source of income on Kiritimati is from formal work (wage earners) but unemployment and under-employment is high. The 2006 Household Income and Expenditure Survey (HIES) reported 33% of the population of the Line Islands (only Tabueran and Kiritimati were surveyed) considered themselves unemployed while 32.5% were engaged in wage or salary work or owned a business. 27.6% of households surveyed were involved in subsistence activities.

The HEIS showed that the average household in the Line Islands (Tabueran and Kiritimati only) earned \$12,345 per year (including almost \$4,000 “cash equivalent” for subsistence activities) but spent \$12,506 each year with half of this spending being on food.

4.3.4 Land Tenure and Rights

The land tenure system in Kiribati is complex however all land on Kiritimati is Government owned and leased to individuals and families, usually on 25 year leases.

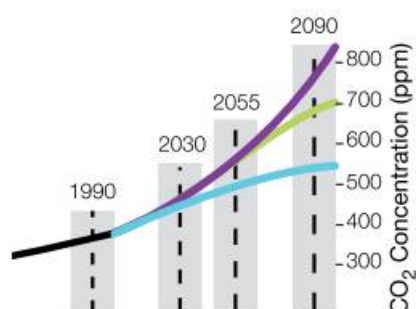
The Land Planning Ordinance 1972, revised 1977, establishes the right of Government to set aside designated areas, as was done with effect from October 1979 for the whole of Kiritimati Island (Subsidiary Legislation to Section III). The Native Lands Ordinance 1956, revised 1977 establishes the principle of indefeasibility of native title to land (S.4), though land may be alienated by the Crown (S.5(2)).

4.4 Projected Climate Changes and Impacts

The Pacific Climate Change Science Program (PCCSP) (part of the International Climate Change Adaptation Initiative) conducts critical climate research and capacity building in Pacific Island countries. Information regarding climate change projections was obtained from the BoM and CSIRO (2011) *Climate Change in the Pacific: Scientific Assessment and New Research (Vol. 2: Country Reports)* produced by the Pacific Climate Change Science Program.

Kiribati, like many other Pacific atoll nations are already experiencing the effects of increased temperatures and rising sea level. Sea level (satellite data) has risen by 1 to 4 mm per year since 1993. Sea level does fluctuate throughout the year particularly during La Nina years which tend to record warmer ocean temperatures. The annual mean air temperature (since 1950) has increased by approximately 0.184 °C per decade on Tarawa (no specific temperature data for Kiritimati provided). Rainfall data for Kiritimati has shown an increasing trend in annual and wet season rainfall since 1951, but no trend in the dry season.

The projected design life is 20 years for the runway, and 50 years for the upgraded terminal structure (or less for specific components such as cladding). Climate change projections for 2030, 2055 and 2090 (relative to 1990) were reviewed. The PCCSP report (as identified above) reviewed a number of climate projection models to determine the most plausible representations of future climate in the Pacific under the three emission scenarios developed by the Intergovernmental Panel on Climate Change (IPCC). The three emission scenarios are: low (B1), medium (A1B) and high (A2), for time periods around 2030, 2055 and 2090 (refer to Figure 7 for details of emission scenarios).

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Source: PCCSP, 2011. *Current and future climate of Kiribati Brochure*. Kiribati Meteorological Service, Australian Bureau of Meteorology and CSIRO.

Figure 7 Carbon dioxide (CO₂) concentrations (parts per million, ppm) associated with three IPCC emissions scenarios: low emissions (B1 – blue), medium emissions (A1B – green) and high emissions (A2 – purple). The PCCSP has analysed climate model results for periods centred on 1990, 2030, 2055 and 2090 (shaded).

Table 2 below shows the projected changes in annual average air temperature and sea level for the Line Islands (location of Kiritimati Island) for the three emission scenarios and the three time horizons. Sea level rise should be considered when establishing the design terminal floor levels, in conjunction with the intended design life and appropriate freeboard requirements.

Table 3 Air temperature and sea level rise projections for the three emission scenarios and three time periods

Annual Average Air Temperature Projection (Line Islands)				Sea Level Rise Projection (Kiribati)			
Values represent 90% of the range of the models and changes are relative to the average of the period 1980-1999.							
	2030 (°C)	2055 (°C)	2090 (°C)		2030 (cm)	2055 (cm)	2090 (cm)
Low emissions scenario	0.2-1.2	0.6-1.8	1.0-2.4	Low emissions scenario	4-13	9-25	16-45
Medium emissions scenario	0.3-1.3	1.0-2.2	1.6-3.4	Medium emissions scenario	5-14	10-29	19-57
High emissions scenario	0.4-1.2	1.0-2.0	2.3-3.5	High emissions scenario	5-14	10-28	20-58

Source: PCCSP, 2011. *Current and future climate of Kiribati Brochure*. Kiribati Meteorological Service, Australian Bureau of Meteorology and CSIRO.

In the short term (2030) the climate models prediction for rainfall do not increase (or decrease) significantly, however by 2090 it is expected that rainfall will increase. There is only low confidence in the models prediction. There is high confidence that the intensity and frequency of extreme rainfall days are projected to increase. As most runoff from rain events goes to natural soakage this does not impact on the detailed designs.

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5.0 Consultation and Stakeholder Engagement

5.1 Background and Approach

As required by WB Safeguards Policies and the Kiribati Environment Act consultation and disclosure of Category B projects must be undertaken with project affected groups (stakeholders) and non-government organisations (NGO). The potential environmental and social impacts of the project require the opportunity for discussion and review during the environmental assessment/ EMP process to inform detailed design and mitigation measures. This EMP will remain a draft until public disclosure and consultation has been completed. This will allow for the EMP to be updated with details of consultation and disclosure as and when this is completed. Disclosure and consultation will be the responsibility of MCTTD either directly or through their nominated Consultant.

5.2 Outcomes of Consultation to Date

During April 2011 MCTTD undertook a program of consultation on Kiritimati with assistance provided by the Ministry of Line and Phoenix Islands. The format of the consultation was through a series of public meetings. In total 11 public meetings were held at different maneaba in Tabwakea, Tenneese, Ronton and Banana villages. The focus for many was the road rehabilitation. However targeted, informal conversations were had with selected individuals (e.g. airport staff, Wildlife Unit) regarding the airport. The Port Manager did express concern with the absence of high capacity lifting machinery which could impact the time and ease of loading and unloading of cargo or heavy goods from vessels.

A second round of consultation was undertaken in February 2012 involving six public meetings. The consultation team consisted of a representative from MCTTD headquarters (Ms. Teboranga Tioti), MLPD (Mr. Moutu Barairai and Mr. Tiaon Tewaaki Kobae), MELAD (Ms. Ratita Bebe) and the CXI Airport Manager (Ms. Kitaea Mikaere,). Again much of the consultation focussed on the road rehabilitation project. However a key issue which was raised is also relevant to the CXI airport upgrades and that is the recruitment of casual labourers for the project must be fair and transparent (in compliance with Kiribati labour laws). Public meetings were held in maneaba in Tabwakea, Ronton, and Banana.

5.3 Disclosure

Disclosure does not equate to consultation (and vice versa) as disclosure is about transparency and accountability through release of information about the project. The draft overarching KAIP EMP has been made available on the WB Infoshop website and in hard copy at government offices (most applicable and accessible) and the ECD website. A draft of this updated KAIP CXI EMP should also be made available online (WB and government websites) and hard copies available at government offices and community centres in Kiritimati.

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6.0 Environmental and Social Impacts

6.1 Overview of Impacts

The CXI KAIP scope is to upgrade the terminal, provide new buildings and upgrade navigation aids and lighting. New land acquisition is not required and the project is unlikely to cause any major negative environmental or social impacts as the work is improving existing infrastructure. The social outcomes of the CXI KAIP are expected to be positive by improving safety, accessibility and mobility of island communities. No land acquisition is required thus no physical resettlement will be necessary.

Possible negative impacts related to the airport are expected to be confined to the construction phase. Public notices and consultation with affected people will continue throughout the project. Where appropriate warning notices and project bulletins will be posted informing the community when particular stages are to be completed and opportunities for involvement, whether through employment, collection and reuse of demolition materials or if there are complaints. With timely and proper implementation of this EMP and application of appropriate mitigation measures, most if not all the potential negative impacts can be prevented or minimized. These impacts are expected to be limited to the following impacts, however this EMP is a dynamic document and any changes in design or construction methodology may result in a reduction of impacts or additional impacts that will require mitigation.

6.2 Environmental Impacts

6.2.1 Solid Waste

Clearing of old terminal and derelict equipment would lead to the generation of excess soil and debris waste. Kiritimati has recognised waste management as a significant problem which the community and Government are struggling to overcome. Implementing reuse and recycling opportunities are paramount as are the removal of any unusable waste (including hazardous substances) at the end of the project. The island cannot manage the potential level of waste generated from the demolition and construction activities and burning of waste can cause odour and health effects on the community.

The export of waste to another territory transfers the potential solid waste impacts (e.g. air, land and water pollution) therefore careful due diligence of the receiving waste facility is required to ensure the facility is a licensed operation (under the receiving country's legislation) and that it is managed according to standard operational management practices for solid waste facilities. The trans-boundary movement of waste can also cause pollution at sea if the waste is not properly packaged and prepared for transport.

Material will be generated from the excavations associated with navigational aids and lighting concrete pads, and cable trenches. Most of the raw material can either be used to backfill areas where old equipment or infrastructure has been removed or as a resource (e.g. crushed concrete) for general use by MPWU and the community.

6.2.2 Water Resources

Freshwater will be required for workers and some construction activities (e.g. dust suppression and concrete production). The impact on current water supply could be major if not properly mitigated through good resource planning. Water efficiency, conservation and reclamation practices will be adopted, for example use of an osmosis plant for non-potable water purification.

The demands of the terminal on the island's water supply have potential to have long term lasting impacts if not properly addressed during the design phase.

6.2.3 Biological Resources

The CXI KAIP will upgrade the existing infrastructure. The airport is located remotely from any settlements or conservation areas. It is not anticipated that there will be any further loss of habitat or disturbance that is not short term (e.g. related to the construction phase). There is the possibility that in the process of construction works fauna (e.g. nesting birds) could be impacted or the temporary removal of vegetation (e.g. for trenching) could impact on potential habitats. The habitats surrounding the runway are primarily open grass. Mitigation measures will include liaison with the ECD should any fauna (reptile, avian, or mammal) be encountered that affect construction activities (e.g. nesting bird).

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6.2.4 Hazardous Materials

Potential soil and water pollution from construction run-off with fuel and lubricants are expected to be temporary and minor. Work practices and mitigation measures for spills will be implemented, including spill response plan and bunded areas for storage (during construction and operation phase).

There is also potential for hazardous materials to be in the building materials used in existing structures that are to be demolished (e.g. asbestos downpipes and guttering on the terminal).

6.2.5 Noise and Vibration

Noise and vibration disturbances are particularly likely during construction related to the transportation of construction materials from the port and operation of equipment. These impacts will be short-term and affect different people at different times. In some areas of the road network there is little distance from the road edge and a house or building. Therefore noise and vibration is likely to be an ongoing issue when equipment and materials are transported from the main port to the airport (some 25 km). As the airport is existing infrastructure, any noise or vibration impacts are probably already being experienced by the local community.

6.2.6 Erosion and Sediment Control

Some soil erosion may occur as a result of the removal of shrubs and earth cover for foundations and trenches. The impacts on vegetative cover will be short-term and reversible through natural regeneration. There is only a thin topsoil layer in most parts and runoff is easily filtered into the underlying groundwater table. Where topsoil is required to be cleared this will be set aside for use in restoration of disturbed areas.

Sediment has the potential to be generated during any excavations or land clearing activities, particularly for navigational aids. Excavation will also be required for the terminal however details of these excavations have yet to be defined as these components are at the draft design stage and have not been confirmed. Likely excavation requirements will be for rainwater harvesting and installation of septic tank system and associated pipework.

6.2.7 Air Emissions

Air pollution can arise due to improper maintenance of equipment and dust generation. Impacts are expected to be localised and short term with only minor negative impact on the ambient air quality in the vicinity of the construction areas. No ongoing impact to air quality is expected as this is rehabilitation of existing infrastructure.

6.2.8 Traffic and Airport Operations

Traffic impacts will occur in transporting equipment and materials from the port and to and from the airport. These impacts will mostly be short-term and through good mitigation and traffic management the impacts should be low. The Contractor is responsible for developing and implementing a Traffic Management Plan (TMP). The TMP will need to consider pedestrian traffic as well as vehicle traffic management, and particular attention will need to be given to management near sensitive receptors (residential dwellings, markets, churches, schools etc.). Upon completion of the construction phase of works traffic and road safety impacts caused by the CXI KAIP should cease.

The MOWP will specify safety measures required for the operation of the airport when construction work is underway. The MOWP includes instruction on airfield operational distances, FOD protection, airfield security, and responsibility hierarchy and communication methods.

6.2.9 Wastewater Discharges

Sanitary facilities for workers will be provided to prevent lagoons or other areas being used. The terminal will have a new septic system installed. The system selected for the sanitary waste collection and or treatment must not discharge liquid within the water reserve catchment area and this can introduce pathogens and pollution to the groundwater. Any holding or collection system will require resources and equipment to maintain and collect the sludge. Failure to ensure resources and equipment are available for operation of the sanitary waste system prior to selection could result in sewage overflows into the water reserve catchment area once the system is full.

Uncontrolled wastewater (e.g. sewage, grey water, wash water) discharges have the potential to contaminate soil, water and spread disease. Wash water from equipment can be contaminated with hydrocarbons (e.g. oil and fuel) which have a detrimental effect on aquatic life, water quality and soil quality. There are also human health impacts regarding hydrocarbon exposure which vary in severity depending on type and length of exposure. Wash water from concrete processing and cutting is highly alkaline and can burn vegetation, result in fish kills and also cause burns to the skin. Sediment loads in wash water if allowed to discharge to either marine or freshwater systems

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can also adversely impact aquatic life and water quality. While the potential impacts of uncontrolled discharges of wastewater can adversely affect the receiving environment, they can be easily mitigated through planning and implementation of mitigation measures (as outlined in Section 7.8).

6.2.10 Biosecurity

All aggregate material and equipment will most likely need to be imported as there are very limited natural resources available on Kiritimati. Imported aggregate and equipment can harbour plant and animal species which may pose a threat to Kiribati's biodiversity and ecosystems. The aggregate can also be a source of contamination from pesticides and other harmful substances which can pose short and long term environmental and public health risks.

6.2.11 Secondary and Cumulative Impacts

Secondary and cumulative impacts tend to be triggered by impacts to environmental resources that function as integral parts of a larger system over time and space, and can initially be 'invisible' to the normal present time impact assessment. Secondary impacts can include land use changes due to improved accessibility which in turn can impact habitats and pressure on existing resources and utilities (e.g. water supply). Secondary and cumulative impacts also often cannot be managed solely by the project executors (MCTTD). Town planning (e.g. restricting development and clearing of land) and conservation are two examples of external influences which can assist in reducing secondary and cumulative impacts.

Secondary and cumulative impacts are not always negative, positive impacts include increased business and supply chain opportunities due to improved infrastructure and accessibility, improved access to health and education facilities and employment (beyond the scope of the project).

6.2.12 **The airport is existing infrastructure which has existing impacts (e.g. noise and dust generation). In most cases the CXI KAIP will not be able to remedy these impacts however the designs can lessen and in some cases mitigate some of the impacts. Coastal and Marine Environment Impacts**

A number of activities have the potential to adversely affect the marine and coastal environment, including uncontrolled discharges (e.g. stormwater, wastewater, spills), use of heavy machinery adjacent to the coast, and increased shipping. Impacts range from destruction of habitat and natural protection (e.g. the boulder bank and mangrove forest), to reduced or contaminated water quality and loss of aquatic life due to pollution.

6.3 Social Impacts

6.3.1 Health and Safety

During construction and operation health and safety is to be managed through a Site Specific Safety Management Plan (to be developed by the contractors for their respective works) and application of international environmental and health and safety (EHS) standards. The primary hazards identified are construction on an active runway, construction works involving heavy equipment and materials, and working in extreme ambient temperatures.

If the trench required for the navigation aids and lighting cabling is to be dug to a depth greater than 1.5 m the sides of the trench will need either batter slopes or shoring to prevent collapse. Exposed trenches pose a risk to the community and airport operations therefore trenches will be progressively filled as the cable ducts are laid. At any one time the maximum length of exposed trench shall be 30 m. Exposed trenches shall be secured at night to prevent access by non-authorised personnel.

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7.0 Mitigation Measures

Due to the nature of the rehabilitation activities proposed there are some mitigation measures which are applicable to all aspects of the project, while others that are specific to particular components e.g. the terminal. Sensitive receptors and environmental values have been identified around the airport site which will require specific mitigation measures for safety and environmental protection. The mitigation measures are outlined in Appendix B. The mitigation tables detail the impact or issue, the mitigation required, where this is to occur, when this mitigation is to be applied, estimated costs, implementation responsibility and supervision responsibility.

This EMP should be included in all bidding documents and form the basis of the Contractors EMP which will detail implementation of the mitigation measures identified in this EMP. The EMPs are dynamic documents which should be updated to include any variation from the current scope or addition of newly identified impacts and mitigation measures that may arise through the bidding and contracting process (if not addressed in the Contractor's EMP) or consultation. The mitigation measures associated with the impacts identified above are detailed below.

7.1 Aggregate, Materials and Equipment Importation

All materials and equipment must be fumigated and official certificates issued prior to arrival in Kiritimati to ensure no plant or animal pests are accidentally introduced. The aggregate and any other fill type material will need to be completely inert and free of contaminants. Verification of source and or results from laboratory testing must be provided for importation. Importation permits and Quarantine certification shall be obtained from the MPWU and Quarantine Department before applying for export permits from the source country of materials. Natural resources of important biodiversity value such as coral reefs shall not be imported as construction materials (either locally or imported).

The increased shipping needs for the import of materials and equipment can have an adverse impact on the port facilities and local lagoon habitats. The scale of shipping needs is to be determined by the contractor and is dependent on the project schedule and construction methodology.

7.2 Hazardous Substance Use, Storage and Disposal

Hazardous liquids (e.g. fuel and lubricants) must be managed within hardstand and bunded areas to prevent runoff to surrounding permeable ground. Bunded areas (secondary containment) must contain the larger of 110 percent of the largest tank or 25 percent of the combined volumes in areas with a total storage volume equal or greater than 1,000 liters. Bunded areas are to be impervious (water tight), constructed from chemically resistant material, and be sheltered from the rain as rain water allowed to collect within the bund could be contaminated if there is any hazardous substance residue on storage containers or spilt product within the bund. A spill response plan must be in place and all workers trained in correct implementation of the spill response plan. Spill kits should be available in close proximity to where hazardous substances are used and stored e.g. on the work truck or beside the fuel store.

Consultation should be undertaken with residents to ensure hours of work are known and the procedure for complaints is readily available on signage.

Asbestos (hazardous substance) could be in some building materials used in the terminal. Other areas, such as wrapped pipes, may also have asbestos containing material (ACM). The International Finance Corporation (IFC) Environmental, Health and Safety (EHS) Guidelines for Occupational Health and Safety (section 2.4 Chemical Hazards) should be followed for demolition, handling and transport of any ACM. An asbestos management plan which clearly identifies the locations where the ACM is present, its condition (e.g. whether it is in friable form with the potential to release fibres), procedures for monitoring its condition, procedures to access the locations where ACM is present to avoid damage, and training of staff who can potentially come into contact with the material to avoid damage and prevent exposure. The plan should be made available to all persons involved in operations and maintenance activities, including the ECD. Repair or removal and disposal of existing ACM in buildings should only be performed by specially trained personnel (equivalent to training standards required under applicable regulations in the United States and Europe) following Kiribati national requirements, or in their absence, internationally recognised procedures.

The ACM will need to be removed from island so any international transport and disposal requirements will also need to be complied with (e.g. Waigani Convention and Basel Convention) and clearly documented in the asbestos management plan. Any personnel in contact with the ACM must be wearing suitable PPE, including

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respiratory protection, suitable for the removal of asbestos to be worn while handling and transporting the material. All workers should be provided with onsite washing facilities, and should wash hands, face, and boots/shoes before eating, drinking or smoking, and before returning home. Work clothing should be removed as soon as possible after arriving home and should be washed separately from other family laundry. It is advisable to have an officer from ECD and or National Health Department onsite during asbestos removal and packing to assist in monitoring and ensuring compliance with environmental, and health and safety requirements. The exact nature of required environmental, and health and safety requirements (also dependent on the type, scale, and deterioration of asbestos containing material identified) should be documented in the asbestos management plan. The plan should describe the work in detail and may include but not be limited to the following:

- Containment of interior areas where removal will occur in a negative pressure enclosure;
- Protection of walls, floors, and other surfaces with plastic sheeting;
- Construction of decontamination facilities for workers and equipment;
- Removing the ACM using wet methods, and promptly placing the material in impermeable containers;
- Final clean-up with special vacuums and dismantling of the enclosure and decontamination facilities;
- Inspection and air monitoring as the work progresses, as well as final air sampling for clearance, by an entity independent of the contractor removing the ACM.

7.3 Safety and Traffic Management

Pedestrian and vehicle safety will be an issue when transporting materials and equipment from the port and to and from the airport site. The Contractors are responsible for developing a TMP which will specify how traffic (vehicle and pedestrian) will be managed, including transport times (outside peak hours), maximum speed and loads of trucks, use of flag controls at site entrances (construction lay down area at the airport) and around specific work areas.

The MOWP will detail the specific safety and security requirements for the airport operations, including safe operating distances and responsibility of key project roles.

7.4 Stormwater and Water Management

During construction clean water diversion bunds will be used to direct any runoff from undisturbed areas away from work areas, stockpiles and storage areas. The diversion bunds will direct this clean water to land for soakage. Runoff will not be directed to discharge directly to the lagoon or ocean (other than natural overland flow).

Water required for construction activities such as dust suppression and concrete production will need to be managed carefully so as not to impact on the island's freshwater supply. Water for use during construction should be carefully planned for at the pre-construction mobilisation stage by the contractor. If required rain water should be collected in advance and a project specific mobile desalination plant imported (or other mobile water treatment unit). Possible non-potable water sources (e.g. seawater) and uses should be identified (e.g. dust suppression, machinery washing), provided there will be no risk of contamination of groundwater. Water saving measures include sweeping of work areas and vehicles tires instead of washing to prevent dust.

Due to the proximity of the water reserve protection area monitoring of selected bores should be completed prior to construction works commence, during construction works and at completion of all construction works. Depending on what works are being undertaken (e.g. terminal versus trenching around the runway) different bores may be selected to provide information on groundwater quality at any given time in that area. As a minimum the bores that should be included in the monitoring programme is the terminal bore, to capture activities related to the terminal upgrade, and the bore nearest to the construction camp, to capture any potential effects as a result of a spill or general site activities. Other bores may also be identified by the ECD as requiring monitoring to determine effects from construction and or operational activities.

Parameters that should be monitored include pH, electrical conductivity and total petroleum hydrocarbons (TPH).

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7.5 Concrete Production

The project requires concrete production for the terminal, navigational aids and lighting. It is unknown whether the bulk of concrete will be prefabricated off island, at a concrete plant on the island or in-situ. If concrete is to be constructed on the island care needs to be taken with slurry and runoff from the concrete. Concrete production should only take place when there is no rain forecast, not near the coast and away from the water reserve catchment infiltration galleries. Concrete slurry is highly alkali and cannot be diluted. Sand bags or diversion drains must be used to divert runoff from concrete cutting or setting areas. Any concrete debris must be collected and disposed of as a hazardous substance and removed from the island. Wastewater from concrete cutting or production must be collected and treated (settling and neutralisation through pH adjustment). All equipment used in concrete production must be cleaned in designated wash down areas away from surface water and not be allowed to permeate to ground.

7.6 Construction Lay Down Area

The construction camp will be used to store equipment and materials for all components of the project, and as such there are a number of potential hazards associated with the equipment and materials. The construction lay down area must be fenced and secured to prevent access by unauthorised personal. Areas within the compound must be clearly marked for solid waste collection, machinery maintenance, hazardous substance storage, plant operations (concrete, bitumen, asphalt) and toilet facilities for workers. Each of these areas must be constructed in such a way to prevent any potential adverse impacts on the surrounding environment. Including hard stand areas, protection from wind and rain, bunding (hazardous substances), clean water diversion drains, and collection and treatment of waste water from site operations (e.g. concrete production, machinery maintenance). The construction camp is not a residential camp. Foreign contract and project staff will utilise existing local accommodation.

