Fulton Hogan	**Inspection and Test Plan - Control and Supervision of the Works**	**Doc ID:** ITP 015 **REV:** 2

Client: Melbourne Airport	**Contract No:** CP21009	**Prepared By:** Faiyaaz Ahmed
Project: APAM Runway 16/34 Overlay	**Reviewed By:** Jamal Khodr	**Date:** 27/06/2023
Construction Process: Aeronautical Ground Lighting (AGL) – Cabling Works	**Approved By:** Adrian Barbagallo	**Date:** 27/06/2023
Specifications: Melbourne Airport RWY 16/34 Overlay Project – Works Specifications		
Structure / Component: AGL Electrical Systems - Cabling		

Lot No:	Lot Details:	Lot size/Quantity:	Date:

Item No.	Task/Activity Description	Inspection/Test					HP/ WP/ AP/ IP/ TP/ SCP	Responsibility Site Engineer Principal's Representative Surveyor Foreman	Checked by:			
		Frequency	Acceptance Criteria	Reference Documents	Inspection/ Test Method	Record of conformity			Subcontractor	Principal's Rep.	FH	Date
1.0	**Preliminary Works**											
1.1	Check for correct documentation	Prior to commencing any activity	Ensure that all employees and subcontractors are using the latest and complete set of drawings	IFC Drawings	Verify	Drawings	**HP***	Site Engineer				
1.2	Implementation of all measures and controls	Prior to commencing any activity	All necessary measures and controls are being implemented, that is PSP, EMP, TMP, SWMS & WP.	PSP, EMP, TMP, JSEA, SWMS, WP	Verify	Site and Office Inspection	**HP***	Site Engineer / Site Supervisor				
1.3	Definition of the work Area & Survey check	Prior to commencing any activity	Work area has been cleared and surveyed (marked on site). Limits of excavation clearly defined as per For Construction drawings prior to trenching and install.	IFC Drawings 12554937-E014 to E028	Verify	This ITP Signed & Sub-contractor ITC	SCP	Site Engineer / Site Supervisor				
1.4	Plug & Socket	Prior to commencing any activity	The Contractor must supply a sample representative constructed plug and socket connection to the Contract Administrator upon request. The Contractor shall advise The Contract Administrator when the first assembly is to be installed in the field and shall be implemented as a witness point for the Contract Administrator.	Appendix K-Technical Specifications) 3.11.4	