7.7 Erosion and Sediment Control

The land on Kiritimati is relatively flat, low lying with porous soils. Wet weather is usually experienced as short, heavy rainfall events, often in the morning or at night. Clean water diversion bunds should be constructed around any excavation to prevent ingress of runoff from surrounding areas. Any ponding which may occur within an excavated area shall either be allowed to percolate into the subsoil or pumped out to a settling area or used for dust suppression at a later date. Excavations should be kept to a manageable size to reduce the time of exposure. Stockpiles of any fine grain materials (e.g. sand and topsoil) must be covered to prevent dust and sediment laden runoff during rain events. All stockpiles must be located on hard stand areas.

The airport is over 350m from the coast at the nearest point (eastern end of runway) so uncontrolled discharges from construction activities are unlikely to occur directly to the marine and coastal environment. Clean runoff should be diverted inland for percolation to underlying groundwater, and potentially contaminated runoff should be collected and treated. Treatment will be dependent on type of potential contamination (e.g. oil water separator for runoff contaminated with hydrocarbons, or settling pond or tank for sediment laden runoff).

7.8 Wastewater Management

There are a number of activities during construction and operation phases of the project which will generate wastewater. During construction wastewater will be generated by the sanitation facilities provided for workers and as there is no reticulated wastewater treatment system for this area of the island, the contractor is responsible for the collection and treatment of the generated wastewater from sanitation facilities. There are a number of options regarding sewage treatment that the contractor can implement to mitigate the potential impacts on the land and water (ocean or groundwater). These include mobile proprietary treatment systems (to be imported for the project) and composting systems. The contractor is responsible for ensuring the treatment and disposal of wastewater is in accordance with MCTTD, MPWU and ECD advice and approved by MCTTD and MPWU.

Wastewater from wash down areas is to be collected either in a settlement pond or tank to allow sediment and particulate matter to drop out before the water can be reused as wash water, dust suppression or in other processes. A separate wash down area is required for machinery or material with oil or fuel residue as this wash water is required to be treated through a mobile oil water separator. Wash water from concrete production, cutting, washing of equipment used and areas where concrete is produced must be collected and treated to lower the pH (closer to neutral) and to allow settlement of suspended solids (see Section 7.5). All wash down areas and wastewater treatment areas, where practical should be located within the construction camp or lay down areas.

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Treated wash water where possible should be reused for dust suppression or within other processes. Direct discharge to the marine or coastal environment is prohibited. Discharges of treated wash water are to occur to land only (outside the water reserve catchment area).

During operation wastewater will be generated from the toilet and basin facilities in the terminal, and ARFF and maintenance building. Indiscriminate discharge of sanitary waste to ground around the airport can contaminate the groundwater (freshwater source) therefore the system selected for the terminal, and ARFF and maintenance building will need to ensure there is no discharge within the water reserve catchment area. Advice and agreement on sanitary system selection and treatment method is required from the Ministry of Line and Phoenix Islands Development, ECD, MPWD and MCTTD (as operators of the airport).

7.9 Solid Waste Management

Waste generated by the project that cannot be recycled or reused (to be determined in consultation with the MPWU, ECD and Kiribati Island Council) is to be removed from Kiribati at the completion of the contractors work. The contractor is responsible for ensuring the waste is packed in shipping containers or other suitable impermeable containment to ensure waste (solid and liquid) is not inadvertently discharged at sea. Details of the receiving waste facility (including transport documentation and agreements to receive the waste) must be provided to MCTTD to ensure the facility is licensed or permitted.

General waste is not to be burnt or incinerated. Vegetative waste (from clearing construction areas) should be composted through existing composting schemes (contact the Kiribati Island Council and or ECD) and topsoil stockpiled for rehabilitation of the construction camp and or lay down areas at completion of the project. If burning or incineration of vegetation is the only suitable disposal method and agreed to by MCTTD, ECD and the Kiribati Island Council then it shall be undertaken with supervision by the onsite Supervising Engineer and in accordance with local legislation and regulations. Burning or incineration is not to occur near any residential or community facilities, areas of protected vegetation or during high winds.

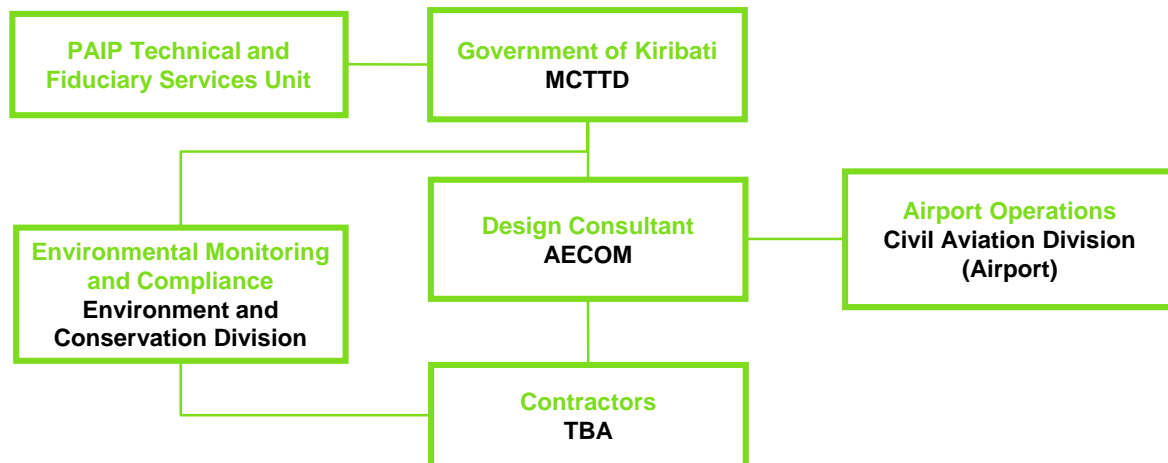
7.10 Marine and Coastal Specific Mitigation Measures

The runway runs in an east to west direction with the ocean at the western end (approximately 680m from the end of the runway) and the ocean at the eastern end (over 350m at the closest point). All project work will be occurring inland and there will be no direct or indirect discharges (stormwater or wastewater) to the marine environment. Temporary stockpiles and equipment parking is prohibited on the beach.

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8.0 Roles and Responsibilities

The MCTTD is responsible for delivery of the KAIP project (including all components), funding received and contracts awarded under the KAIP. MCTTD is the Implementing Agency in regards to funding received from donors including the WB. A Project Management Unit (PMU) within MCTTD has been established to undertake the day to day management of the project. Aspects of the monitoring required by the EMP will be undertaken by MCTTD. The implementation of this EMP is the responsibility of the contractors awarded contracts under the KAIP. The diagram below shows the reporting and responsibilities for this EMP. The ECD has a statutory responsibility to respond to pollution complaints, and ensuring impacts are managed as per the EMP. There will also be ongoing airport operational monitoring requirements of the ECD. The Department of Public Works will work alongside the Resident Engineer in order to capacity build within the department and for ongoing maintenance of the terminal and ARFF and maintenance building.



8.1 Institutional Capacity

MCTTD will require environmental awareness training for monitoring the Contractors. Personnel from the MPWU will work alongside the Contractor and Resident Engineer to capacity build and gain a better understanding of the terminal and ARFF and maintenance building materials being used and ongoing maintenance requirements. A training budget must be put aside to enable this capacity building with the Government departments. There may also be an opportunity for an Officer from the ECD to work with the Contractor's environmental officer. X-ray equipment for security screening has been recommended however this may not be implemented as part of the KAIP. Costs for ongoing monitoring of x-ray equipment have been included below but is provisional based on whether x-ray equipment is actually installed. It is understood that noise meters will be required.

An indicative training budget is as follows:

Training for Contractors and CAD/ MPWU personnel (onsite training in Kiribati)	US\$ 15,000
Operational monitoring of x-ray equipment (annual cost)	US\$ 1,000
Procurement of two noise meters for monitoring (plus duty and delivery)	US\$ 1,000
Miscellaneous (e.g. ECD participation)	US\$ 2,000
TOTAL Budget	US\$ 18,500

8.2 Complaints and Incident Reporting

Environmental complaints and incidents should be referred to the Supervision Consultant's Environmental Officer (or designated staff) for undertaking complaint/incident investigation procedures. All complaints must be acknowledged with the complainant within 24 hours. In general the following procedure should be followed:

- Log complaint/incident, date of receipt and acknowledge complaint receipt
- Investigate the complaint/incident to determine its validity and to assess the source of the problem

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- Identify and undertake any action required, communicate response action to complainant (if requested by complainant)
- Log the date of resolution
- Report the complaint in monthly monitoring report including actions, resolution status and any outstanding actions required.

Signage at site will be displayed by the contractor outlining the complaints procedure and contact details for making complaints.

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9.0 Compliance and Monitoring Plan

9.1 Monitoring Plan

The Environmental Monitoring Plan identifies the environmental monitoring requirements to ensure that all the mitigation measures identified in this EMP are implemented effectively. Environmental monitoring methodology (refer Appendix C for details) for this project includes:

- Audit of detailed designs.
- Audit and approval of site environmental planning documents.
- Consultations with communities and other stakeholders as required.
- Routine site inspection of construction works to confirm or otherwise the implementation and effectiveness of required environmental mitigation measures.

Non-compliance to environmental mitigation measures identified in the EMP will be advised to the Contractor(s) in writing by MCTTD's nominated Environmental Officer as required. The non-compliance notification will identify the problem, including the actions the Contractor needs to take and a time frame for implementing the corrective action.

9.2 Monitoring Plan Reporting

Throughout the construction period, the Contractor(s) will include results of the EMP monitoring in a monthly report for submission to the MCTTD who is responsible for submitting these monthly progress reports to the PAIP Technical and Fiduciary Services Unit (TFSU). The format of the monthly report shall be agreed with all agencies but is recommended to include the following aspects:

- Description and results of environmental monitoring activities undertaken during the month.
- Status of implementation of relevant environmental mitigation measures pertaining to the works.
- Key environmental problems encountered and actions taken to rectify problems.
- Summary of non-compliance notifications issued to the Contractor during the month.
- Summary of environmental complaints received and actions taken.
- Key environmental issues to be addressed in the coming month.

A day to day contract diary is to be maintained pertaining to administration of the contract, request forms and orders given to the Contractors, and any other information which may at a later date be of assistance in resolving queries which may arise concerning execution of works. This day to day contract diary is to include any environmental events that may arise in the course of the day, including incidents and response, complaints and inspections completed.

During airport operations the CXI Managers will include an environmental management section as part of their normal reporting the MCTTD. The environmental management section shall include an analysis of the operation monitoring programme, any environmental issues arising and recommendations (including cost estimates as required) for further action.

MCTTD is also responsible for quarterly progress reports to the WB. This quarterly progress report will include a section on environmental compliance and issues. This section will cover (as a minimum) the overall compliance with implementation of the EMP, any environmental issues arising as a result of project works and how these issues will be remedied or mitigated, and the schedule for completion of project works.

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10.0 Contingency Plan

It is recommended that the Contractors prepare a Contingency Plan encompassing tsunamis, cyclone and storm events. The purpose of the Plan is to ensure all staff are fully aware of their responsibilities in respect to human safety and environmental risk reduction. Procedures should clearly delineate the roles and responsibilities of staff; define the functions to be performed by them, the process to be followed in the performance of these functions including tools and equipment to be kept in readiness, and an emergency medical plan. All of the Contractor's staff should undergo training/induction to the Plan.

The wet season on Kiritimati is December to April which coincides with the cyclone season. Construction activities should be limited to the dry season (May to October) however storm and rain events can still occur during this period causing flooding and bringing high winds.

The Contractors are responsible for monitoring weather forecasts, inspecting all erosion and sediment control measures and undertaking any remedial works required prior to the forecast rain or storm event.

In general the Contractors will:

- Inspect daily weather patterns to anticipate periods of risk and be prepared to undertake remedial works on erosion and sediment control measures to suit the climatic conditions;
- Monitor the effectiveness of such measures after storms and incorporate improvements where possible in accordance with best management practice;
- Ensure appropriate resources are available to deal with the installation of additional controls as and when needed; and
- Inform MCTTD if there are any concerns associated with the measures in place.

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Appendix A

Plans and Detailed Designs

CAD Ref: K:\PROJECTS\ATTA PAIP Airports (48277003-48277004-48277005-48277006)\S_CAD\1.5.3 Working\DRG01.DWG (48277003-AV-2402.dwg)
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SYMBOL LEGEND:

- MEDIUM INTENSITY RUNWAY EDGE LIGHT
- ELEVATED OMNI-DIRECTIONAL WHITE

◻

MEDIUM INTENSITY RUNWAY EDGE LIGHT
- INSET OMNI-DIRECTIONAL WHITE

●

MEDIUM INTENSITY RUNWAY EDGE LIGHT
- ELEVATED OMNI-DIRECTIONAL WHITE / RED

●

MEDIUM INTENSITY THRESHOLD LIGHT
- ELEVATED OMNI-DIRECTIONAL GREEN

■

MEDIUM INTENSITY THRESHOLD LIGHT
- INSET OMNI-DIRECTIONAL GREEN

●

MEDIUM INTENSITY RUNWAY THRESHOLD / END LIGHT
- ELEVATED BI-DIRECTIONAL GREEN / RED

■

MEDIUM INTENSITY RUNWAY THRESHOLD LIGHT
- INSET UNI-DIRECTIONAL GREEN

■

MEDIUM INTENSITY RUNWAY THRESHOLD / END LIGHT
- INSET UNI-DIRECTIONAL GREEN / RED

●

MEDIUM INTENSITY RUNWAY END LIGHT
- ELEVATED UNI-DIRECTIONAL RED

●

MEDIUM INTENSITY ELEVATED TURNING NODE AND TAXIWAY
EDGE LIGHT - ELEVATED OMNI-DIRECTIONAL BLUE

■

MEDIUM INTENSITY ELEVATED TURNING NODE AND
TAXIWAY EDGE LIGHT - INSET OMNI-DIRECTIONAL BLUE
- MEDIUM INTENSITY HOLD POINT LIGHT
- ELEVATED OMNI-DIRECTIONAL YELLOW
- MEDIUM INTENSITY HOLD POINT LIGHT
- INSET UNI-DIRECTIONAL YELLOW
- ⊗

MEDIUM INTENSITY SIMPLE APPROACH LIGHT
- ELEVATED OMNI-DIRECTIONAL WHITE
- ⊗

PRECISION APPROACH PATH INDICATOR (PAPI)
- ⊗

RUNWAY THRESHOLD IDENTIFICATION LIGHT
- ⊗

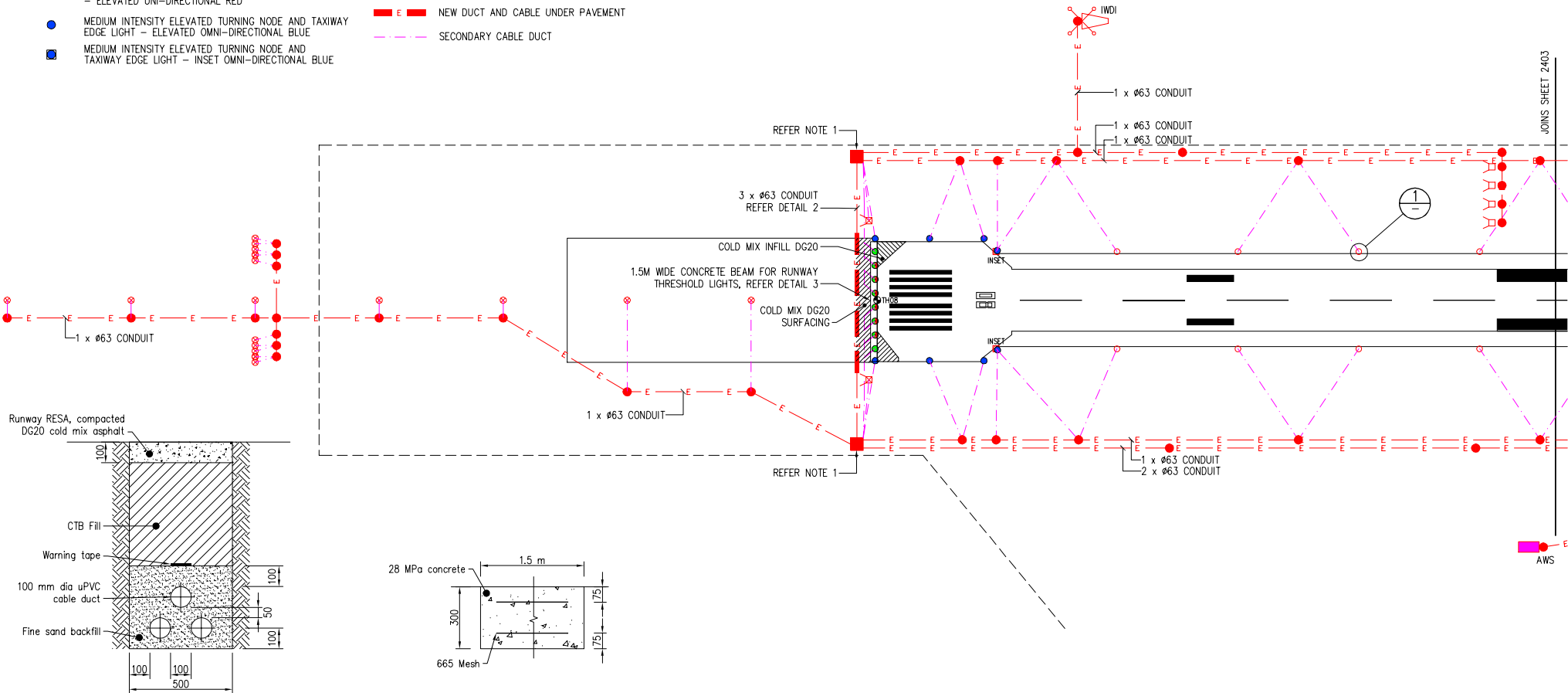
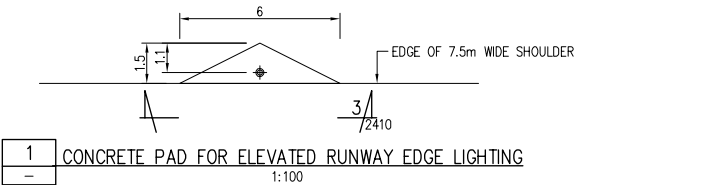
ILLUMINATED WIND DIRECTION INDICATOR 'IWDI'
- SIT PIT
- HEAVY DUTY PIT (CLASS 'D' 900x900x1000)
- AUTOMATIC WEATHER STATION (AWS)
- E —

NEW PRIMARY DUCT AND CABLE
- E —

NEW DUCT AND CABLE UNDER PAVEMENT
- SECONDARY CABLE DUCT

- NOTE 1:
 PITS WITHIN THE RUNWAY GRADED STRIP MUST BE HEAVY
 DUTY TYPE WITH CLASS 'G' COVERS.
- NOTE 2:
 ELECTRONIC FILES WILL BE PROVIDED FOR WORKS SETTING
 OUT.
- NOTE 3:
 SIMPLE APPROACH LIGHTING SYSTEM (SALS) LAYOUT IN
 ACCORDANCE WITH ICAO ANNEX 14.
- NOTE 4:
 CONTRACTOR TO LOCATE AND PROTECT EXISTING AGL
 RETICULATION THROUGHOUT CONTRACT AND ALLOW FOR A
 COORDINATED TRANSITION OF EXISTING TO NEW AGL SYSTEMS

SETOUT INFORMATION:
 TH08
 399999.963mE, 800000.891mN, RL=2.311m



2 3No 100MM DIA DUCT BANK DETAIL
 1 : 10

3 CONCRETE BEAM SECTION
 1 : 10

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REV	NO	BY	DATE	DESCRIPTION	APPD
3	JC	19.04.13	FOR TENDER ISSUE		CR
2	JC	03.05.13	DETAILED DESIGN ISSUE		CR
1	NW	05.04.13	90% DRAFT ISSUE		CR

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING
 OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE
 WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001:2008

DESIGNED	SH	CHECKED	CR
DRAWN	NL	CHECKED	CR
APPROVED	CR	DATE	Apr-13

SCALES:

1:1000 (A1)

AECOM

AECOM New Zealand Limited

CLIENT:



NOT FOR CONSTRUCTION

PACIFIC AVIATION INVESTMENT PROGRAM (PAIP)
 CASSIDY INTERNATIONAL AIRPORT (CXI)
 AIRFIELD LIGHTING & AIR NAVIGATIONAL AIDS
 LAYOUT SHEET 1

STATUS	FOR TENDER	DRAWING NO	60277003-AV-2402	REV	3
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Last saved Wed, 19 Jun 2013 05:06 pm

CAD Ref: K:\PROJECTS\ATTA PAIP Airports\40277003\40277003-02\CON\40277003-AV-2403.dwg

SYMBOL LEGEND:

- MEDIUM INTENSITY RUNWAY EDGE LIGHT
- ELEVATED OMNI-DIRECTIONAL WHITE

◻

MEDIUM INTENSITY RUNWAY EDGE LIGHT
- INSET OMNI-DIRECTIONAL WHITE

●

MEDIUM INTENSITY RUNWAY EDGE LIGHT
- ELEVATED OMNI-DIRECTIONAL WHITE / RED

●

MEDIUM INTENSITY THRESHOLD LIGHT
- ELEVATED OMNI-DIRECTIONAL GREEN

■

MEDIUM INTENSITY THRESHOLD LIGHT
- INSET OMNI-DIRECTIONAL GREEN

●

MEDIUM INTENSITY RUNWAY THRESHOLD / END LIGHT
- ELEVATED BI-DIRECTIONAL GREEN / RED

■

MEDIUM INTENSITY RUNWAY THRESHOLD LIGHT
- INSET OMNI-DIRECTIONAL GREEN

■

MEDIUM INTENSITY RUNWAY THRESHOLD / END LIGHT
- INSET OMNI-DIRECTIONAL GREEN / RED

●

MEDIUM INTENSITY RUNWAY END LIGHT
- ELEVATED OMNI-DIRECTIONAL RED

●

MEDIUM INTENSITY ELEVATED TURNING NODE AND TAXIWAY
EDGE LIGHT - ELEVATED OMNI-DIRECTIONAL BLUE

■

MEDIUM INTENSITY ELEVATED TURNING NODE AND
TAXIWAY EDGE LIGHT - INSET OMNI-DIRECTIONAL BLUE
- MEDIUM INTENSITY HOLD POINT LIGHT
- ELEVATED OMNI-DIRECTIONAL YELLOW
- MEDIUM INTENSITY HOLD POINT LIGHT
- INSET OMNI-DIRECTIONAL YELLOW
- ⊗

MEDIUM INTENSITY SIMPLE APPROACH LIGHT
- ELEVATED OMNI-DIRECTIONAL WHITE
- ⏏

PRECISION APPROACH PATH INDICATOR (PAPI)
- ⏏

RUNWAY THRESHOLD IDENTIFICATION LIGHT
- ⏏

ILLUMINATED WIND DIRECTION INDICATOR 'IWDI'
- SIT PIT
- HEAVY DUTY PIT (CLASS 'D' 900x900x1000)
- AUTOMATIC WEATHER STATION (AWS)
- E —

NEW PRIMARY DUCT AND CABLE
- E —

NEW DUCT AND CABLE UNDER PAVEMENT
- — —

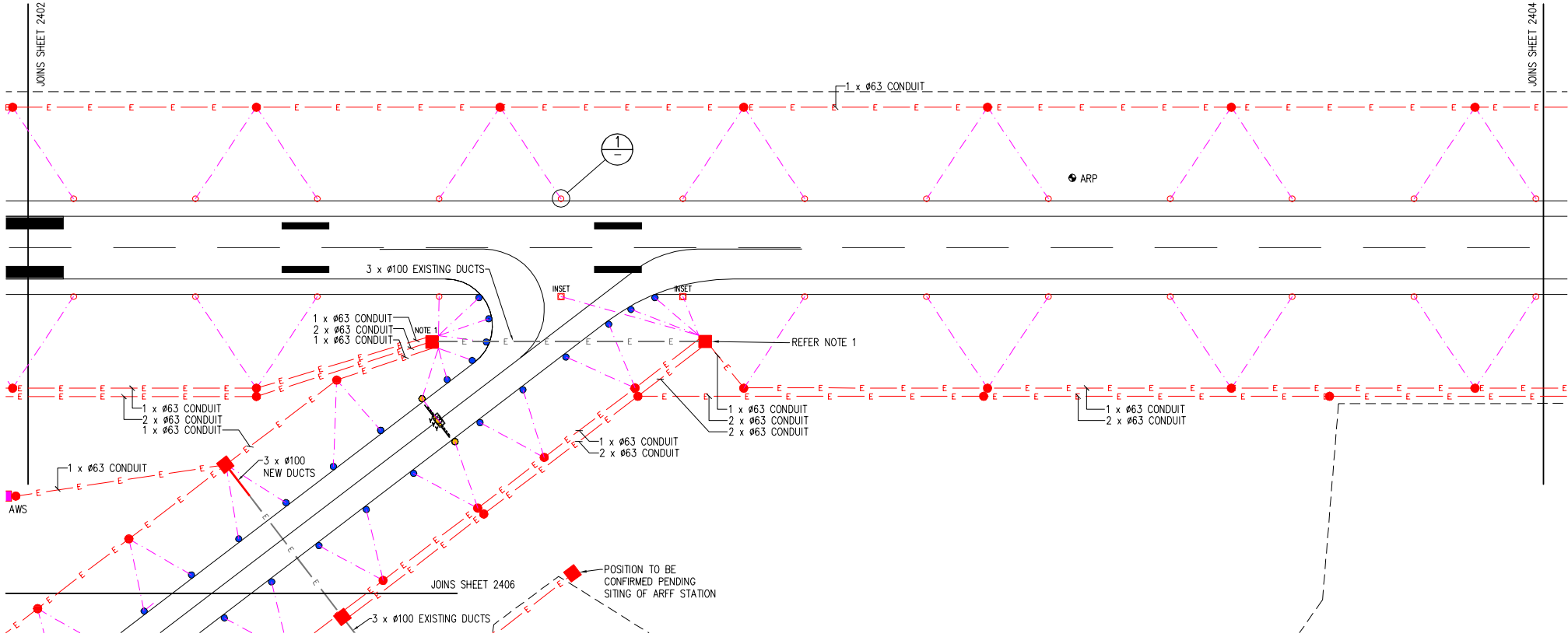
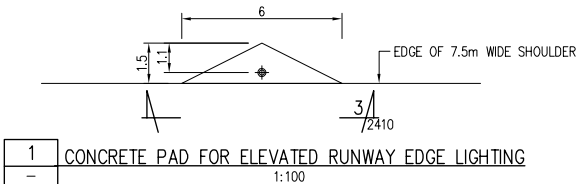
SECONDARY CABLE DUCT

NOTE 1:
PITS WITHIN THE RUNWAY GRADED STRIP MUST BE HEAVY DUTY TYPE WITH CLASS 'G' COVERS.

NOTE 2:
ELECTRONIC FILES WILL BE PROVIDED FOR WORKS SETTING OUT.

NOTE 3:
CONTRACTOR TO LOCATE AND PROTECT EXISTING AGL RETICULATION THROUGHOUT CONTRACT AND ALLOW FOR A COORDINATED TRANSITION OF EXISTING TO NEW AGL SYSTEMS.

SETOUT INFORMATION:
ARP
400828.832mE, 800034.149mN, RL=2.86m



NOT FOR CONSTRUCTION

REVISIONS				
No.	BY	DATE	DESCRIPTION	APPD
3	JK	19.04.13	FOR TENDER ISSUE	CR
2	JKZ	03.05.13	DETAILED DESIGN ISSUE	CR
1	NW	05.04.13	90% DRAFT ISSUE	CR

DESIGNED				
SH	CHECKED	CR	DATE	APPROVED
NL	CHECKED	CR	Apr-13	

SCALES				
1:1000 (A1)				

AECOM				
AECOM New Zealand Limited				

Government of the Republic of Kiribati				

PACIFIC AVIATION INVESTMENT PROGRAM (PAIP)				
CASSIDY INTERNATIONAL AIRPORT (CXI) AIRFIELD LIGHTING & AIR NAVIGATIONAL AIDS LAYOUT SHEET 2				
A1	STATUS	FOR TENDER	DRAWING NO	60277003-AV-2403
			REV	3

Last saved Wed, 19 Jun 2013 05:07 pm
 CAD Ref: K:\PROJECTS\ATTA PAIP Airports (40277003-40277004-40277005-40277006)\S_CAD\153 Working\DRG\02 COI_40277003-AV-2404.dwg

SYMBOL LEGEND:

- MEDIUM INTENSITY RUNWAY EDGE LIGHT
– ELEVATED OMNI-DIRECTIONAL WHITE

◻

MEDIUM INTENSITY RUNWAY EDGE LIGHT
– INSET OMNI-DIRECTIONAL WHITE

●

MEDIUM INTENSITY RUNWAY EDGE LIGHT
– ELEVATED OMNI-DIRECTIONAL WHITE / RED

●

MEDIUM INTENSITY THRESHOLD LIGHT
– ELEVATED OMNI-DIRECTIONAL GREEN

■

MEDIUM INTENSITY THRESHOLD LIGHT
– INSET OMNI-DIRECTIONAL GREEN

●

MEDIUM INTENSITY RUNWAY THRESHOLD / END LIGHT
– ELEVATED BI-DIRECTIONAL GREEN / RED

■

MEDIUM INTENSITY RUNWAY THRESHOLD LIGHT
– INSET UNI-DIRECTIONAL GREEN

■

MEDIUM INTENSITY RUNWAY THRESHOLD / END LIGHT
– INSET UNI-DIRECTIONAL GREEN / RED

●

MEDIUM INTENSITY RUNWAY END LIGHT
– ELEVATED UNI-DIRECTIONAL RED

●

MEDIUM INTENSITY ELEVATED TURNING NODE AND TAXIWAY
EDGE LIGHT – ELEVATED OMNI-DIRECTIONAL BLUE

■

MEDIUM INTENSITY ELEVATED TURNING NODE AND
TAXIWAY EDGE LIGHT – INSET OMNI-DIRECTIONAL BLUE
- MEDIUM INTENSITY HOLD POINT LIGHT
– ELEVATED OMNI-DIRECTIONAL YELLOW
- MEDIUM INTENSITY HOLD POINT LIGHT
– INSET UNI-DIRECTIONAL YELLOW
- ⊗

MEDIUM INTENSITY SIMPLE APPROACH LIGHT
– ELEVATED OMNI-DIRECTIONAL WHITE
- ⏏

PRECISION APPROACH PATH INDICATOR (PAPI)
- ⏏

RUNWAY THRESHOLD IDENTIFICATION LIGHT
- ⏏

ILLUMINATED WIND DIRECTION INDICATOR 'IWDI'
- SIT PIT
- HEAVY DUTY PIT (CLASS 'D' 900x900x1000)
- AUTOMATIC WEATHER STATION (AWS)
- E —

NEW PRIMARY DUCT AND CABLE
- E —

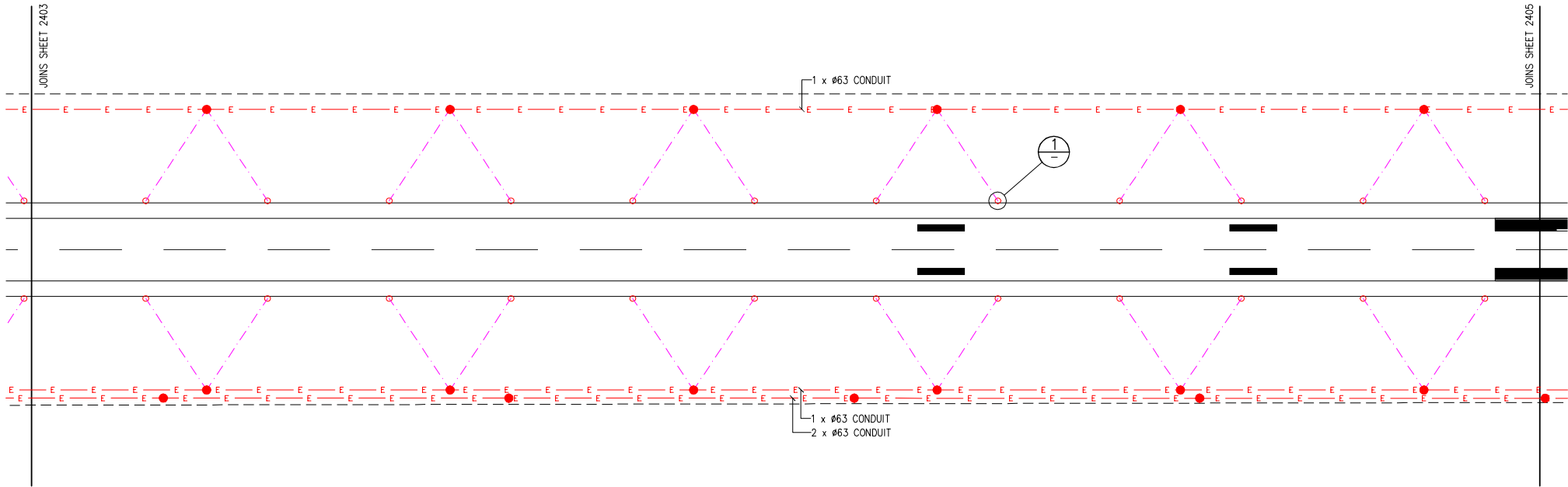
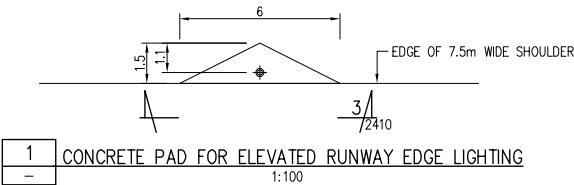
NEW DUCT AND CABLE UNDER PAVEMENT
- — —

SECONDARY CABLE DUCT

NOTE 1:
PITS WITHIN THE RUNWAY GRADED STRIP MUST BE HEAVY DUTY TYPE WITH CLASS 'G' COVERS.

NOTE 2:
ELECTRONIC FILES WILL BE PROVIDED FOR WORKS SETTING OUT.

NOTE 3:
CONTRACTOR TO LOCATE AND PROTECT EXISTING AGL RETICULATION THROUGHOUT CONTRACT AND ALLOW FOR A COORDINATED TRANSITION OF EXISTING TO NEW AGL SYSTEMS.



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No.	BY	DATE	DESCRIPTION	APPD
3	JC	19.04.13	FOR TENDER ISSUE	CR
2	JCZ	03.05.13	DETAILED DESIGN ISSUE	CR
1	NW	05.04.13	90% DRAFT ISSUE	CR

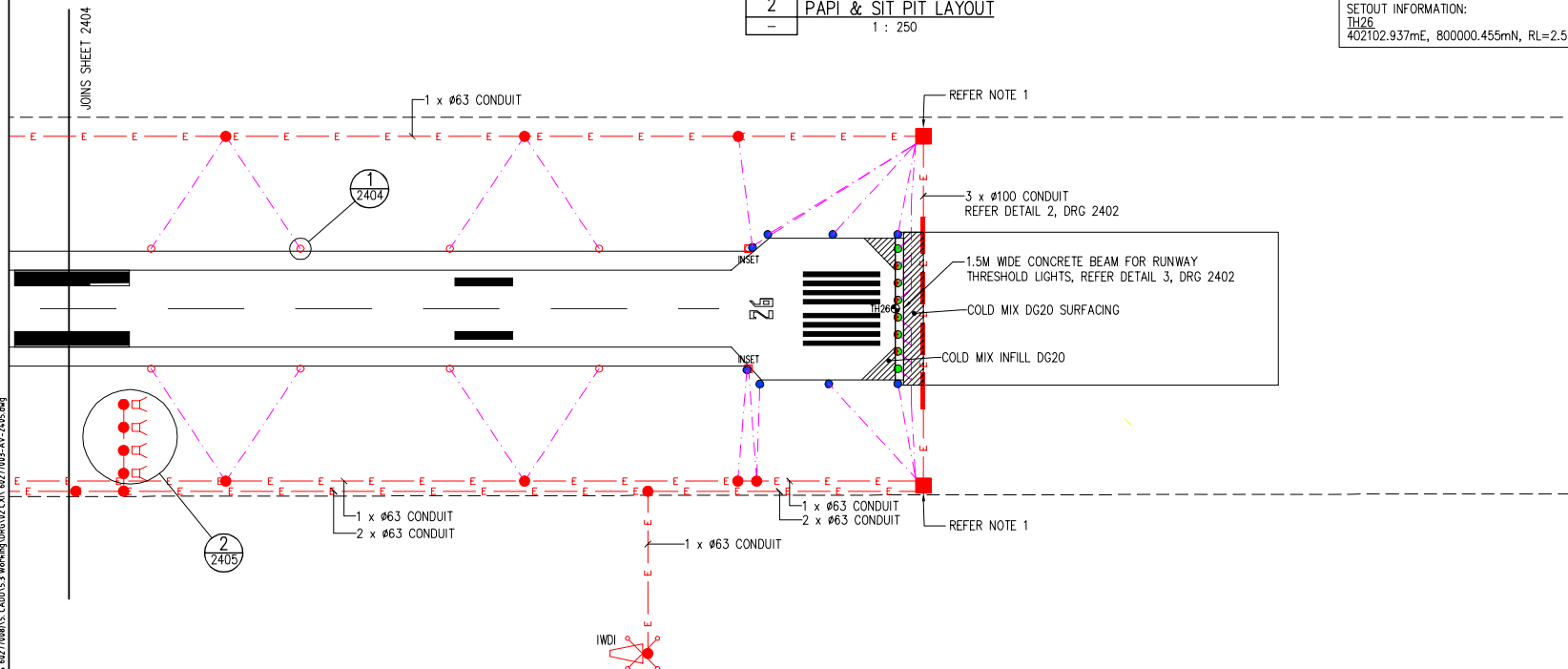
DESIGNED	SH	CHECKED	CR
DRAWN	NL	CHECKED	CR
APPROVED	CR	DATE	Apr-13

SCALES	1:1000 (A1)
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NOT FOR CONSTRUCTION	
PACIFIC AVIATION INVESTMENT PROGRAM (PAIP)	
CASSIDY INTERNATIONAL AIRPORT (CXI)	
AIRFIELD LIGHTING & AIR NAVIGATIONAL AIDS	
LAYOUT SHEET 3	
A1	STATUS: FOR TENDER
DRAWING NO: 60277003-AV-2404	REV: 3



Last saved Wed, 19 Jun 2013 05:07 pm

CAD Ref: K:\PROJECTS\ATTA PAIP\Airport\60277003-Working\DRG\02.Civil\60277003-AV-2406.dwg

SYMBOL LEGEND:

- MEDIUM INTENSITY RUNWAY EDGE LIGHT
- ELEVATED OMNI-DIRECTIONAL WHITE

◻

MEDIUM INTENSITY RUNWAY EDGE LIGHT
- INSET OMNI-DIRECTIONAL WHITE

●

MEDIUM INTENSITY RUNWAY EDGE LIGHT
- ELEVATED OMNI-DIRECTIONAL WHITE / RED

●

MEDIUM INTENSITY THRESHOLD LIGHT
- ELEVATED OMNI-DIRECTIONAL GREEN

■

MEDIUM INTENSITY THRESHOLD LIGHT
- INSET OMNI-DIRECTIONAL GREEN

●

MEDIUM INTENSITY RUNWAY THRESHOLD / END LIGHT
- ELEVATED BI-DIRECTIONAL GREEN / RED

■

MEDIUM INTENSITY RUNWAY THRESHOLD LIGHT
- INSET UNI-DIRECTIONAL GREEN

■

MEDIUM INTENSITY RUNWAY THRESHOLD / END LIGHT
- INSET UNI-DIRECTIONAL GREEN / RED

●

MEDIUM INTENSITY RUNWAY END LIGHT
- ELEVATED UNI-DIRECTIONAL RED

●

MEDIUM INTENSITY ELEVATED TURNING NODE AND TAXIWAY
EDGE LIGHT - ELEVATED OMNI-DIRECTIONAL BLUE

■

MEDIUM INTENSITY ELEVATED TURNING NODE AND
TAXIWAY EDGE LIGHT - INSET OMNI-DIRECTIONAL BLUE
- MEDIUM INTENSITY HOLD POINT LIGHT
- ELEVATED OMNI-DIRECTIONAL YELLOW
- MEDIUM INTENSITY HOLD POINT LIGHT
- INSET UNI-DIRECTIONAL YELLOW
- ⊗

MEDIUM INTENSITY SIMPLE APPROACH LIGHT
- ELEVATED OMNI-DIRECTIONAL WHITE
- ⏏

PRECISION APPROACH PATH INDICATOR (PAPI)
- ⏏

RUNWAY THRESHOLD IDENTIFICATION LIGHT
- ⏏

ILLUMINATED WIND DIRECTION INDICATOR 'IWDI'
- SIT PIT
- HEAVY DUTY PIT (CLASS 'D' 900x900x1000)
- AUTOMATIC WEATHER STATION (AWS)
- E —

NEW PRIMARY DUCT AND CABLE
- E —

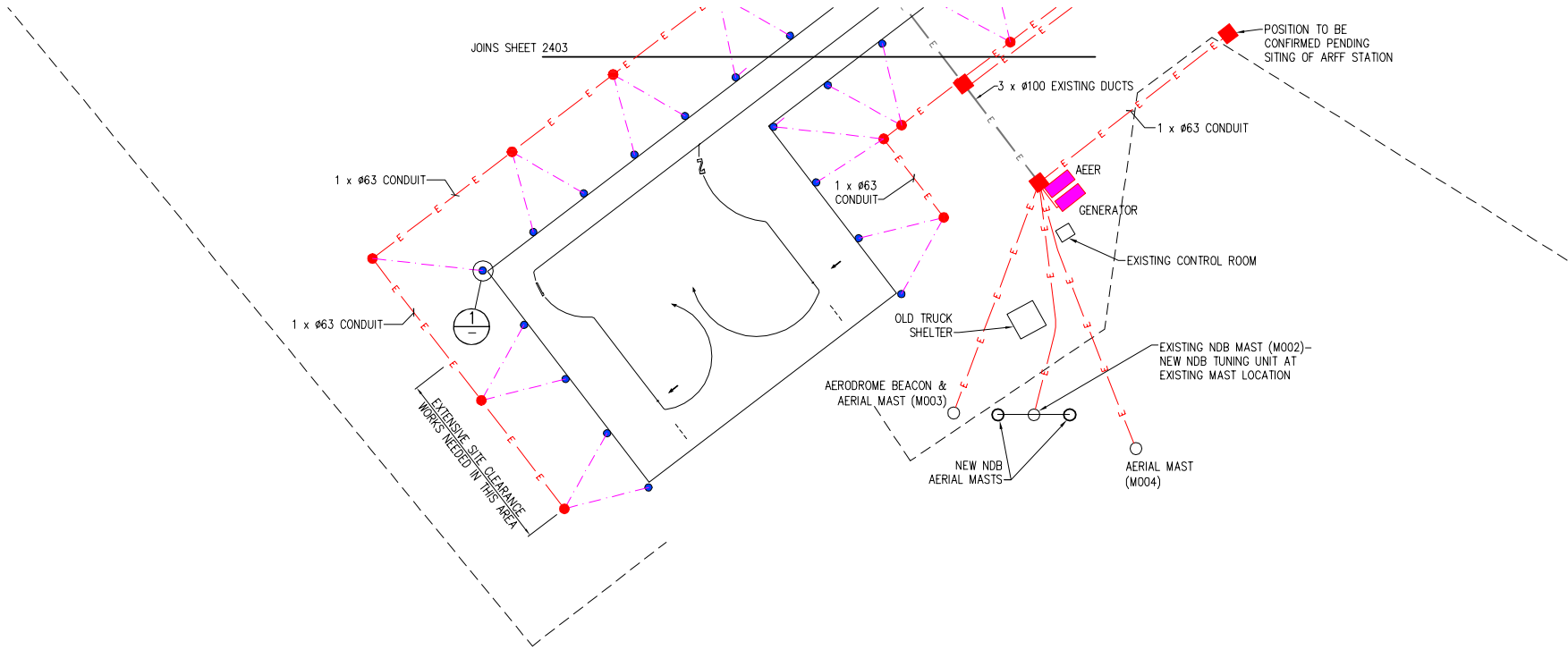
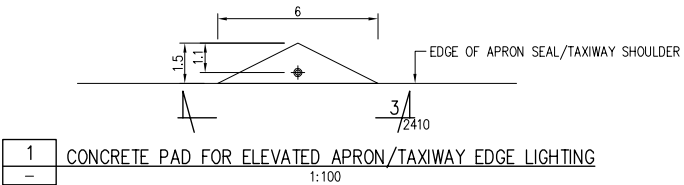
NEW DUCT AND CABLE UNDER PAVEMENT
- — —

SECONDARY CABLE DUCT

NOTE 1:
PITS WITHIN THE RUNWAY GRADED STRIP MUST BE HEAVY DUTY TYPE WITH CLASS 'G' COVERS.

NOTE 2:
ELECTRONIC FILES WILL BE PROVIDED FOR WORKS SETTING OUT.

NOTE 3:
EXTENSIVE ELECTRICAL RETICULATION EXISTS IN THE VICINITY OF THE EXISTING CONTROL BUILDING, CONTRACTOR TO LOCATE AND PROTECT PRIOR TO DUCTING INSTALLATIONS



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No.	BY	DATE	DESCRIPTION	APPD
3	JC	19.04.13	FOR TENDER ISSUE	CR
2	JCZ	03.05.13	DETAILED DESIGN ISSUE	CR
1	NW	05.04.13	90% DRAFT ISSUE	CR

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001:2008

DESIGNED	SH	CHECKED	CR
DRAWN	NL	CHECKED	CR
APPROVED	CR	DATE	Apr-13

SCALES:

1:1000 (A1)

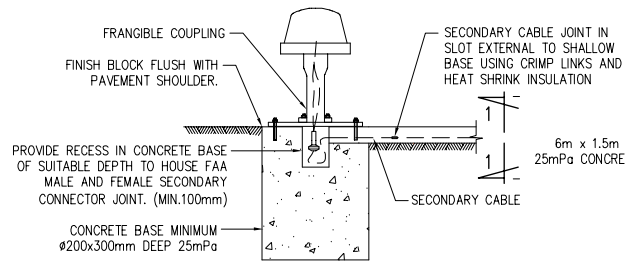
AECOM

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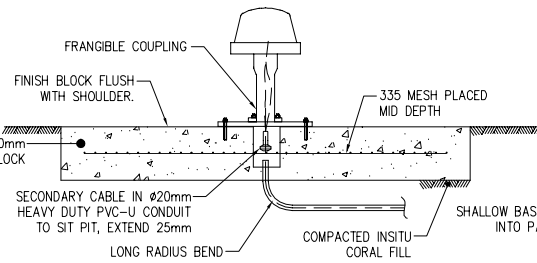
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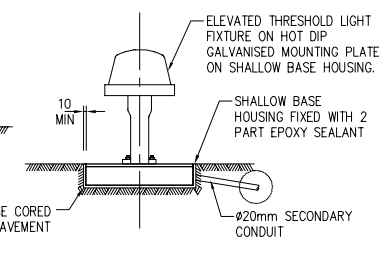
PACIFIC AVIATION INVESTMENT PROGRAM (PAIP)			
CASSIDY INTERNATIONAL AIRPORT (CXI) AIRFIELD LIGHTING & AIR NAVIGATIONAL AIDS LAYOUT SHEET 5			
A1	STATUS:	FOR TENDER	REV: 3
DRAWING NO:	60277003-AV-2406		REV: 3



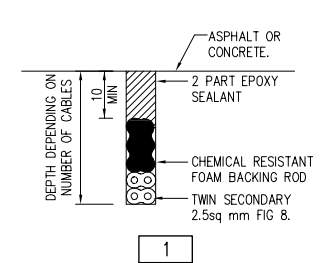
TYPICAL INSTALLATION ELEVATED EDGE LIGHT FIXTURE IN SEALED SHOULDER
NTS



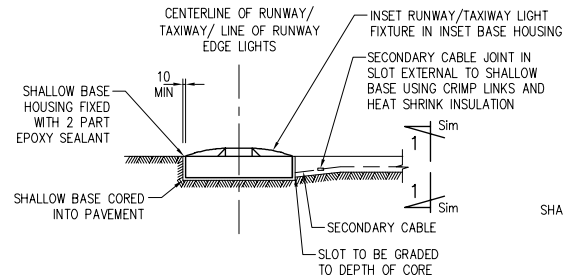
TYPICAL INSTALLATION ELEVATED LIGHT FIXTURE IN UNSEALED SHOULDER
NTS



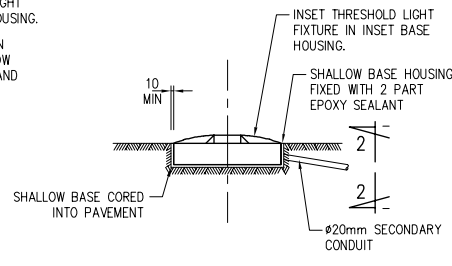
TYPICAL ELEVATED THRESHOLD LIGHT INSTALLATION ON SHALLOW BASE HOUSING
NTS



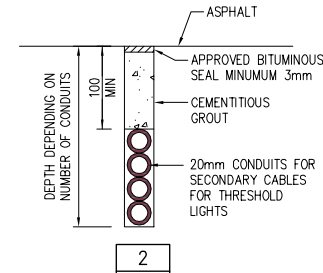
SAWN CABLE SLOT DETAIL
NTS



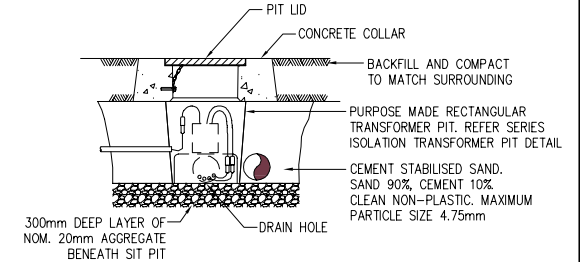
TYPICAL INSTALLATION INSET LIGHT FIXTURE IN SHALLOW BASE HOUSING
NTS



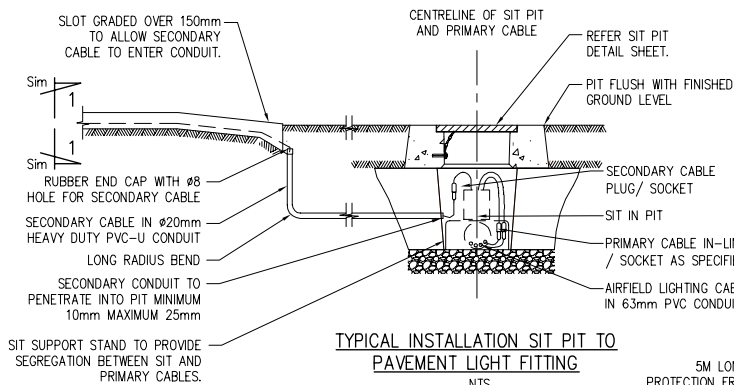
TYPICAL INSET THRESHOLD LIGHT INSTALLATION ON SHALLOW BASE HOUSING WITH SECONDARY CABLE IN CONDUIT
NTS



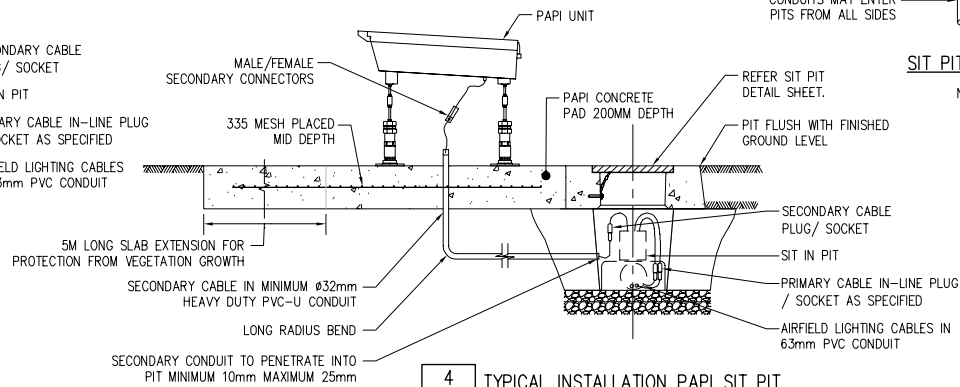
THRESHOLD LIGHT CONDUITS INSTALLATION DETAIL
NTS



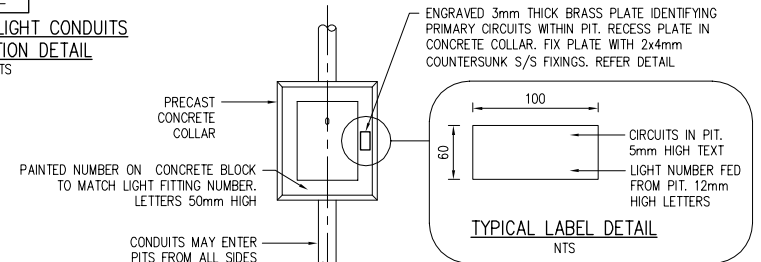
SIT PIT INSTALLATION REQUIREMENTS
NTS



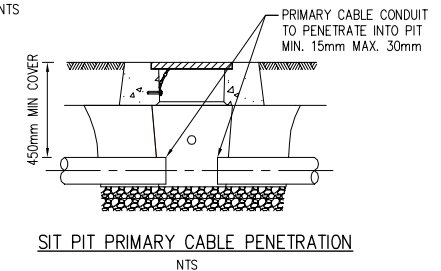
TYPICAL INSTALLATION SIT PIT TO PAVEMENT LIGHT FITTING
NTS



TYPICAL INSTALLATION PAPI SIT PIT
NTS



SIT PIT DETAIL
NTS



SIT PIT PRIMARY CABLE PENETRATION
NTS

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SCALES:

AS SHOWN

AECOM

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CLIENT:



PACIFIC AVIATION INVESTMENT PROGRAM (PAIP)

CASSIDY INTERNATIONAL AIRPORT (CXII)
AIRFIELD LIGHTING & AIR NAVIGATIONAL AIDS
LIGHT FIXTURE AND PIT INSTALLATION DETAILS

A1

STATUS:

FOR TENDER

DRAWING NO:

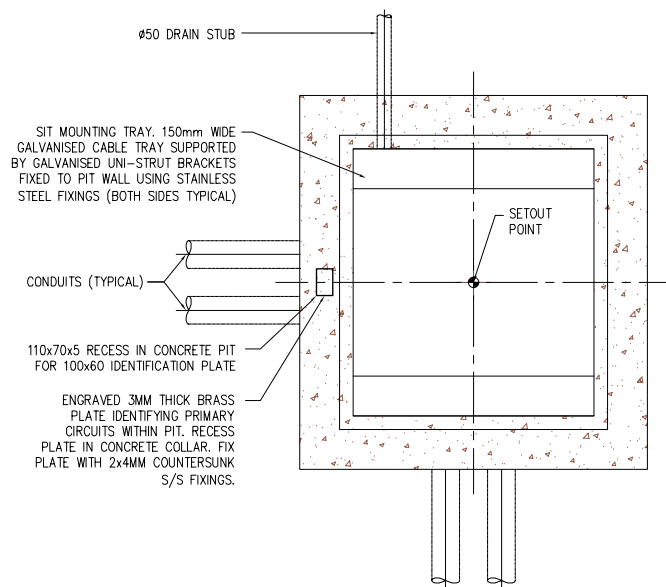
60277003-AV-24-10

REV:

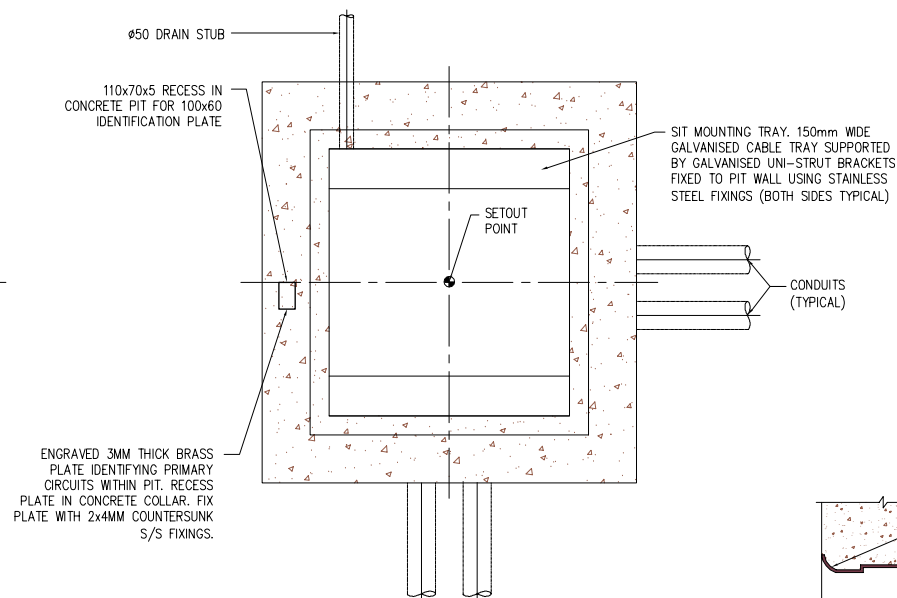
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REV	BY	DATE	DESCRIPTION	APPD
3	JK	19.06.13	FOR TENDER ISSUE	CR
2	JKZ	03.05.13	DETAILED DESIGN ISSUE	CR
1	NW	05.04.13	90% DRAFT ISSUE	CR

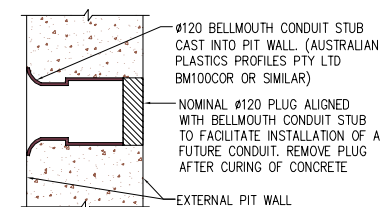
DESIGNED	SH	CHECKED	CR
DRAWN	NL	CHECKED	CR
APPROVED	CR	DATE	Apr-13



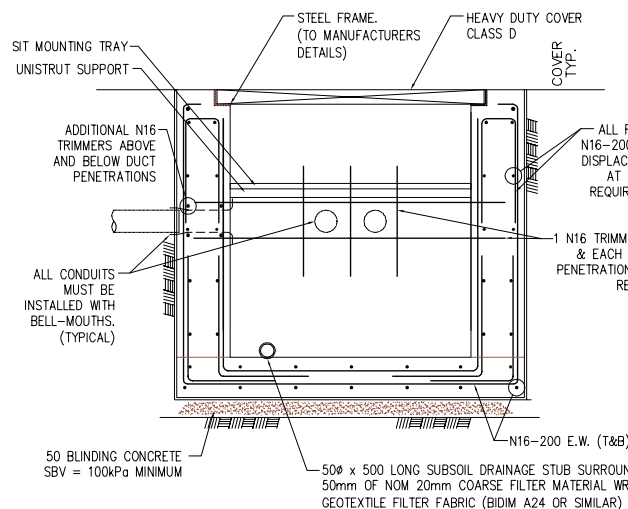
CLASS D ELECTRICAL PIT
GENERAL ARRANGEMENT
SCALE 1:10



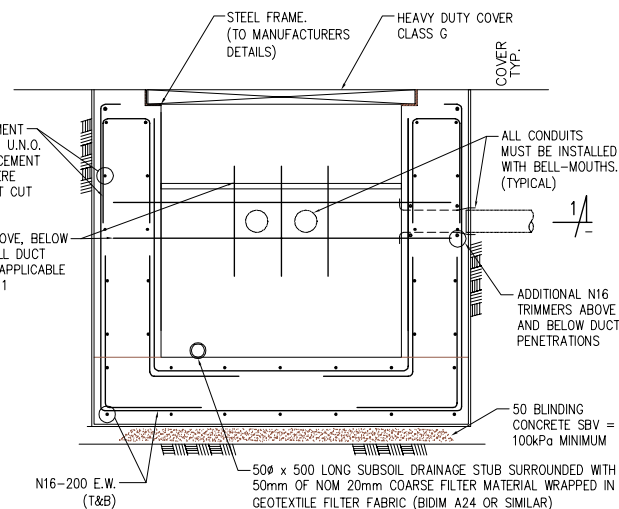
CLASS G ELECTRICAL PIT
GENERAL ARRANGEMENT
SCALE 1:10



1
-

NTS

TYPICAL SECTION OF CLASS D PIT



TYPICAL SECTION CLASS G PIT

NOTE 1:
PROVIDE NUMBER OF PENETRATIONS OF
THE REQUIRED SIZE AND AT THE REQUIRED
DEPTH TO SUIT EACH LOCATION

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REVISIONS				
No.	BY	DATE	DESCRIPTION	APPD
1	NW	05.04.13	90% DRAFT ISSUE	CR
2	KZ	03.05.13	DETAILED DESIGN ISSUE	CR
3	KC	19.06.13	FOR TENDER ISSUE	CR

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING

OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001:2000			
DESIGNED	SH	CHECKED	CR
DRAWN	NL	CHECKED	CR
APPROVED	CR	DATE	Apr-13

SCALES:

AS SHOWN

AECOM

AECOM New Zealand Limited

	CLIENT:
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NOT FOR CONSTRUCTION

PACIFIC AVIATION INVESTMENT PROGRAM (PAIP)
CASSIDY INTERNATIONAL AIRPORT (CXI)
AIRFIELD LIGHTING & AIR NAVIGATIONAL AIDS
CLASS 'D' AND 'G' HEAVY DUTY PIT DETAILS

A1

1	STATUS
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FOR TENDER

	DRAWING NO:
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DRAWING NO: 60277003-AV-2411

REV:	
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3

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3	JK	19.06.13	FOR TENDER ISSUE	CR
2	JKZ	03.05.13	DETAILED DESIGN ISSUE	CR
1	NW	05.04.13	90% DRAFT ISSUE	CR
No.	BY	DATE	DESCRIPTION	APPD

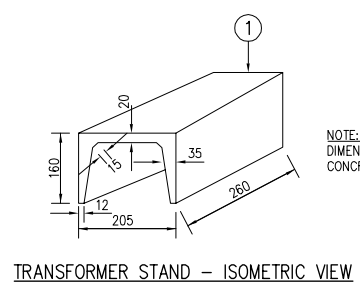
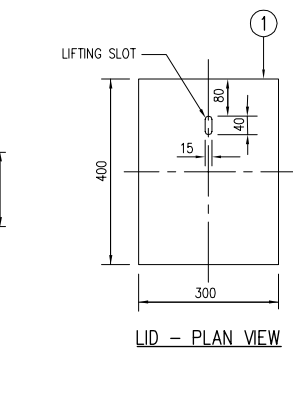
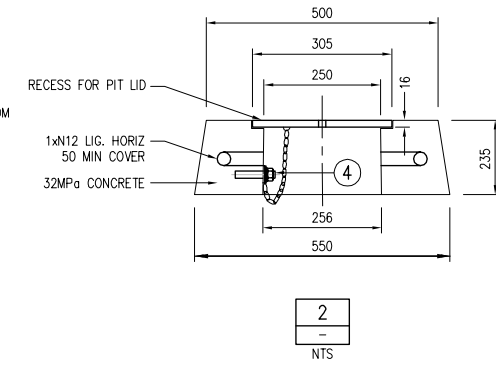
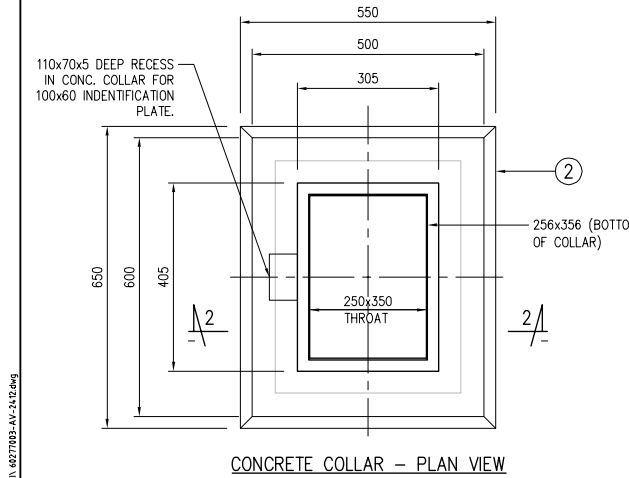
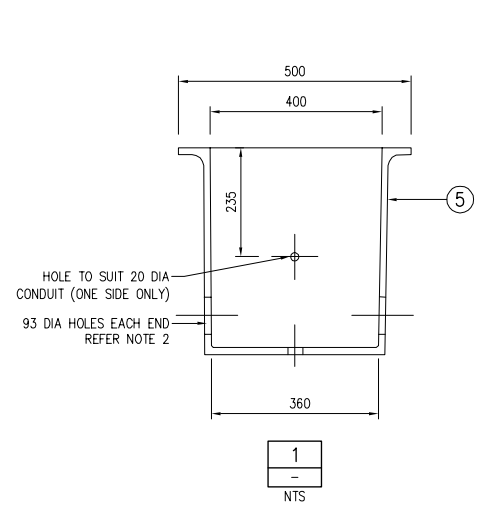
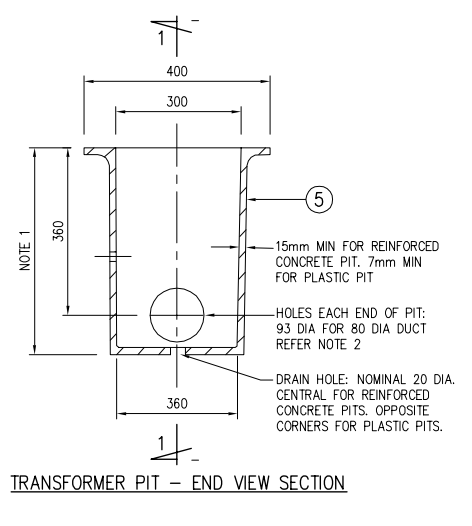
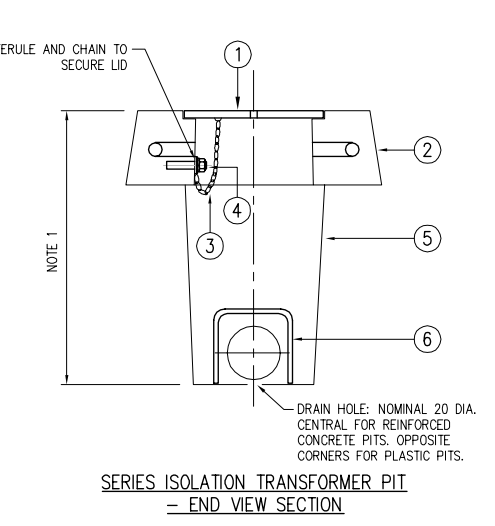
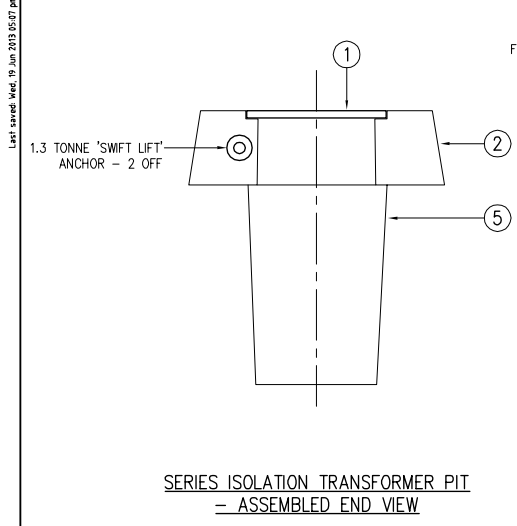
DESIGNED	SH	CHECKED	CR
DRAWN	NL	CHECKED	CR
APPROVED	CR	DATE	Apr-13

AS SHOWN

 AECOM New Zealand Limited
--

 Government of the Republic of Kiribati

PACIFIC AVIATION INVESTMENT PROGRAM (PAIP) CASSIDY INTERNATIONAL AIRPORT (CXI) AIRFIELD LIGHTING & AIR NAVIGATIONAL AIDS SIT PIT DETAILS SHEET
STATUS: FOR TENDER DRAWING NO: 60277003-AV-24-12 REV: 3



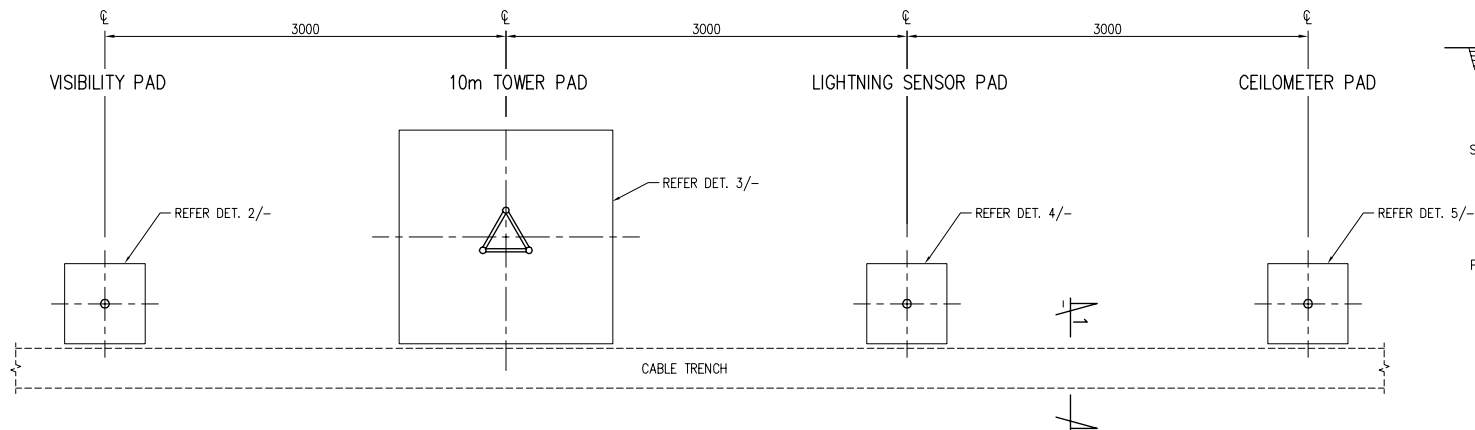
NOTES:
 1A. STANDARD PIT DEPTH 430mm FOR 450mm COVER OVER TOP OF DUCT, OVERALL DEPTH 590mm
 1B. SPECIAL PIT DEPTH 480mm FOR 500mm COVER OVER TOP OF DUCT, OVERALL DEPTH 640mm
 1C. SPECIAL PIT DEPTH 730mm FOR 750mm COVER OVER TOP OF DUCT, OVERALL DEPTH 945mm
 2. WHERE DUCTS ARE SMALLER OR LARGER THAN 80mm ARE USED, PROVIDE HOLES OF APPROPRIATE SIZES FOR DUCT SIZE USED

PART NUMBERS:		
PART NUMBERS PROVIDED FOR INFORMATION ONLY. ITEMS MAY BE SOURCED FROM OTHER SUPPLIERS		
ITEM	DESCRIPTION	BVCI PTY LTD
1	PIT LID WITH CHAIN	321200
2	PIT COLLAR	523165
5	TRANSFORMER PIT	124060
6	TRANSFORMER SUPPORT STAND	124065

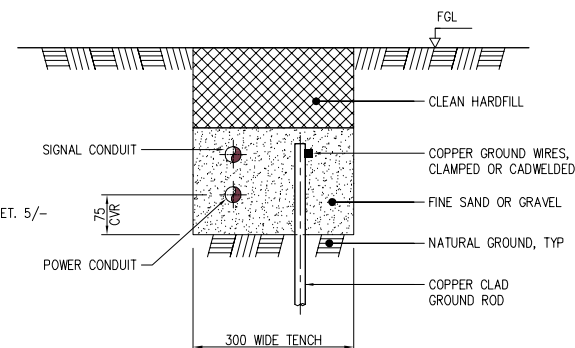
PARTS LIST:			
ITEM	DESCRIPTION	MATERIAL	NOTE
1	PIT LID	16mm THICK HOT DIP GALVANISED STEEL GRADE 250	
2	PIT COLLAR	32 MPa PRECAST CONCRETE COLLAR WITH 1xN12 LIG. 80+/- SLUMP. 14-20mm AGGREGATE	50 MIN COVER TO LIG. 1.3 TONNE SWIFT LIFT ANCHOR - 2 OFF
3	LID CHAIN	GENERAL PURPOSE HOT DIP GALVANISED 5mm CHAIN (188.7m/100kg) 500mm LENGTH	WELD TO UNDERSIDE OF STEEL LID AND BOLT TO ITEM 4
4	CHAIN FIXING	STUD/WASHER/NUT/FERRULE	CAST OR CHEMICALLY ANCHORED STAINLESS STEEL STUD IN COLLAR
5	TRANSFORMER PIT	U.V STABILISED POLYETHYLENE OR FIBERGLASS REINFORCED CONCRETE (RECTANGULAR)	REFER NOTES 1A, 1B AND 1C FOR PIT REQUIRED DEPTHS
6	TRANSFORMER SUPPORT STAND	U.V STABILISED POLYETHYLENE OR FIBERGLASS REINFORCED CONCRETE	

SERIES ISOLATING TRANSFORMER PIT / CONSTRUCTION DETAILS

NOT FOR CONSTRUCTION



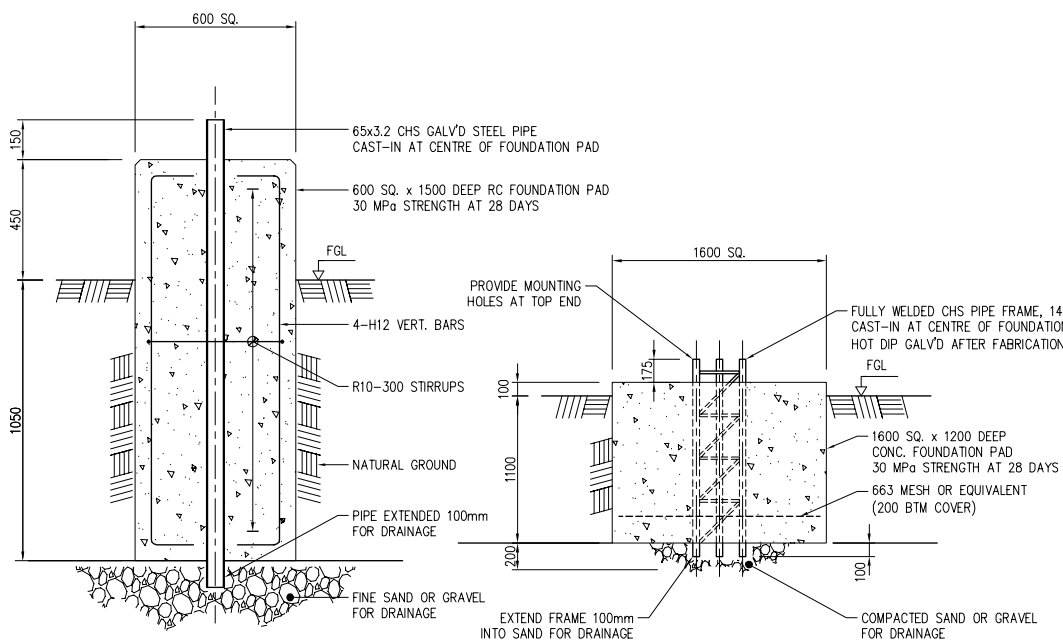
AWS SENSORS FOUNDATION PAD – TYPICAL LAYOUT
1:20mm



TYPICAL TRENCH DETAIL

1
—

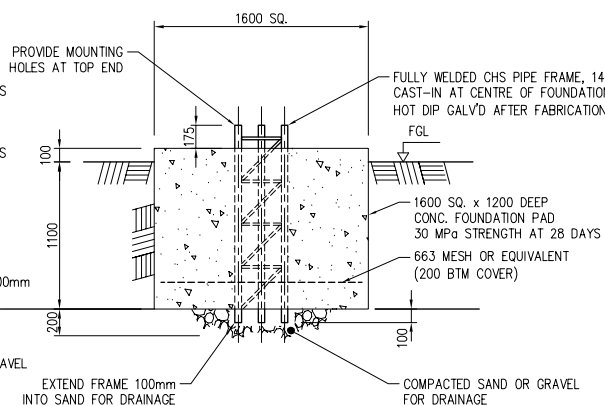
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VISIBILITY SENSOR FOUNDATION PAD DETAIL

2
—

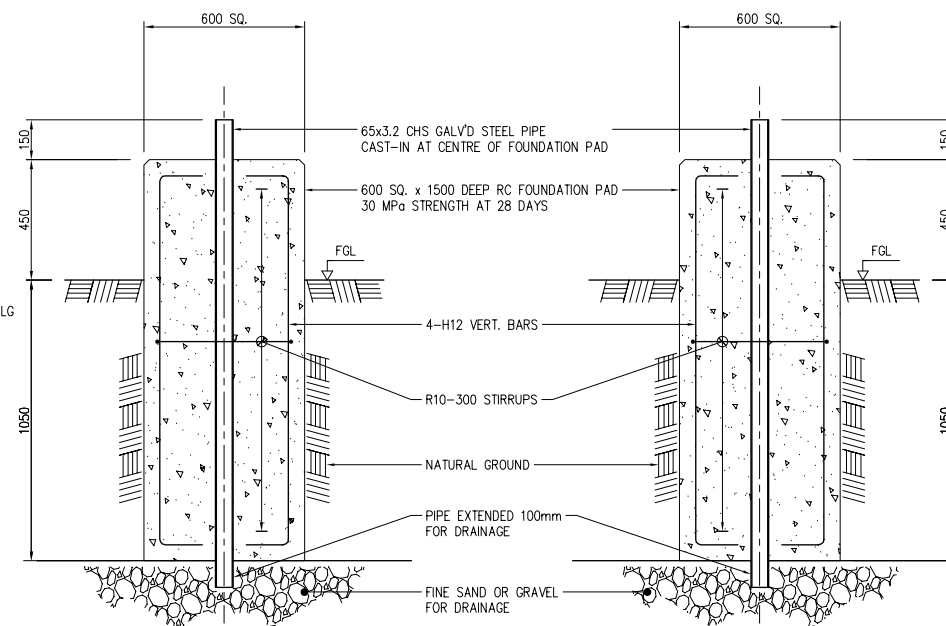
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10m TOWER FOUNDATION PAD DETAIL

3
—

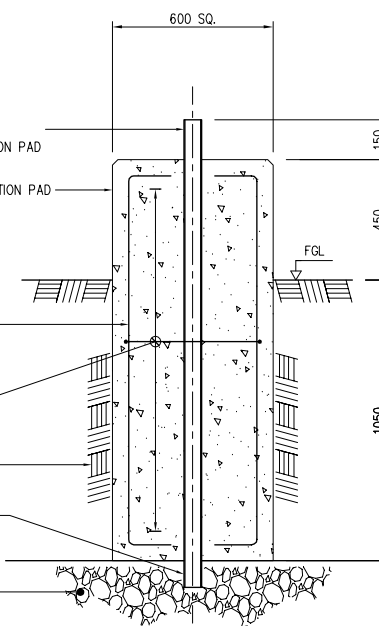
1:20mm



LIGHTNING SENSOR FOUNDATION PAD DETAIL

4
—

1:10mm



CEILOMETER FOUNDATION PAD DETAIL

5
—

1:10mm

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	CLIENT:
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NOT FOR CONSTRUCTION

CASSIDY INTERNATIONAL AIRPORT (CXI)
AIRFIELD LIGHTING & AIR NAVIGATIONAL AIDS
AUTOMATIC WEATHER STATION SENSOR INSTALLATION

A1

1	STATUS
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FOR TENDER

	DRAWING NO:
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60277003-AV-2415

REV:	3
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THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ARCHITECTS DRAWING T1
- TECHNICAL SPECIFICATION CODES - DRG. NO. AR-2301

THIS DRAWING SHALL BE READ IN CONJUNCTION
WITH THE ARCHITECTS SPECIFICATION.

NOTE:
1. FINAL DETAIL DESIGN IS SUBJECT TO THE STRUCTURAL ENGINEERS DESIGN
2. FINAL DETAIL DESIGN IS SUBJECT TO THE ELECTRICAL/ FIRE/
MECHANICAL/ HYDRAULIC ENGINEERS DESIGN

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MANATŪ AORERE



Government of the Republic of Kiribati

PACIFIC AVIATION INVESTMENT PROGRAM (PAIP)

CASSIDY INTERNATIONAL AIRPORT
TERMINAL
SITE PLAN

A1

STATUS:

DETAIL DESIGN

DRAWING NO.

60277003-AR-2302

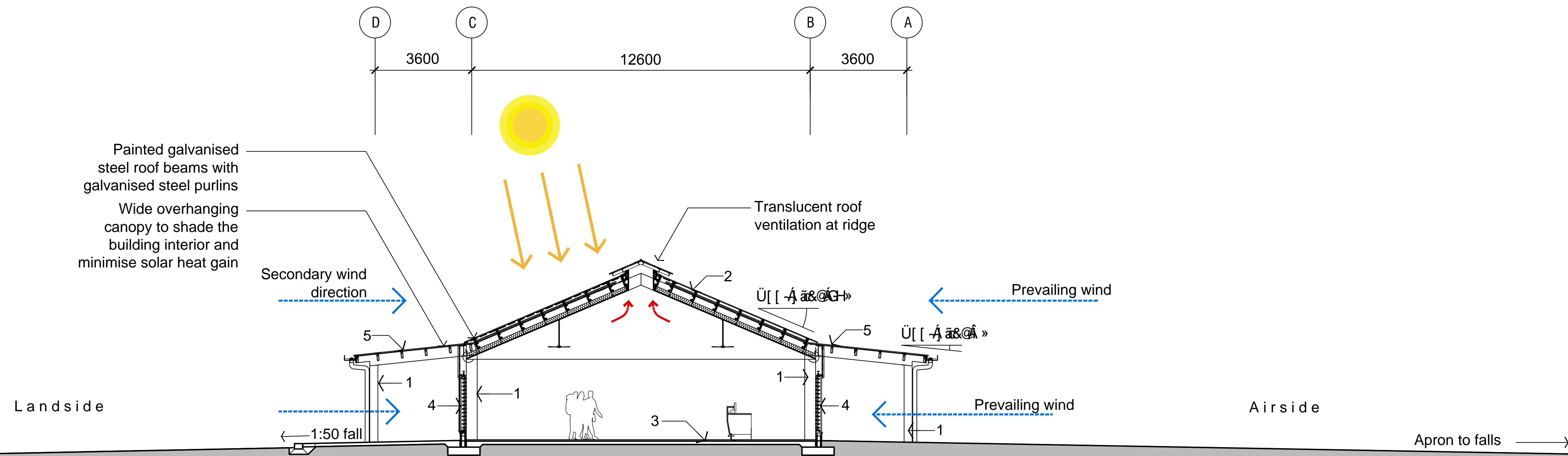
REV:

01

REVISIONS

No.	BY	DATE	DESCRIPTION	APPD
01	TMA	31.07.13.	FOR APPROVAL	

DESIGNED	TMA	CHECKED	TM
DRAWN	TMA	CHECKED	TM
APPROVED		DATE	



S1 SECTION 1
Between GL3 and GL4

Legend

- | | |
|---|---|
| 1. Painted galvanised steel columns to structural engineers' design | 4. Operable glass louvres |
| 2. Insulated Colorcote ARX profiled aluminium sheet roof | 5. Timber glulam beam structure for exterior roof |
| 3. Tiles on mortar bed on reinforced concrete slab on DPM | |

NOTE:
1. FINAL DETAIL DESIGN IS SUBJECT TO THE STRUCTURAL ENGINEERS DESIGN
2. FINAL DETAIL DESIGN IS SUBJECT TO THE ELECTRICAL/ FIRE/ MECHANICAL/ HYDRAULIC ENGINEERS DESIGN

THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ARCHITECTS DRAWING T1 - TECHNICAL SPECIFICATION CODES - DRG. NO. AR-2301

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DESIGNED	TMA	CHECKED	TM
DRAWN	TMA	CHECKED	TM
APPROVED		DATE	

SCALES:

0 4 10m
Scale 1:100 at A1

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NEW ZEALAND MINISTRY OF
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Government of the Republic of Kiribati

PACIFIC AVIATION INVESTMENT PROGRAM (PAIP)

CASSIDY INTERNATIONAL AIRPORT
TERMINAL
SECTIONS - SHEET 1

A1

STATUS:

DETAIL DESIGN

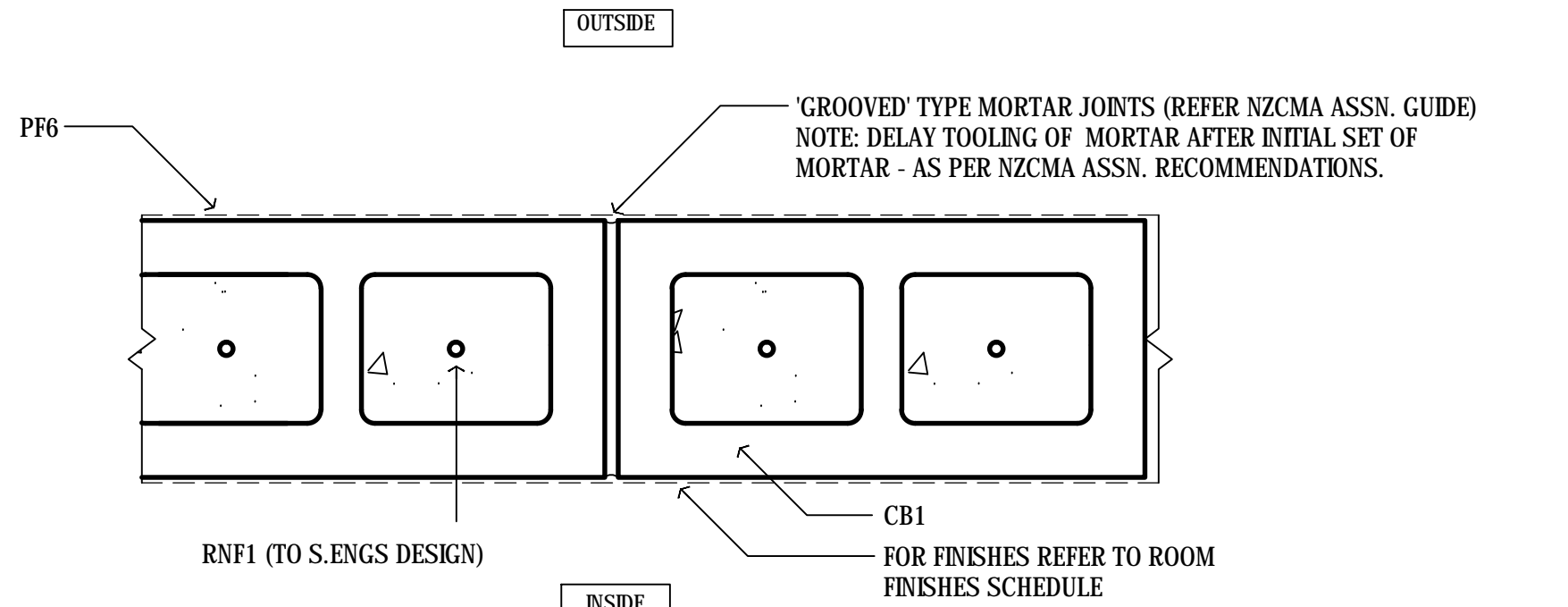
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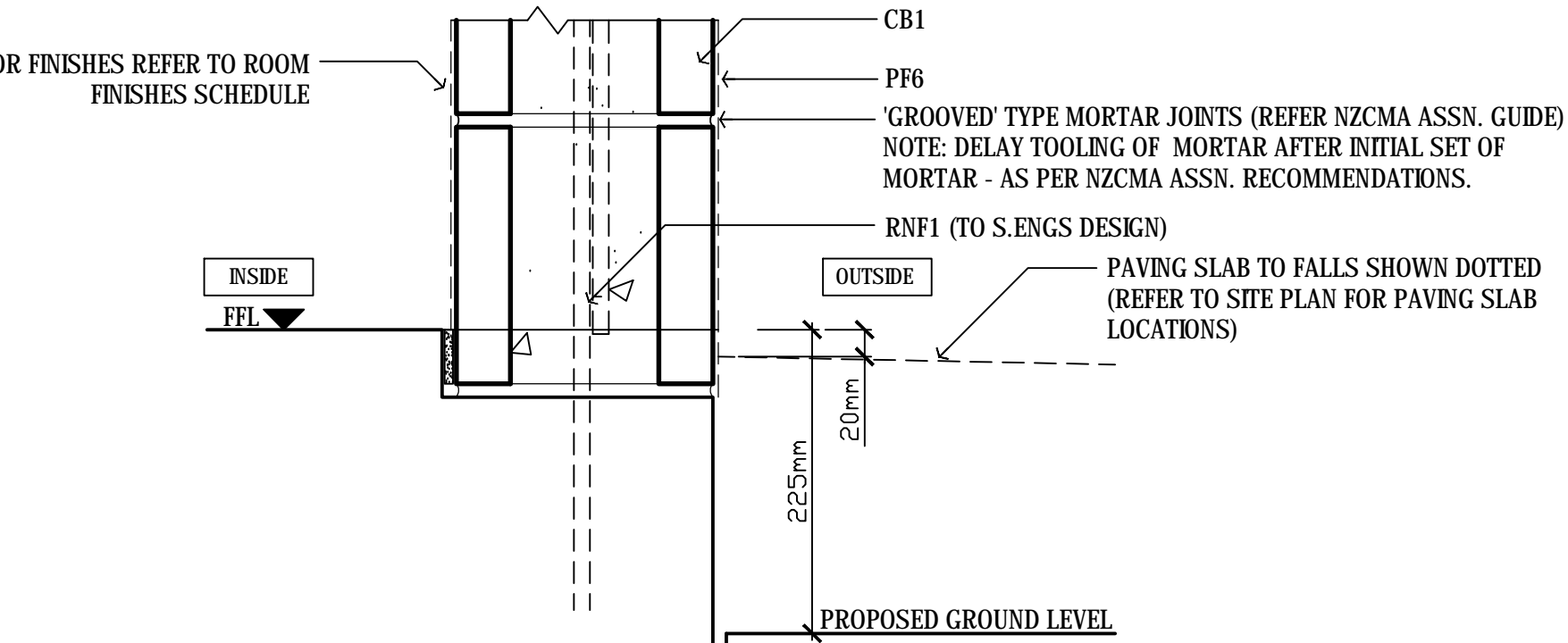
01

FRAMING		LOUVRES		MISCELLANEOUS		STRUCTURE		WINDOW AND DOOR JOINERY	
MS1	GALVANISED STEEL STUD FRAMING		LVR2	'COLT' UNIVERSAL LOUVRE 2UL - SHALLOW 50mm PROFILE '2UL' BASE MATERIAL: ALUMINIUM FINISH: ANODISED, 25 MICRONS. COLOUR: ANODISED DARK GREY MATT	SEL1	SPECIALIST SANITARY SEALANT. COLOUR TO MATCH TILE GROUT.	SF1	NEW FOUNDATION/ PILE. REFER TO STRUCTURAL ENGINEERS DESIGN.	1 ALL GLAZING SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH NZS 4223: PART 3 1999 2 ALL WINDOW AND DOOR JOINERY SHALL BE TO SUPPLIERS DESIGN AND INSTALLATION TO SUIT COUNTRY ULTIMATE LIMIT STATE /WIND PRESSURE. 3 PROVIDE ALL DOOR AND WINDOW HARDWARE (I.E. IRONMONGERY), PRE-FIXED TO JOINERY PRIOR TO SHIPMENT OF THE COMPLETED UNITS. 4. ALL WINDOW/DOOR HARDWARE LOCKS SHALL BE KEVED ALIKE I.E. PROVIDE A SINGLE KEY TYPE FOR THE TERMINAL BUILDING .
	INTERNAL WALL GALVANISED STEEL FRAMING: -MINIMUM BASE METAL THICKNESS: 0.75mm BMT (UNO) -MINIMUM STUD SIZES 92mm TYPICAL, 150mm WHERE PIPED SERVICES ARE LOCATED WITHIN WALL.		LVR3	'COLT' UNIVERSAL LOUVRE 3UL - SHALLOW 50mm PROFILE '3UL' BASE MATERIAL: ALUMINIUM FINISH: ANODISED, 25 MICRONS. COLOUR: ANODISED DARK GREY MATT	SEL2	'SHEETROCK' BRAND ACOUSTIC SEALANT - OEA	SF2	NEW FOUNDATION REFER TO STRUCTURAL ENGINEERS DESIGN.	
	INTERNAL WALL GALVANISED STEEL FRAMING ACCEPTABLE PRODUCTS AND SYSTEMS: - RONDO OEA				SEL3	EXTERIOR GRADE, NEUTRAL CURE, SILICON RUBBER SEALANT (CLEAR).			
MS4	EXTERNAL WALL GALVANISED STEEL FRAMING: -MINIMUM BASE METAL THICKNESS: 1.15mm BMT -MINIMUM STUD SIZES 92mm OR 150mm				BWR1	'THERMAKRAFT DIFLEX 130' O.E.A. INSTALL IN ACCORDANCE WITH MAUFACTURERS REQUIREMENTS. DRESS INTO WINDOW/DOOR OPENINGS (REVEALS) USING WFL1.	SE1	RC FLOOR SLAB - TO STRUCTURAL ENGINEERS DESIGN. CONCRETE FINISH: U3 STEEL TROWELLED FINISH WITH 'ASHFORDS FORMULA' SEALER TO ENTIRE SLAB. SUPPLY/INSTALLATION BY CRETESEAL NZ LTD 09 2960917. INSTALL 'ASHFORDS FORMULA' AT COMPLETION OF FINAL TROWELLING, IN ACCORDANCE WITH 'MANUFACTURERS DATA SHEETS'. WET CURING: AFTER APPLICATION OF ASHFORDS FORMULA, KEEP SLAB SURFACE CONTINUOUSLY WET FOR MIN. 14 DAYS.	
	1 PROVIDE A DPC SEPARATION SHEET BETWEEN ALL GALVANISED STEEL STUD AND CONCRETE/MASONARY ELEMENTS - INCLUDING GALVANISED METAL FRAMING AND STRAPPING TO BLOCK WALLS 2 GALVANISED STEEL STUD NOTES: ADDITIONAL HOLE DRILLING: MIN. EDGE DISTANCE 25mm. PROVIDE PLASTIC GROMMETS TO ISOLATE ALL ELECTRICAL/PLUMBING SERVICES AND PREVENT WATER HAMMER. INSULATE ALL COPPER/BRASS PIPES WITH NEOPRENE SHEETING OR APPROVED LAGGING AND TAPE.		PF1	PROVIDE THREE COAT (MINIMUM) INTERIOR QUALITY, WATERBORNE SATIN PAINT FINISH TO ALL NEW AND ALTERED GIB PLASTERBOARD WALLS, SKIRTINGS AND CEILINGS PREPARATION: PROVIDE GIB STOPPED F4 FINISH, FILL ALL HOLES AND CRACKS, SAND AND WASH PRIOR TO PAINT APPLICATION. ACCEPTABLE PRODUCTS: DULUX WASH & WEAR 101 ADVANCED LOW SHEEN OR RESENE PAINTS. PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS DATA SHEET/SPECIFICATIONS.	BWR2	CELLULOSE (PAPER) BASED BUILDING WRAP. INSTALL IN ACCORDANCE WITH MAUFACTURERS REQUIREMENTS. DRESS INTO WINDOW/DOOR OPENINGS (REVEALS) USING WFL1.	SE3	RC CHANNEL DRAIN - TO STRUCTURAL ENGINEERS DESIGN CONCRETE FINISH: TROWELLED FINISH	
	TIMBER FRAMING 1 ALL NEW TIMBER FRAMING UP TO 290 X 45 SIZE SHALL BE MACHINE STRESS GRADE (MSG) I10 OR HIGHER. TIMBER SIZES NOTED IN THE DOCUMENTS ARE 'ACTUAL MINIMUM DRIED SIZES'. 2 ALL NEW TIMBER FRAMING SHALL HAVE TREATMENT:- -H3.2 CCA TREATED FOR ALL FRAMING INCLUDING WHEN USED IN OUTDOOR AREAS EXPOSED TO MOISTURE -H4 FOR RETAINING WALLS AND EXTERNAL FRAMING -H5 FOR TIMBER IN GROUND		PF2	PROVIDE THREE COAT (MINIMUM) INTERIOR QUALITY, WATERBORNE SEMIGLOSS ENAMEL PAINT FINISH TO ALL NEW OR ALTERED WINDOW FRAMES, DOORS AND DOOR FRAMES PREPARATION: FILL ALL HOLES AND CRACKS, SAND AND WASH PRIOR TO PAINT APPLICATION. ACCEPTABLE PRODUCTS: DULUX AQUANAMEL LOW SHEEN OR RESENE PAINTS. PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS DATA SHEET/SPECIFICATIONS.	WFL1	FOIL FLASHING TAPE SYSTEM FOR WINDOW AND DOOR REVEALS. 'THERMAKRAFT ALUBAND WINDOW SEALING SYSTEM' INSTALL IN ACCORDANCE WITH MAUFACTURERS REQUIREMENTS TO ALL NEW WINDOWS/DOORS.	SSL	STRUCTURAL STEEL TO STRUCTURAL ENGINEERS DESIGN FINISH: GALVANISED WITH SPECIALIST THREE COAT STEEL PAINT PROTECTIVE SYSTEM OVER. ACCEPTABLE PAINT MANUFACTURERS: INTERNATIONAL PAINTS (AKZO NOBEL) OEA.	
1	ALL NEW TIMBER FRAMING UP TO 290 X 45 SIZE SHALL BE MACHINE STRESS GRADE (MSG) I10 OR HIGHER. TIMBER SIZES NOTED IN THE DOCUMENTS ARE 'ACTUAL MINIMUM DRIED SIZES'.		PF3	PROVIDE TWO COAT INTERIOR QUALITY, WATERBORNE SATIN CLEAR SEALER. ACCEPTABLE PRODUCTS: DULUX, CABOTS OR RESENE PAINTS. PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS DATA SHEET/SPECIFICATIONS.	TNK1	'BITUTHENE 3000' WALL TANKING, WITH 'PREPRUFE ' SLAB/FOUNDATION TANKING SYSTEM. CONTACT NUXLEX: 09 6342079. ALL PREPARATION AND INSTALLATION SHALL BE CARRIED OUT BY A NUXLEX LICENCED SPECIALIST TANKING CONTRACTOR AND ALL DATA SHEET AND PRODUCT INSTALLATION DETAILS SHALL BE STRICTLY FOLLOWED. WARRANTY: THE TANKING CONTRACTOR SHALL PROVIDE A FIFTEEN (15) YEAR WARRANTY. USE ALL RELATED BITUTHENE/PREPRUFE SYSTEM PRODUCTS, AS SHOWN ON THE MANUFACTURERS DETAILS. TO PROVIDE A COMPLETE, WATERPROOF SUB-GROUND TANKING SYSTEM.	RNF1	REINFORCEMENT TO STRUCTURAL ENGINEERS DESIGN	
2	ALL NEW TIMBER FRAMING SHALL HAVE TREATMENT:- -H3.2 CCA TREATED FOR ALL FRAMING INCLUDING WHEN USED IN OUTDOOR AREAS EXPOSED TO MOISTURE -H4 FOR RETAINING WALLS AND EXTERNAL FRAMING -H5 FOR TIMBER IN GROUND		PF8	PROVIDE THREE COAT (MINIMUM) INTERIOR QUALITY, WATERBORNE SATIN PAINT FINISH TO EXISTING TIMBER SLAT CEILING. PREPARATION: SAND TO REMOVE EXISTING TIMBER FINISH. FILL ALL HOLES AND CRACKS AND WASH PRIOR TO PAINT APPLICATION. ACCEPTABLE PRODUCTS: DULUX WASH & WEAR 101 ADVANCED LOW SHEEN OR RESENE PAINTS. PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS DATA SHEET/SPECIFICATIONS.					
3	ALL CONSTRUCTION SHALL COMPLY WITH THE N.Z.B.C. AND NZS 3604 (2011).								
4	PROVIDE A DPC SEPARATION SHEET BETWEEN ALL TIMBER AND CONCRETE/MASONRY ELEMENTS - INCLUDING TIMBER FRAMING AND TIMBER STRAPPING TO BLOCK WALLS								
5	GLULAM BEAMS SHALL BE H3.2 TREATED								
INSULATION		EXTERIOR PAINT FINISHES		EXTERIOR PAVING AND DECKING		METALWORK		ROOF	
IN1	'AUTEX SOUND BLANKET, ASB 5' ACOUSTIC INSULATION 70mm THK.	PF4	PROVIDE MIN. TWO TOP-COAT OVER ONE PRIMER (SEALER) COAT EXTERIOR QUALITY WATERBORNE PAINT FINISH. PREPARATION: FILL ALL HOLES AND CRACKS WITH EXTERIOR QUALITY FILLER, SAND AND WASH PRIOR TO PAINT APPLICATION. ACCEPTABLE PRODUCTS: DULUX WEATHERSHIELD X10 LOW SHEEN OR RESENE PAINTS. PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS DATA SHEET/SPECIFICATIONS.	NVF1	100mm Ø SLOTTED NOVAFLO DRAIN WITH FILTER SOCK - GRADIENT: 1:200 MINIMUM. NOVAFLO DRAIN EMBEDDED IN GAP 20/40 DRAINAGE METAL WRAPPED IN MACAFERRIE GEOTEXTILE CLOTH - FOR FULL LENGTH OF NOVAFLO DRAIN.	STAINLESS STEEL	ALL STAINLESS STEEL ARCHITECTURAL METALWORK SHALL BE GRADE 316L. FINISH: BRUSHED FINISH.	RF1	RF1 - NEW ROOF CONSTRUCTION, AS FOLLOWS:
IN2	PINK BATT'S BUILDING INSULATION BLANKET (BIB) R3.2 GLASS WOOL INSULATION 135 mm THK. - OEA	PF5	PROVIDE THREE COAT (MINIMUM) EXTERIOR QUALITY, WATERBORNE SEMIGLOSS ENAMEL PAINT FINISH TO ALL NEW AND ALTERED WINDOW FRAMES, DOORS AND DOOR FRAMES PREPARATION: FILL ALL HOLES AND CRACKS, SAND AND WASH PRIOR TO PAINT APPLICATION. ACCEPTABLE PRODUCTS: DULUX AQUANAMEL SEMIGLOSS OR RESENE PAINTS. PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS DATA SHEET/SPECIFICATIONS.	PAV1	CRUSHED CONCRETE (RECYCLED) 7-20mm ON NON-WOVEN WEEDMAT ON 100mm COMPACTED HARDPILL ON MACAFERRIE GEOTEXTILE. ALTERNATIVE: CORAL 10-30mm	RS1	PRE-FINISHED GRADE 5052 ALUMINIUM ROOF SHEETING, 0.9mm BMT - DIMOND VEEDEK IN SINGLE CONTINUOUS SHEET TO FULL EXTENT OF NEW ROOF. FINISH: 'COLORCOTE'@ ARX BOTH SIDES COLOUR : TBC FIXINGS: FX1	CB52	ON CAVIBAT 'R' 45mm X 18mm INSULATING CAVITY BATTEN SYSTEM. NOTE: TWO BATTENS REQUIRED TO COVER FULL WIDTH OF PURLIN CONTACT: CAVIBAT 0508 2284228 www.cavibat.co.nz
IN5	'GOLDFOAM' OEA EXTRUDED POLYSTYRENE (XPS) INSULATION 50mm THK(JOINTS: T + G R VALUE: 2.31 CONTACT: COMPOSITE INSULATION LTD 03 348 8015	PF6	PROVIDE 'RESENE X200' PAINT SYSTEM. PREPARATION: FILL ALL HOLES AND CRACKS, SAND AND WASH PRIOR TO PAINT APPLICATION. PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS DATA SHEET/SPECIFICATIONS.	PAV2	RC PAVING SLAB - TO S.ENGS. DESIGN. AGGREGATE: GREY WACKE 7-14mm. COLOUR: PROVIDE 4KG BLACK OXIDE PER CUBIC METRE FINISH: SLIP RESISTANCE SHALL COMPLY WITH NZBC SECTION D1/AST. PROVIDE LIGHT SAND BLAST OR ACID ETCH	RUC1	ON THERMOKRAFT COVERTEK 407 ABSORBENT, FIRE RETARDANT UNDERLAY	CB52	ON CAVIBAT 'R' 45mm X 18mm INSULATING CAVITY BATTEN SYSTEM. NOTE: TWO BATTENS REQUIRED TO COVER FULL WIDTH OF PURLIN CONTACT: CAVIBAT 0508 2284228 www.cavibat.co.nz
IN6	PINK BATT'S BUILDING INSULATION BLANKET (BIB) R1.8 GLASS WOOL INSULATION 75 mm THK. - OEA								
NOTE:	INSTALL ALL INSULATION TYPES IN ACCORDANCE WITH MANUFACTURERS DATA SHEETS & SPECIFICATIONS. TIGHTLY FIT IN1, IN2, AND IN6 BETWEEN FRAMING MEMBERS THROUGHOUT. UNACCEPTABLE PRODUCTS: EXPANDED POLYSTYRENE INSULATION (EPS)								
EXTERNAL WALLS		STEEL PAINT FINISH		TILING AND TILING ACCESSORIES		ROOF		LEGEND	
W1	190mm REINFORCED CONCRETE BLOCKWORK- CORE FILLED- TO S.ENGS. DESIGN. REFER TO EXTERNAL WALL DETAILS SHEET	PF7	PROVIDE SPECIALIST THREE COAT STEEL PAINT PROTECTIVE SYSTEM. ACCEPTABLE PAINT MANUFACTURERS: INTERNATIONAL PAINTS (AKZO NOBEL) SYSTEM: 1. INTERZINC 52 2. INTERGARD47SHS 3. INTERTHANE 878 PREPARATION: REMOVE ALL EXISTING PAINT BACK TO STEEL. REMOVE CORROSION AND REPAIR OR REPLACE STEEL TO S.ENGS. DETAIL. PREPARATION AND APPLICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS DATA SHEET/SPECIFICATIONS.	TIL1	300 x 300 VITRIFIED CERAMIC BATHROOM FLOOR TILES. COLOUR: DARK GREY/CHARCOAL	DHS1	ON GALVANISED STEEL PURLINS BOLTED TO PURLIN CLEATS - TO S.ENGS. DETAIL	IN6	WITH R1.8 INSULATION (MAX 80mm THICK) BETWEEN PURLINS (ENSURE 25mm AIR GAP FROM UNDERLAY ABOVE)
CB1	REINFORCED CONCRETE BLOCKWORK- CORE FILLED- TO S.ENGS. DESIGN. REFER TO WALL TYPES SHEETS FOR BLOCK THICKNESS.			TIL2	200 x 60 GLAZED CERAMIC BATHROOM WALL TILES	DHS1	ON GALVANISED STEEL PURLINS BOLTED TO PURLIN CLEATS - TO S.ENGS. DETAIL	RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
W2		FLASHINGS		TIL 4	10 x 10 CERAMIC KITCHEN SPLASHBACK TILES	IN6	WITH R1.8 INSULATION (MAX 80mm THICK) BETWEEN PURLINS (ENSURE 25mm AIR GAP FROM UNDERLAY ABOVE)	RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
RS1	PRE-FINISHED GRADE 5052 ALUMINIUM WALLSHEETING, 0.9mm BMT- DIMOND VEEDEK IN SINGLE CONTINUOUS SHEET VERTICALLY. FINISH: 'COLORCOTE'@ARX BOTH SIDES COLOUR : TBC FIXINGS: FX1	FL1	0.55BMT CUSTOM FABRICATED PRE-FINISHED FLAT STEEL SHEET FLASHINGS. FINISH AND COLOUR: MATCH ROOF SHEETING	NOTE:	1. PROVIDE DOCUMENTATION TO CERTIFY THAT ALL INTERIOR FLOOR FINISHES MEET NZBC AND NZS SLIP RESISTANCE STANDARDS.	MOV1	GRADE 316L WALL TILE MOVEMENT JOINT. ACCEPTABLE PRODUCT: 'DTA CODE CGE3S410XGG - GREY COLOUR, 10mm.	RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
CB52	ON CAVIBAT 'R' 45mm X 18mm INSULATING CAVITY BATTEN SYSTEM. CONTACT: CAVIBAT 0508 2284228 www.cavibat.co.nz	FL2	FLASHING: CUSTOM FABRICATED/EXTRUDED 1.2BMT OR 1.5 BMT ALUMINIUM FLASHING. FINISH: ANODISED, 25 MICRONS. COLOUR TO MATCH WINDOW FRAME. PRE-WELD JOINTS/JUNCTIONS AND GRIND PRIOR TO FINISH.	MOV2	PVC FLOOR TILE MOVEMENT JOINT. ACCEPTABLE PRODUCT: 'DTA CODE EJ30 - GREY OR BLACK. ARCHITECT TO APPROVE COLOUR.	MOV2	PVC FLOOR TILE MOVEMENT JOINT. ACCEPTABLE PRODUCT: 'DTA CODE EJ30 - GREY OR BLACK. ARCHITECT TO APPROVE COLOUR.	RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
RUC1	ON BWR1 WALL WRAP	CEILINGS		CNR1	GRADE 316L EXTERNAL CORNER TRIM. ACCEPTABLE PRODUCT: 'DTA CODE SRE1610, 10mm.	CNR1	GRADE 316L EXTERNAL CORNER TRIM. ACCEPTABLE PRODUCT: 'DTA CODE SRE1610, 10mm.	RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
MS4	ON EXTERNAL WALL GALVANISED STEEL FRAMING	CL2	PB1 PLASTERBOARD ON GALVANISED METAL CEILING FRAMING SYTEM -SIZE AS REQUIRED FOR SPANS. PROVIDE CONTINUOUS IN6 INSULATION ABOVE ALL CL2 NEW PLASTERBOARD CEILINGS. GIB STOP & PROVIDE PF1 FINISH USING ONLY MOISTURE/MOULD RESISTANT DULUX OR RESENE PAINTS. INTERNAL CEILING GALV. STEEL FRAMING. ACCEPTABLE PRODUCTS: RONDO	FWG1	'ALLPROOF INDUSTRIES TILE FLOOR WASTE SYSTEM (FWG)' SQUARE 304 STAINLESS STEEL. CODE: TFW100S5. 100mm PVC LEAK CONTROL FLANGE AND SQUARE HEIGHT ADJUSTABLE FLOOR GRATE	FWG1	'ALLPROOF INDUSTRIES TILE FLOOR WASTE SYSTEM (FWG)' SQUARE 304 STAINLESS STEEL. CODE: TFW100S5. 100mm PVC LEAK CONTROL FLANGE AND SQUARE HEIGHT ADJUSTABLE FLOOR GRATE	RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
IN2	WITH R3.2 INSULATION (MAX 135mm THICK) BETWEEN STUDS	CL3	VITEK (OEA) DRESSED TIMBER CEILING SLATS (15MM GAPS). REFER DETAIL. FIX TO H3.2 TIMBER PURLINS SIZED TO SUIT SPAN TO NZS 3604. FINISH: NAIL GUN, USE 50mm x 3mm S/S JOINT HEAD NAILS. SETOUT FIXINGS IN STRAIGHT LINE. TIMBER FINISH: PF3 TO ALL FOUR SIDES OF TIMBER.					RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
PB1	PB1 LINING TO INTERIOR FACE REFER TO EXTERNAL WALL DETAILS SHEET.	CL6	PRE-FINISHED ALUMINIUM ROOF SHEETING IN CUSTOM ORB PROFILE IN SINGLE CONTINUOUS SHEET TO FULL EXTENT OF CEILING FINISH: 'COLORCOTE'@ ARX BOTH SIDES. COLOUR : TBC					RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
CB52	CAVIBAT 'R' 45mm X 18mm INSULATING CAVITY BATTEN SYSTEM. CONTACT: CAVIBAT 0508 2284228 www.cavibat.co.nz	CL7	UNDERSIDE OF ROOF SHEETING AND SSL PURLINS I.E. NO APPLIED CEILING					RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
CLAD1	DANPALON 10mm THK/600mm WIDE SHEET MULTICELL POLYCARBONATE CLADDING COLOUR: OPAL VERTICAL FRAME: EXTRUDED ALUMINIUM MULLION TO OUTSIDE FACE.FINISH: ANODISED 25 MICRONS . COLOUR: ANODISED CLEAR	SECURITY SCREENS						RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
CLAD2	DANPALON 10mm/600mm WIDE SHEET THK MULTICELL POLYCARBONATE CLADDING COLOUR: OPAL. FRAME: 150x50 DANPALON HARDY EXTRUDED ALUMINIUM MULLION (TO INSIDE FACE) FIXED TO SSL SUBFRAME, TO S.ENGS. DESIGN. FINISH: ANODISED 25 MICRONS. COLOUR: CLEAR ANODISED	SCR1	316L S/S SECURITY SCREEN - REFER TO ARCHITECTS DETAIL. MESH: LOCKER GROUP WOVEN WIRE MESH TYPE 'PLANAR 441.' WIRE DIA. 1.5 x 2.0mm APPERTURE 2.8 x 20mm. FIX MESH IN TENSION. FRAME: 316L S/S 25 x 25 x 3 EA FRAME WITH 316 S/S 25 x 3 FLAT BAR COVER STRIP. PROVIDE 316L S/S HEAD AND SILL PROFILES - REFER TO ARCHITECTS DETAIL.					RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
INTERNAL WALLS		SCR2	LOCKER 'PIC PERP' PERFORATED IN 3mm ALUMINIUM FOLDED SHEET - TO ARCHITECTS DETAIL. FINISH: POWDER COATED. COLOUR: TBC					RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
P1	190mm REINFORCED CONCRETE BLOCKWORK- CORE FILLED- TO S.ENGS. DESIGN. REFER TO INTERNAL WALL DETAILS.	SCR3	KAYNEMAILE 'SPACEMAILE TENSION SCREEN' POLYCARBONATE SEAMLESS MESH SUPPORTED ON KAYNEMAILE S/S PROPRIETARY FRAME & HOOK ATTACHEMENT SYSTEM. COLOUR: WATER CLEAR CONTACT: KAYNEMAILE LTD +64 44734989					RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
P2	140 x 45 H3.2 TIMBER FRAMED PARTITION WITH STUDS AT 400 CENTRES. LINED WITH PB1 BOTH SIDES. PROVIDE IN1 ACOUSTIC INSULATION. REFER TO INTERNAL WALL DETAILS.							RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
P3	MS1 150mm GALVANISED METAL STUD FRAMED PARTITION WITH STUDS AT 400 CENTRES. LINED WITH PB1 BOTH SIDES. PROVIDE IN1 ACOUSTIC INSULATION. REFER TO INTERNAL WALL DETAILS.							RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
P4	190 x 45 H3.2 TIMBER FRAMED PARTITION WITH STUDS AT 400 CENTRES. LINED WITH PB1 BOTH SIDES. PROVIDE IN1 ACOUSTIC INSULATION. REFER TO INTERNAL WALL DETAILS.							RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
IGP1	INTERNAL GLAZED PARTITION IN SQUARE BEADED ALUMINIUM FRAME. GLASS: 12mm CLEAR TOUGHENED. CONTACT: POTTER SYSTEMS +64 9 579 1338							RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
SK2	GRADE 316 STAINLESS STEEL 200mm x 3mm THK. SKIRTING FINISH: BRUSHED FINISH HORIZONTALLY. FIXINGS: GRADE 316 PHILLIPS HEAD COUNTERSUNK SCREWS TOP AND BOTTOM AT 300mm CENTRES							RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
LININGS								RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.
PB1	13mm GIB AQUALINE (WATER RESISTANT) PLASTERBOARD WITH PF1 FINISH INSTALL PB1 IN ACCORDANCE WITH MANUFACTURERS DATA SHEET/ SPECIFICATIONS AND FIXING REQUIREMENTS -PROVIDE FRAMING SETOUT TO SUIT.							RUC2	ON 'THERMOBAR 344' WHITE-FACED/FOIL FACED UNDERLAY. INSTALL WITH WHITE SIDE FACING DOWN.

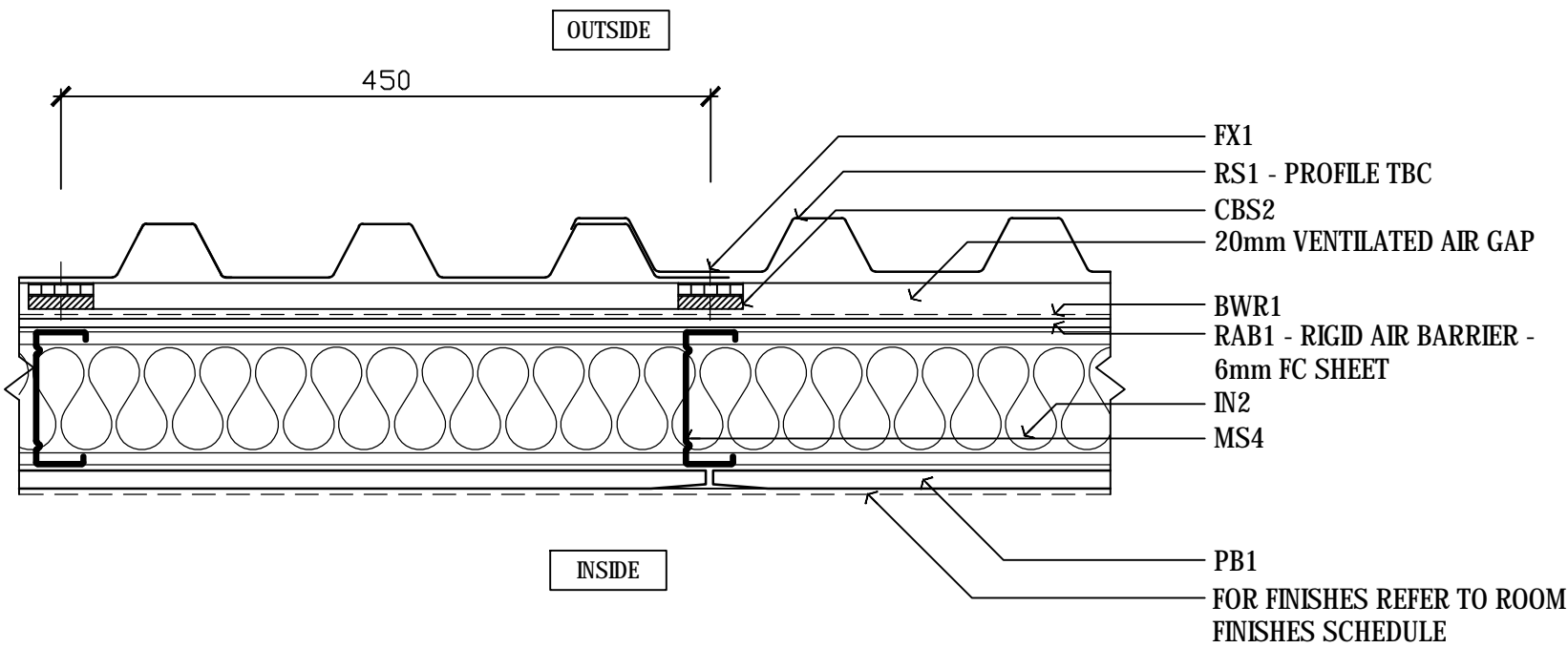


D1 PLAN W1 - EXTERNAL WALL
1:5 @ A1/ 1:10 @ A3

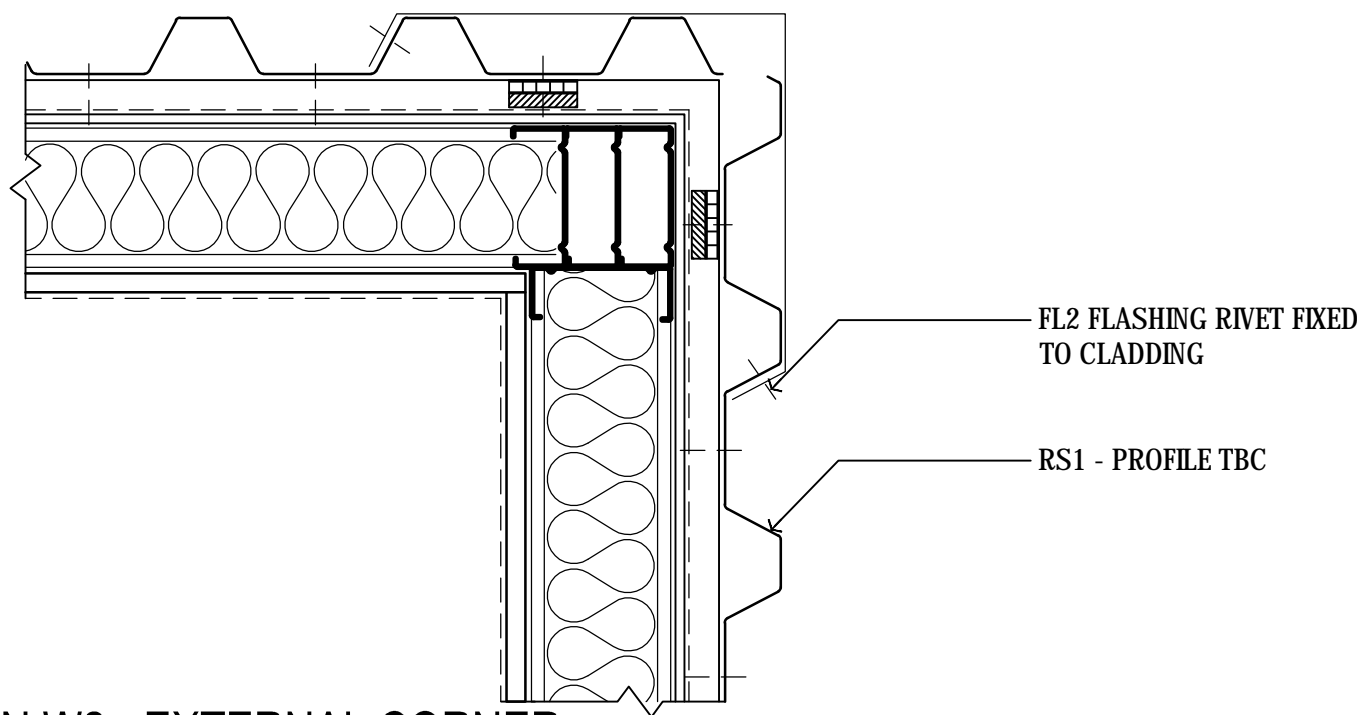
NOTE:
1 PROVIDE CONSTRUCTION JOINTS TO S.ENG'S DESIGN AT 2800mm CENTRES MAXIMUM.



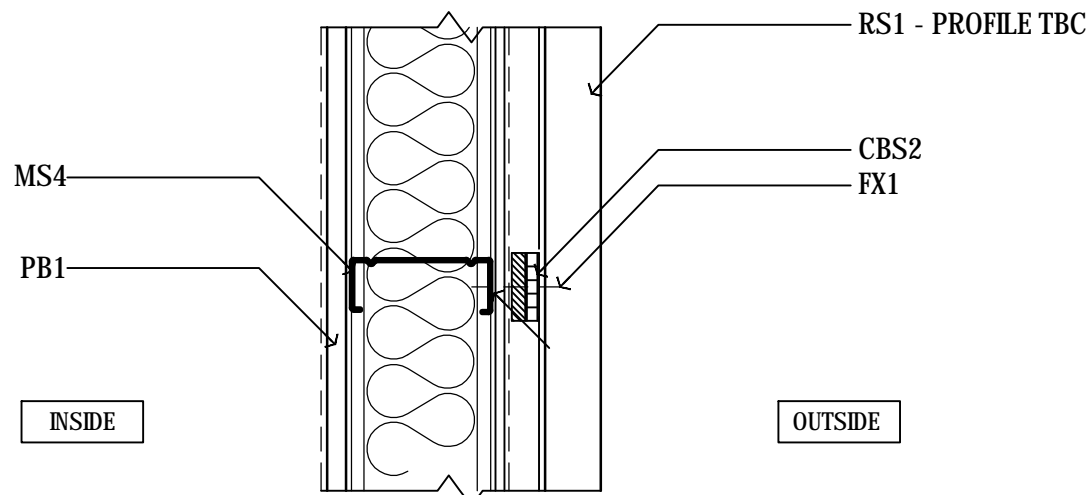
D2 SECTION W1 - EXTERNAL WALL
1:5 @ A1/ 1:10 @ A3



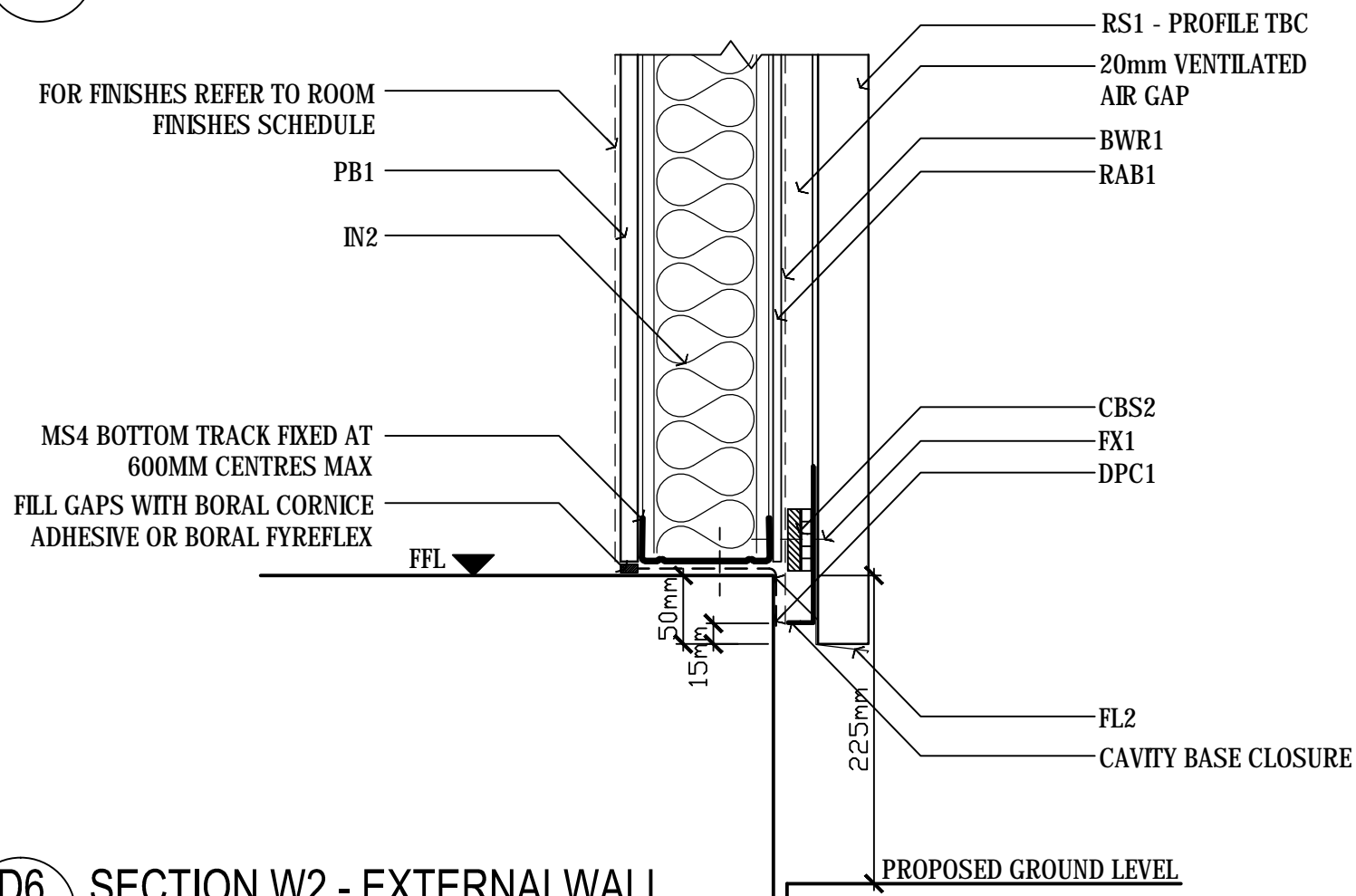
D3 PLAN W2 - EXTERNAL WALL
1:5 @ A1/ 1:10 @ A3



D4 PLAN W2 - EXTERNAL CORNER
1:5 @ A1/ 1:10 @ A3



D5 SECTION W2 - EXTERNAL WALL
1:5 @ A1/ 1:10 @ A3



D6 SECTION W2 - EXTERNALWALL
1:5 @ A1/ 1:10 @ A3

NOTE:

1. FINAL DETAIL DESIGN IS SUBJECT TO THE STRUCTURAL ENGINEERS DESIGN
2. FINAL DETAIL DESIGN IS SUBJECT TO THE ELECTRICAL/ FIRE/ MECHANICAL/ HYDRAULIC ENGINEERS DESIGN
3. H3.2 TIMBER FRAMING (MSG10) MAY BE USED AS A SUBSTITUTE FOR MS4 GALVANISED METAL STUD FRAMING.
4. FOR SKIRTING TYPE REFER TO ROOM FINISHES SCHEDULE.

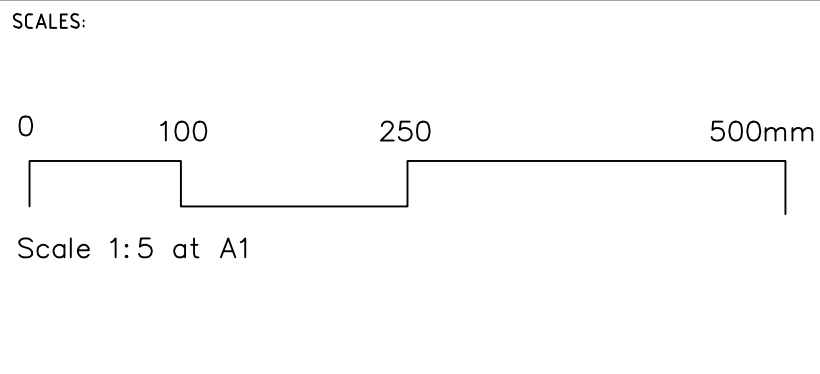
THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ARCHITECTS DRAWING T1 - TECHNICAL SPECIFICATION CODES - DRG. NO. AR-2301

THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTS SPECIFICATION.

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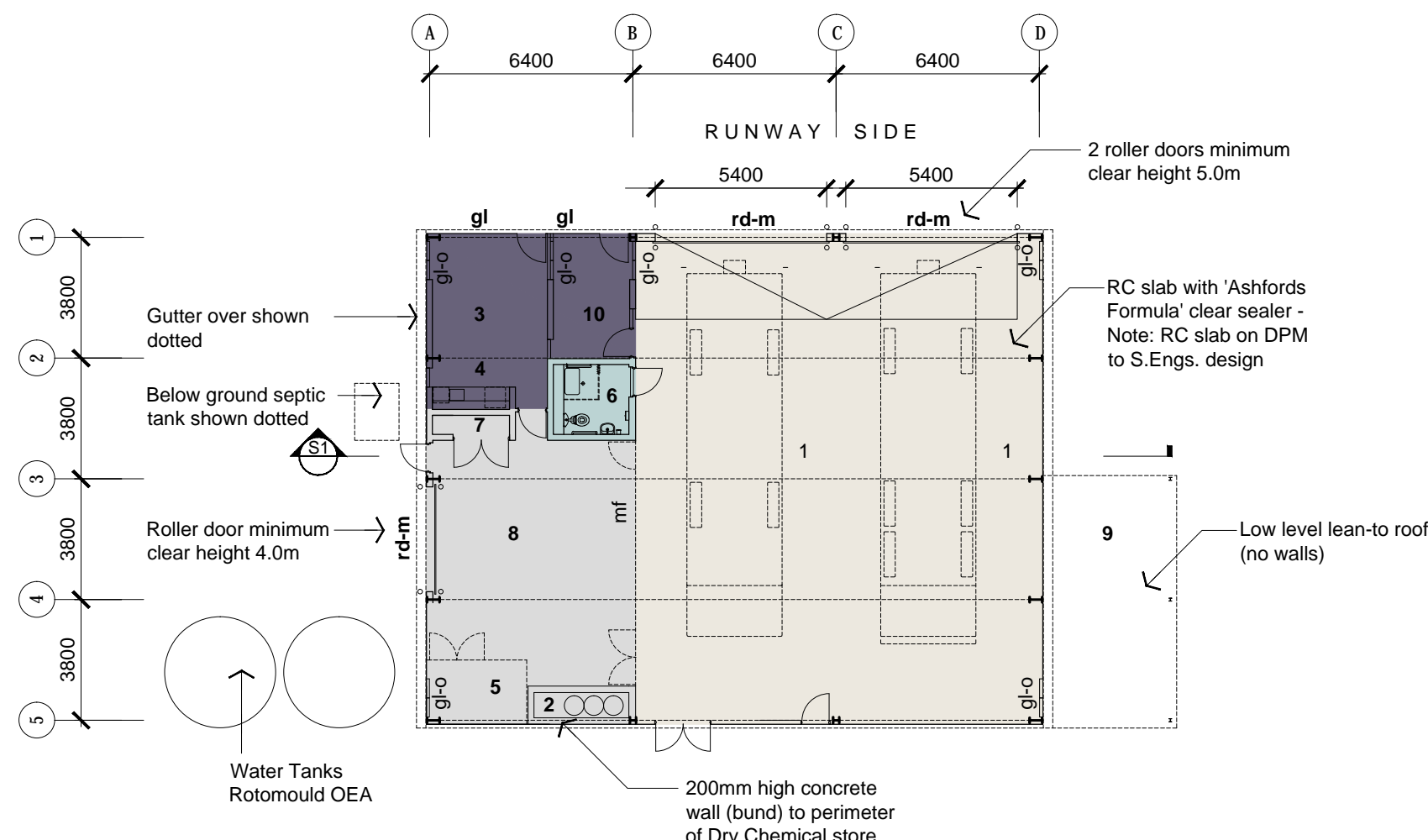
REVISIONS				
No.	BY	DATE	DESCRIPTION	APPD
01	TMA	05.08.13.	FOR APPROVAL	

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001-2000				
DESIGNED	RA	CHECKED	TM	
DRAWN	RA	CHECKED	TM	
APPROVED		DATE		



PACIFIC AVIATION INVESTMENT PROGRAM (PAIP)			
CASSIDY INTERNATIONAL AIRPORT TERMINAL EXTERNAL WALL DETAILS			
A1	STATUS: DETAIL DESIGN	DRAWING NO: 60277008-AR-2343	REV: 01

FOR APPROVAL
NOT FOR CONSTRUCTION



Legend

- 1 Vehicle garage
- 2 Dry chemical storage
- 3 ATC room and training room
- 4 Kitchenette
- 5 Equipment, parts and tools store
- 6 Toilet/shower
- 7 Plant, Com.s & Electrical cupboard
- 8 Maintenance Area
- 9 Covered parking for tractor
- 10 ARFF Watch Room

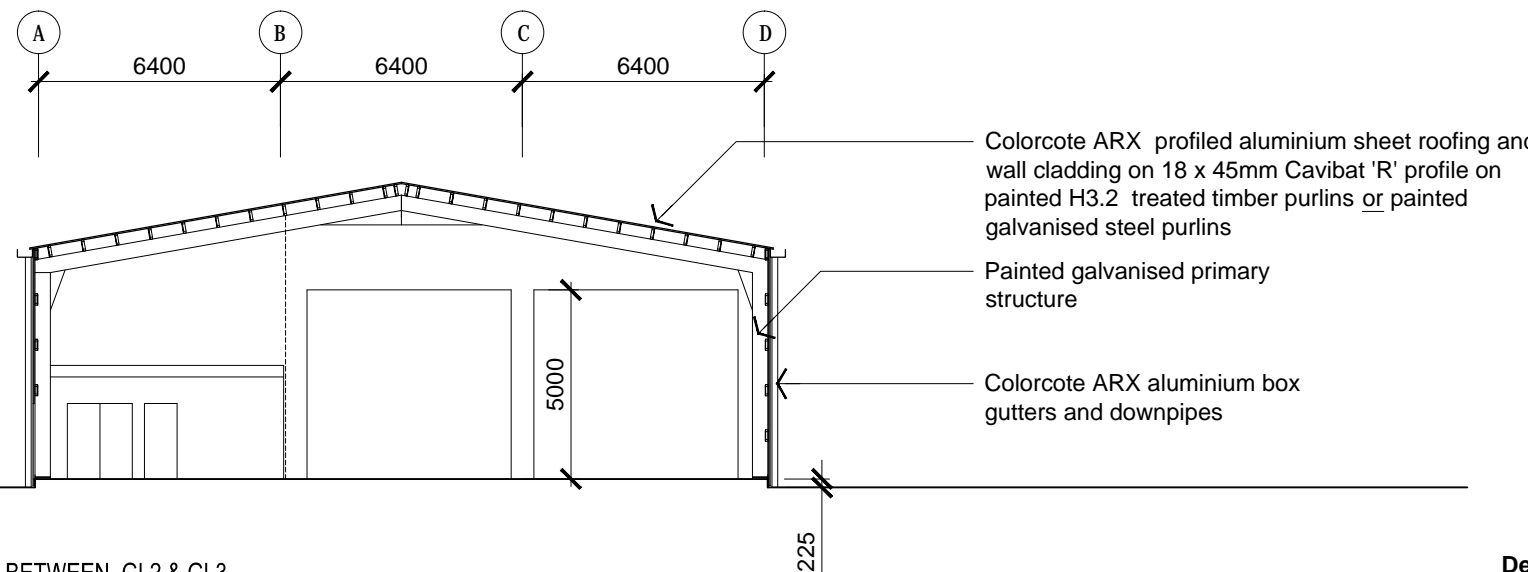
- rd-m Manual roller door with ventilation grilles
- gl Aluminium framed glazing
- s Security fence
- mf SS woven wire mesh wall
- gl-o Operable glass louvers - 2.0m high
- mp Mechanics pit with sump pump and removeable steel covers - to engineers design.

Note

- The site is in a corrosive, exposed marine/coastal location. The climate is tropical - hot and humid year round.
- The design shall cater for potential cyclones. Design wind ULS to be confirmed.

P1 FLOOR PLAN
1:100 @ A1/ 1:50 @ A3

S1 SECTION 1 -BETWEEN GL2 & GL3
1:100 @ A1/ 1:50 @ A3



Design Brief
CXI 2024 Design Aircraft:
B737-800 W

The ARFF Shed design is in progress and subject to:
1. The QS Cost Estimate

FOR APPROVAL
NOT FOR CONSTRUCTION

THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ARCHITECTS DRAWING T1 - TECHNICAL SPECIFICATION CODES - DRG. NO. AR-2301

THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTS SPECIFICATION.

NOTE:
1. FINAL DETAIL DESIGN IS SUBJECT TO THE STRUCTURAL ENGINEERS DESIGN
2. FINAL DETAIL DESIGN IS SUBJECT TO THE ELECTRICAL/ FIRE/ MECHANICAL/ HYDRAULIC ENGINEERS DESIGN

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This drawing is confidential and shall only be used for the purposes of this project.

THE SIGNING OF THIS TITLE BLOCK CONFIRMS THE DESIGN AND DRAFTING OF THIS PROJECT HAVE BEEN PREPARED AND CHECKED IN ACCORDANCE WITH THE AECOM QUALITY ASSURANCE SYSTEM TO ISO 9001-2000

DESIGNED

TMA

CHECKED

TM

DRAWN

TMA

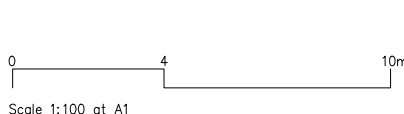
CHECKED

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APPROVED

DATE

SCALE:



AECOM

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CLIENT:

NEW ZEALAND MINISTRY OF
FOREIGN AFFAIRS & TRADE
MANATU AORERE



Government of the Republic of Kiribati

PACIFIC AVIATION INVESTMENT PROGRAM (PAIP)

CASSIDY INTERNATIONAL AIRPORT
KIRITIMATI ISLAND - KIRIBATI
PROPOSED ARFF SHED OPTION 5

A1

STATUS:

DETAIL DESIGN

DRAWING NO.

60277008-AR-2338

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01

D R A F T

Appendix B

Mitigation Measures

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POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS ³	EXECUTING AGENCY	SUPERVISING AGENCY
DETAILED DESIGN/ PRE-CONSTRUCTION MOBILISATION STAGE					
Road traffic safety	<p>Provide for Traffic Management Plan (TMP) to be developed by Contractor, to include signage, flag operators, personnel protective equipment (e.g. high visibility vest), and specific actions to be implemented around sensitive receptors (e.g. residential dwellings, schools, hospital). TMP to include vehicle and pedestrian traffic.</p> <p>Include transport of materials and equipment to construction camp (located at the airport) in the TMP e.g. covering of loads, maximum speed, designated travel times and notification of police and other required departments (e.g. hospital and schools).</p>	From port to airport and To and from the construction camp	Minimal (requirement of bidding documents)	Design Consultant and Contractors	MCTTD
Aviation traffic safety	Each investment within an operational airport is to have a Methods of Works Plan (MOWP) which is to be included in all bid and contract documents. The Contractor is to develop a Safety Management Plan as an addendum to the MOWP. The MOWP will include details of site works scheduling around known flight timetables and procedures for emergency response for all workers.	Operational airports	Minimal (requirement of bidding documents and standard construction practices)	Design Consultant	MCTTD
Soil erosion	<p>Minimize erosion and design erosion protection measures according to international good practice standards, including incorporation of effective drainage systems (soakage pits) and consideration of surface flow paths.</p> <p>Schedule earthworks and construction activities outside of wet season (Dec to Apr).</p>	All locations	Minimal (part of standard design practices).	Design Consultant	MCTTD

³ Costs are estimates only and will be calculated during the detailed engineering design.

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POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS ³	EXECUTING AGENCY	SUPERVISING AGENCY
Dust/Air Pollution	<p>Identify and locate waste disposal sites, stockpile sites and equipment (e.g. bitumen plant) to minimize impacts on the environment and nearby population.</p> <p>Ensure all equipment is serviced and issued with warrant of fitness (as required). Equipment over five years old shall only be used with written approval by MCTTD. Any machinery deemed to be polluting the air must be replaced (or fixed) on instruction by the MCTTD.</p>	Construction camp	Minimal (part of standard design practices).	Design Consultant	MCTTD
Water and soil pollution	<p>Minimise risk to groundwater and surrounding soil by developing a spill response plan and provide training to all contract workers on how to implement the spill response plan.</p> <p>Ensure bunded areas and hard stands are allocated at construction camp for the storage of fuel, lubricants and other potential substances required for the project. Water tight and sheltered bunds to be able to contain 110% of the largest tank/container or, 25% if total volume greater than 1,000L.</p> <p>Ensure wash down areas with respective collection and treatment systems are designated within the construction camp (e.g. settling pond or tank and concrete slurry treatment and oil water separator).</p> <p>Sanitation treatment system (e.g. compost or proprietary treatment system) is to be approved by the MPWU and MCTTD prior to implementation.</p>	All components	Minimal (part of standard design and construction practices).	Design Consultant	MCTTD
Water supply	<p>Include maximum rainwater reclamation and water conservation/efficiency in design of terminal.</p> <p>The Contractors will also need to ensure adequate supply of water for construction and personnel which does not adversely affect the community's water supply (e.g. mobile desalination plant or organising a reservoir supply specifically for construction).</p>	Airport terminals	Minimal (part of standard design practices).	Design Consultant and Contractors	MCTTD

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POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS ³	EXECUTING AGENCY	SUPERVISING AGENCY
Importation of aggregate material	Obtain import permit and Quarantine certification prior to export from country of origin. Certificate of fumigation and verification of source (or proof that material is free of contamination) to be submitted to MPWU and Quarantine Department.	All components	Minimal (part of standard design and construction practices).	Design Consultant	MCTTD
Solid waste generation	<p>Allow for re-use of as much material as possible either within the KAIP, other projects, or for community use. The Island Council should be consulted to determine if materials or waste can be recycled within the community. The recycling of construction materials will be at the discretion of the MCTTD and MPWU.</p> <p>When planning the construction camp ensure temporary waste dump areas are allowed for and approved waste disposal sites / methodologies identified for removal of all solid waste.</p> <p>As early as possible in the pre-construction preparation phase suitable receiving waste facility(ies) should be identified and agreements put in place to transport (trans-boundary) remaining project waste from Kiribati.</p>	All locations	Minimal (part of standard design and construction practices).	Design Consultant and Contractors	MCTTD
Hazardous substances	<p>Where possible fuel shall be obtained from local commercially available sources. Prior arrangement regarding quantity and type will need to be organised (MCTTD to provide details of providers).</p> <p>Fuel shall not be stored in the construction Camp unless permission given by MCTTD.</p> <p>Confirm the presence of asbestos containing material on any buildings to be demolished and develop an asbestos management plan addressing the necessary EHS and customs arrangements to deal with demolition and transport.</p> <p>Ensure containment facilities are set up for the transport of hazardous waste substances that are to be disposed of at licensed waste facility (trans-boundary).</p>	All locations	Minimal (part of mobilisation and construction planning).	Contractors	MCTTD
CONSTRUCTION STAGE					

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POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS ³	EXECUTING AGENCY	SUPERVISING AGENCY
Traffic (vehicle and pedestrian) and construction safety	Implement the traffic management plan to ensure smooth traffic flow and safety for workers, passing vehicles and pedestrian traffic. Where appropriate, employ flag operators on the road to prevent traffic accidents. The workers shall have relevant safety equipment.	Length of road rehabilitation	Safety equipment included in construction cost.	Construction Contractors	MCTTD
Soil erosion	Minimise time and size of ground disturbing activities to workable size at any one time. Vegetation to be removed manually, strictly no use of herbicides/ pesticides. Keep construction vehicles on defined tracks. Revegetate disturbed areas that are not being paved as soon as practicable (loosen ground; apply topsoil; seed or plant as necessary).	All locations	Minimal (part of standard construction practice).	Construction Contractors	MCTTD
Waste disposal	Ensure all construction waste material is recycled or packed up for transport off island. The municipal landfill on Kiritimati is not suitable for disposal of construction waste generated from the KAIP. Ensure areas for waste collection, recycling and off-side disposal are clearly marked/sign posted. Segregate waste to avoid cross contamination, such as with contaminated material (hazardous substance). Install waste collection facilities at construction camp to allow for collection and packing of waste. Strictly no dumping of rubbish. Include awareness training in general environmental training. Workers must be provided with a sanitary system to prevent fouling of lagoon or surrounding soils.	All locations	Minimal (part of standard construction practice).	Construction Contractors	MCTTD

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POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS ³	EXECUTING AGENCY	SUPERVISING AGENCY
Water and soil pollution	<p>Lubricants shall be collected and recycled, or disposed of according to Kiribati regulations, or removed from island as hazardous waste.</p> <p>Spill response plan training completed for all construction workers.</p> <p>Zones for preliminary accumulation of wastes are designated in areas that will cause no damage to the vegetation cover or leach into groundwater or the marine environment (e.g. within construction camp on hard surface).</p> <p>Excavations are bunded to prevent ingress of water runoff.</p> <p>Sediment laden runoff from excavations or stockpiles must be directed to a settling area (not the infiltration galleries, beach or sea) or collected for dust suppression provided the runoff is not contaminated with any chemicals (e.g. fuel).</p> <p>Rehabilitation of the construction camp area shall include scarification to loosen compacted ground as a result of stockpiles and construction of hard stand areas (including bunded areas). Any soil found to be impacted by hydrocarbons shall be excavated, treated as hazardous waste and removed from island for disposal at an approved facility.</p>	All locations	Minimal (part of standard construction practice).	Construction Contractors	MCTTD & ECD

D R A F T

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS ³	EXECUTING AGENCY	SUPERVISING AGENCY
Generation of dust	<p>Use closed/covered trucks for transportation of construction materials. Any vehicle which is overloaded (exceed designed load limit) or is not covered properly shall be refused entry to the construction camp or material shall be refused delivery (if not to the construction camp).</p> <p>Cover stockpiles containing fine material (e.g. sand and topsoil) when not actively being used.</p> <p>Keep work areas clean with regular sweeping. Due to freshwater supply constraints large scale water sprinkling should be kept to a minimum and only as required.</p> <p>Only small areas should be cleared of vegetation at any one time and revegetation should occur as soon as practicable.</p> <p>Dust masks and personnel protective equipment must be available for workers during dust generating activities (e.g. building demolition).</p>	All locations	Minimal (part of standard construction practice).	Construction Contractors	MCTTD

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POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS ³	EXECUTING AGENCY	SUPERVISING AGENCY
Noise and vibration disturbances	<p>Minimise nuisance from noise, especially closer to residential areas, through establishment and communication to affected parties of standard working hours (08:00 to 18:00, Monday to Friday) and avoid increase of noise and number of work equipment at peak hours.</p> <p>Any work outside prescribed hours of operation requires approval by the MTC and notice to affected peoples provided at least 24 hours prior to out of schedule works starting.</p> <p>Regularly check and maintain machinery, equipment and vehicle conditions to ensure appropriate use of mufflers, etc.</p> <p>Workers in the vicinity of sources of high noise shall wear necessary protection gear rated for the situation they are being used.</p> <p>Signage to outline complaints procedure and contact details of recipient of complaints (e.g. phone number, physical address and email).</p> <p>The IFC EHS Guidelines⁴ section 1.7 Noise Management shall be applied (if no local limits are prescribed). Noise impacts should not exceed the levels for industrial commercial activities for one hour LAeq of 70 dB at any point of the day or night. Alternatively noise impacts should not result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site (e.g. residential house).</p>	All locations	Minimal (part of standard construction practice).	Construction Contractors	MCTTD

⁴ International Finance Corporation, Environmental Health and Safety Guidelines, General Guidelines: Noise Management

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POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS ³	EXECUTING AGENCY	SUPERVISING AGENCY
Accident risks/Impacts on traffic safety	<p>Arrange necessary measures for pedestrian and passer-by safety and all means of transportation safety (e.g. establish protection zones, bypass these areas during transportation of materials, etc.)</p> <p>Relevant safety elements such as guardrails, road signs and delineators, pavement markings, barricades and beams, warning lights shall be installed. In some cases a flagman or traffic control supervisor could be engaged around the specific work site.</p>	All locations	<p>Safety equipment included in construction cost.</p> <p>Minimal (part of standard construction practice).</p>	Construction Contractors	MCTTD
Loss of archaeological artefacts or sites	Work to stop in specific location of unearthed artefacts or site and MCTTD notified immediately for instruction to proceed.	All locations	No marginal cost	Construction Contractors	MCTTD
Landscape degradation	<p>Restoration of landscape after completion of rehabilitation works; restore the vegetation cover in accordance with the surrounding landscape and any required design (e.g. grass land or shrubs).</p> <p>Use plant species characteristic for the landscape in the course of restoration of the vegetation cover.</p>	All locations	Minimal (part of standard construction practice).	Construction Contractors	MCTTD

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POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS ³	EXECUTING AGENCY	SUPERVISING AGENCY
Hazardous substances and safety and pollution	<p>Store and handle hazardous substances in bunded, hard stand or designated areas only. Bunded areas should be covered to stop rain water entering or constructed to drain to an oil water separator which will need to be constructed or a mobile proprietary unit imported specifically for use on the KAIP. Bunds (secondary containment) to contain 110% of the largest container/tank required to be stored or, 25% of total volume if total volume is over 1,000L.</p> <p>Provide hazard specific personnel protective equipment to workers directly involved in handling hazardous substances (e.g. chemical or heat resistant clothing, gloves).</p> <p>Complete list, including MSDS for each chemical stored or used shall be accessible at all times. Signage to be posted in storage areas identifying all chemicals present.</p> <p>Spill kits and training of use to be provided to all workers during toolbox meetings. Spill kits to contain PPE gear for the spill clean-up (e.g. gloves and overalls), material to contain the spill and absorbent pads, and a heavy duty rubbish bag to collect absorbent pads or material.</p> <p>Used oil to be collected and taken off island (for disposal or cleaning at approved facility) at completion of works if no on island disposal or recycling facility available.</p> <p>Asbestos containing material (ACM) to be removed from buildings in accordance with the Contractor's approved asbestos management plan (refer IFC EHS Guidelines). Only trained workers wearing full asbestos suitable PPE gear (overalls, respirators, booties, etc.) shall handle the ACM.</p>	All locations	<p>Safety equipment included in construction cost.</p> <p>Minimal (part of standard construction practice).</p>	Construction Contractors	MCTTD

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POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS ³	EXECUTING AGENCY	SUPERVISING AGENCY
Loss of biodiversity	If during course of construction work, particularly vegetation clearance and excavations any bird, reptile or mammal species is identified as being potentially impacted (e.g. nesting bird in area of proposed vegetation clearance) work is to stop in the specific location of the find and the ECD and MCTTD notified immediately for instruction to proceed.	All locations	No marginal cost	Contractors	MCTTD
Health and safety	Construction camp to be fenced to prevent access by unauthorised personnel. First aid training to be provided as required to site workers with basic first aid services to be provided by Contractor e.g. stretcher, vehicle transport to hospital. Only personnel trained in asbestos handling may be involved in any demolition works involving ACM. Full PPE to be used when handling the material ready for transport ECD and MCTTD to be notified prior to specific ACM work commencing.	All locations	Security included in construction cost. Included in construction costs	Contractor	MCTTD
Damage to assets and infrastructure	As a result of KAIP construction activities any damage to assets or infrastructure must be reported to the MCTTD and rectified at the expense of the Contractors.	All locations	Dependent on asset/ infrastructure and level of damage	Contractors	MCTTD

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POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS ³	EXECUTING AGENCY	SUPERVISING AGENCY
OPERATION STAGE					
Hazardous substance management	<p>Strictly apply and enforce manufacturer's recommendations for handling and storage. These measures include sealing of drums, and avoiding extreme heat.</p> <p>Compliance with international good practice.</p> <p>Security of storage areas to facilitate transport, handling and placement to be maintained (e.g. fences and locks fixed immediately if broken or vandalised).</p> <p>Complete list, including MSDS for each chemical stored or used shall be accessible at all times. Signage to be posted in storage areas identifying all chemicals present.</p> <p>Staff to wear manufacturers recommended personnel protective equipment (e.g. gloves and overalls) when handling or mixing hazardous substances.</p> <p>Emergency vehicles are to be serviced and maintained at existing workshop areas.</p>	All airport compounds	No marginal cost (standard operating procedure).	CAD (airports)	MCTTD
Water or soil pollution	<p>Workshops or maintenance areas to be fitted with bunded areas for storage of oil and fuel drums (and any other hazardous substances).</p> <p>Used oil drums should be returned to the suppliers or, after being cleaned, sold in secondary local market if there is demand for this.</p> <p>Used oils may be used for emergency drills/preparedness exercises as appropriate by ARFF.</p>	All locations	No marginal cost (standard operating procedure).	CAD (airports)	MCTTD

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POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS ³	EXECUTING AGENCY	SUPERVISING AGENCY
Maintenance of drainage and soakage systems	Drainage systems shall be periodically cleared of sediment and organic matter build up to ensure appropriate flows and soakage. Material to be disposed at approved site (e.g. landfill or used as cleanfill) or composted if organic. Vegetation to be cleared from drainage channels and soakage pits and composted through the Teinainano Urban Council.	All locations	No marginal cost (standard operating procedure).	CAD (airports)	MCTTD
Wastewater management	Septic systems of the terminal to be cleaned regularly and sludge disposed or treated in accordance with requirements of MPWU and ECD.	Terminal	No marginal cost for current practice of disposal.	CAD (airports)	MCTTD

Note: "All locations" refers to all areas in Kiritimati which will be impacted by KAIP activities, namely the airport (runway, terminal), the road corridor (transport of materials), the port (for delivery of equipment and material), and the construction lay down area.

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Appendix C

Monitoring Plan

DRAFT**Appendix C Monitoring Plan**

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	RESPONSIBILITY
DETAILED DESIGN/ PRE-CONSTRUCTION PHASE				
Traffic safety	Design documents	Ensure TMP has been submitted and approved.	Prior to sign off of final designs	Design Consultant
Aviation safety	Design documents	MOWP complete with details of flight schedules and emergency procedures.	Prior to sign off of final designs	Design Consultant
Soil erosion	Design documents	Construction scheduled for between May and December. Designs include erosion protection measures.	Prior to sign off of final designs	Design Consultant
Water supply	Design documents	Water reclamation systems included in designs (particularly terminal design).	Prior to sign off of final designs	Design Consultant
Importation of materials and equipment	Importation permits	Ensure inclusion in design and material specifications that material and equipment to be fumigated and free of contamination. Approval to import material and equipment is given prior to material and equipment leaving country of origin.	Contractor to organize prior to export from country of origin.	Contractors
CONSTRUCTION				
Agreement for waste disposal	Construction Contractor's records	Permits and/or agreements with local waste disposal providers (e.g. Kiritimati Island Council and recycling contractors). Inspection of disposal sites. Permit and /or agreements with international waste facilities are in place (documented evidence) and correct transport containment methods are available.	Documentation viewed prior to construction works starting Weekly as applicable to schedule of works.	MCTTD
Soil erosion	Areas of exposed soil and earth moving	Inspections at sites to ensure silt fences, diversion drains etc. are constructed as needed. Inspection to ensure replanting and restoration work completed.	Weekly inspection as applicable to schedule of works and after site restoration.	MCTTD

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PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	RESPONSIBILITY
Waste disposal	At construction sites	Inspection to ensure waste is not accumulating and evidence waste has been stockpiled for removal from island. At the end of the project ensure there is no remaining non-recyclable or reusable material remaining.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	MCTTD
Water and soil pollution	At construction sites	Inspection of sites to ensure waste collection in defined area; spill response plan in place and workers trained. Complete spill kits available where hazardous substances sorted and handled. Results from water quality monitoring of the freshwater lens available.	Weekly inspection as applicable to schedule of works and on receipt of any complaints	MCTTD
Dust	At construction sites and adjacent sensitive areas.	Site inspections. Regular visual inspections to ensure stockpiles are covered when not in use and trucks transporting material are covered.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	MCTTD
Noise	At work sites and sensitive locations	Site inspections to ensure workers wearing protective equipment when required. Measurement of noise level with hand-held noise meter not to exceed 80dB. Public signage detailing complaints procedure and contact people/person on display.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	MCTTD
Storage of fuel, oil, bitumen, etc.	At work sites and construction camp. Contractors training log.	Regular site inspections to ensure material is stored within bunded area and spill response training for workers completed. Visual inspection of spill kit for completeness and accessibility.	Weekly as applicable to schedule of works and on receipt of any complaints.	MCTTD
Vehicle and pedestrian safety	At and near work sites	Regular inspections to check that TMP is implemented correctly (e.g. flags and diversions in place) and workers wearing appropriate personnel protective gear.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	MCTTD
Construction workers and staff safety (personal protective equipment)	At work sites	Inspections to ensure workers have access to and are wearing (when required) appropriate personnel protective equipment (e.g. for handling hazardous materials).	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	MCTTD

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PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	RESPONSIBILITY
Community safety	At work sites	Inspections to ensure signs and fences restricting access are in place and pedestrian diversion routes clearly marked (whether for access to a building or home or particular route).	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	MCTTD
OPERATION				
Accidents with hazardous materials or wastes	Airport sites	Accident report	Immediately after accident	ECD
Maintenance of drainage system	On site	Inspection	When needed, particularly after storm events and during rainy season	MPWU
Wastewater management	Terminal and control tower	Proper maintenance of septic system	Quarterly inspection (observation) at connection to septic system.	CAD
Solid waste collection and disposal (non-hazardous)	Terminal and control tower	Solid waste being collected and taken to approved disposal site (e.g. landfill)	To be arranged with Teinainano Urban Council as required	CAD

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Appendix D

Inspection Checklist

D R A F T**Appendix D Inspection Checklist****EMP Monitoring Plan Checklist**

Location:	
Auditor:	
Audit Date/Time (Start):	
Audit Date/Time (Finish):	

Environmental Issue:	Inspection areas:	Requirements met?
1.0 Construction Phase		
1.1 Soil Erosion	<ul style="list-style-type: none"> - Silt fences and diversion drains in place - Replanting and restoration work completed 	Yes No If No, details:
1.2 Waste accumulation and Disposal Agreements	<ul style="list-style-type: none"> - Good housekeeping around the work sites - Waste stockpiled in defined areas with signage ready for removal - Waste/recycling permits/agreements in place 	Yes No If No, details:
1.3 Soil and Water Pollution	<ul style="list-style-type: none"> - Waste collected in defined area on impermeable ground - Appropriate spill response plan/kit in place for waste area - Freshwater lens water quality results sighted 	Yes No If No, details:
1.4 Dust	<ul style="list-style-type: none"> - Stockpiles covered or kept wet when not in use - Visual inspection of ambient dust conditions - Truck transports are covered 	Yes No If No, details:
1.5 Noise	<ul style="list-style-type: none"> - Workers wearing ear protection as required - Noise level maximum of 70dB 	Yes No If No, details:

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Environmental Issue:	Inspection areas:	Requirements met?
1.0 Construction Phase		
1.6 Hazardous Substance Storage (fuel/oil/bitumen)	<ul style="list-style-type: none"> - Hazardous substances within bund on impermeable surface - Spill kit complete and accessible - Spill training completed 	Yes No If No, details:
1.7 Traffic Management Plan Implementation	<ul style="list-style-type: none"> - Traffic Management Plan (TMP) implemented - PPE is being worn by workers 	Yes No If No, details:
1.8 Personal Protective Equipment Use	<ul style="list-style-type: none"> - Workers have access to, and using appropriate, PPE for the task. 	Yes No If No, details:
1.9 Community Safety	<ul style="list-style-type: none"> - Public signage of complaints procedure - Signs and fences restrict or direct pedestrians and public where appropriate 	Yes No If No, details:
2.0 Operational Phase		
2.1 Drainage Maintenance	<ul style="list-style-type: none"> - Inspect to check for blockages and debris, particularly after storm events 	Yes No If No, details:
2.2 Septic System Maintenance and Upkeep at Terminal/ Control tower	<ul style="list-style-type: none"> - <i>Quarterly inspection</i> of connections to system, for leaks 	Yes No If No, details:
2.3 Solid Waste Collection/ Disposal from Terminal/ Control Tower	<ul style="list-style-type: none"> - Solid non-hazardous waste being removed to council approved disposal site 	Yes No If No, details:

D R A F T**Actions Required:**

Issue No.	Action Required? By Whom?	Date Action Required?

Signoff

Signature:

Date:

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Appendix E

Contents of Comprehensive Environmental Impact Assessment

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In progress – not yet complete

Item	Detail	Reference/ Comment
	an executive summary of the impact assessment report, written in Kiribati	To be provided by the PAIP Kiribati Project Support Team
1	the objectives of the proposed activity	Section 1.0 Introduction
2	an analysis of the need for the proposed activity	Section 1.1 Background and Section 2.0 Upgrade Description of Works for specific upgrade works
3	a description of the proposed activity, including—	Section 2.0 Upgrade Description of Works
	a) if the activity includes construction work—	
	i) designs, plans and maps;	Section 2.0, Appendix A and Appendix B
	ii) adequate technical data to allow an assessment of the impact of the prescribed works;	
	iii) the quantities of any materials and equipment needed;	
	iv) the nature of any construction or works process;	
	v) construction working hours;	
	vi) level of noise involved and hours of operation;	
	vii) proposed schedule for implementation and completion;	The exact schedule for implementation and completion of works will be determined once the contractor(s) have been confirmed for each component of work. However indicative time frames have been provided in Section 2.0.
	viii) the plans for de-commissioning the constructed works.	
	b) if the activity includes carrying on an environmentally-significant activity—	Section 2.0 Upgrade Description of Works
	i) the nature and extent of the activity;	
	ii) materials needed;	
	iii) sourcing of material, whether imported or locally sourced;	
	c) if the activity includes taking, harvesting, growing or keeping of organisms, the type and number of organisms involved;	Not applicable – there will be no taking, harvesting, growing or keeping of organisms.
	d) if the activity includes the generation of any waste substances or energy—	
	i) the nature and quantity of any waste products;	Sections 6.2.1 Solid Waste, Section 6.2.9 Wastewater, Section 7.0 Mitigation Measures (specifically 7.2, 7.4, 7.8, 7.9) and Appendix B
	ii) proposed methods for controlling and dealing with any waste products;	
	e) if the activity includes harm to a coral reef, mangrove or sea grass bed, the nature and extent of the harm;	Not applicable – there will be no harm caused to a coral reef, mangrove or sea grass bed. Works within or discharges to the coastal and marine environment are prohibited.

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Item	Detail	Reference/ Comment
	f) if the activity includes harm to a protected species or ecological community, the nature and extent of the harm;	Not applicable – there will be no harm caused to a protected species or ecological community.
	g) if the activity is in a protected area or World Heritage area, the nature and extent of any harm to the protected area or World Heritage area	Not applicable – the location of CXI is not within a World Heritage Area.
4	a description of the environment with the potential to be affected by the proposed activity including— a) the geology, soils, ground, surface and lagoon water (including baseline data); b) the nearby foreshore description – beach material, shape of coastline, wind direction, currents and nature of reef; c) ecological important habitats and organisms: distribution and abundance in the area	Section 4.0 Environmental and Social Environment Proximity to foreshore discussed but details regarding beach material, shape, wind direction, currents and nature of the reef are not applicable. There are no ecologically important habitats at the airport.
5	the potential or actual impacts of the proposed activity on the environment, a description of, and any potential impacts on, social, economic and cultural resources including: a) population & employment (within the likely affected community); b) health facilities; c) education facilities; d) current land use and resources traditionally used by local communities; e) sites or structures that are of historical and cultural significance	Section 6.0 Environmental and Social Impacts There will be no direct impacts on health facilities, education facilities, current land use and resources (CXI is existing infrastructure), nor any sites of structures of historical or cultural significance.
6	the potential or actual impacts of the proposed activity on the environment, including any primary, secondary, short and long term adverse and beneficial impacts	Section 6.0 Environmental and Social Impacts
7	a full description of any residual impact which cannot be mitigated	Section 6.2.5 (noise impacts from operational airport)
8	an account of any similar projects elsewhere and a description of the impacts, and controls used	Successful resurfacing of CXI runway, Kiritimati
9	a description of any intended investigations or studies of the possible impact of the proposed activity on the environment	Section 7.0 Mitigation Measures
10	a full description on long term measures proposed to be undertaken to avoid likely adverse impacts of climate change and climate variability in relation to the activity, taking into consideration global and local climate scenarios	Section 4.4 Projected Climate Change and Impacts Greatest likely impact from climate change is rising sea level. Due to low lying, flat landscape any rise in sea level will inundate surrounding land before the runway.

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Item	Detail	Reference/ Comment
11	a description of the possible energy sources for activity, taking into account viable renewable energy sources, and a justification for the proposed energy source	Equipment used during construction will use fossil based fuel (e.g. diesel and petrol). While not included in the PAIP funding, the terminal structure is being designed to support installation and maintenance of photovoltaic panels which should generate enough electricity to export to the local power system.
12	the benefits of the proposed activity, including any economic, social and cultural factors	Section 2.2 Alternatives
13	reasonable alternatives to the proposed activity, for example, design and sites, and including, at least, the alternative of not undertaking the activity (basic EIA) a full description of each alternative to the proposed activity, including the benefits, impacts and management options (Comprehensive EIA)	Section 2.2 Alternatives
14	an outline of the reasons for the proposed activity as opposed to the alternatives	Section 2.2 Alternatives
15	a description of any other legal requirements relating to the proposed activity	Section 3.0 Policy, Legal and Administrative Framework
16	a summary of the results of consultations undertaken for the proposed activity	Section 5.0 Consultation and Stakeholder Engagement
17	a list of the persons and bodies who have been consulted detail of public involvement and disclosure including: a) a description of the participation schemes involving the public from project planning until decommissioning; b) an outline of major issues received from the public and a description of how these concerns are going to be addressed; c) a summary of public opinion on the proposed project	Section 5.0 Consultation and Stakeholder Engagement– to be updated as additional consultation is undertaken.

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Item	Detail	Reference/ Comment
18	<p>an environmental management and protection plan for the proposed activity, including—</p> <ul style="list-style-type: none"> a) a description of environmental issues or the environment to be affected or impacted, b) a description and assessment of the controls, safeguards, standards or other environmental management or mitigation measures intended to be adopted or applied for the protection of the environment, or to minimize or prevent harm to the environment, including their estimated costs; c) a description of any intended environmental monitoring and reporting of the impact of the activity with estimated costs; d) a description of responsibilities and authorities for implementation of mitigation measures and monitoring requirements; e) a clear statement that the applicant is committed to the measures included in the environmental management and protection plan; and f) a clear statement by the applicant that, if unexpected adverse impacts occur, contact will be made immediately with the Principal Environment Officer to seek advice. 	Sections 6.0 Environmental and Social Impacts, 7.0 Mitigation Measures, 9.0 Compliance and Monitoring Plan , Appendix B Mitigation Measures, and Appendix C Monitoring Plan
19	<p>the summary of the environmental management and protection plan in a matrix form. The summary of the environmental and protection plan must include –</p> <ul style="list-style-type: none"> a) environmental issues or the environment to be affected or impacted. b) proposed mitigation, control or safeguard measures, c) name of institutions responsible for implementing mitigation, control or safeguard measures, . 	Appendix B
20	a full description of the methods used in predicting and assessing the information presented	
21	a list of contributors to the report and their contact details	
22	Sources and references to materials relied on	Throughout document

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Appendix F

Environment License Application Form



Project No.	
Date of receipt	
RR number	
Review date	
Site visit date	
Status	

GOVERNMENT OF KIRIBATI
MINISTRY OF ENVIRONMENT LANDS AND AGRICULTURAL DEVELOPMENT
 P.O. Box 234,, Bikenibeu, Tarawa, Republic of Kiribati
 Tel. No. (686) 28000/28425 Fax: (686) 28334
Email: information@environment.gov.ki

Environment Licence Application Form

1. Contact Information

Name of applicant Ministry of Communications, Transport and Tourism Development (must be an individual person, corporation or government body)

Contact Address

Betio, Tarawa, KIRIBATI

Telephone +686 26003 Mobile _____ Fax _____

Email:

teboranga@gmail.com

—

2 Background Information

Name of project (ESA) Kiribati Aviation Investment Project

Type of project

(government/private/commercial) Government – Ministry of Communications, Transport and Tourism Development

Location of the project Cassidy International Airport, Kiritimati
 (attach site plan if applicable)

Proposed implementation date

2. Site description detailing the state of the environment

Please refer to attached Environmental Management Plan, Section 4.0 Environmental and Social Environment

3 Project Description

Purpose of the project (attach supplement information if available)













Refer to Section 1.0 and 2.0 of the attached
EMP _____

Size of the project (design specifications to be provided if applicable)

Refer to Section 2.0 and Appendix A for a Description of Works and design
plans _____

Persons or contractors who will undertake the activity Not yet known

5. Specify activity/activities below if they are going to involve or be part of this proposed Project.

Activities	Tick below
Activities involving significant coastal and marine impact ∅ extraction of aggregates, minerals, stones or shingles, sand, reef mud and beach rock— ∅ clearance of live corals, mangroves and seagrass ∅ construction work below the high water mark ∅ construction of seawalls ∅ land reclamation ∅ establishment of boat channels ∅ dredging	      
Activities requiring significant materials ∅ brick manufacture ∅ landfilling	 
Activities involving significant waste products ∅ operation of waste disposal plants including recycling and collection systems ∅ operation of drainage, disposal or sewerage systems ∅ chemical treatment of timber	  

Other Activities – Refer to ESA list	Specify if any
∅ Activities using significant natural resources	The project will import all necessary equipment or material (e.g. aggregate).

<p>≠ Activities involving harmful chemicals</p>	<p>The project will make use of hazardous substances (e.g. fuel, lubricants, bitumen), which is to be managed in accordance with the EMP.</p>
<p>≠ Activities involving a significant alteration of the environment</p>	<p>The project involves upgrading and maintenance type activities on existing infrastructure. There will not be any further permanent alteration of the environment as a result of project activities.</p>

I certify that the above information is true.

Signature _____

Name of person (providing information) _____

Date _____

Note: It is an offence under section 30 of the *Environment Act 1999* to provide false or misleading information

Attach any other relevant information (in the form of Project document, Study report, etc.)

Lodgment Requirements/Conditions.

1. For seawall and mining activities (sand and gravel, reef mud dredging), please obtain license forms from Land Management Division(LMD) before applying for an Environment Licence.
2. Application fee of \$10.00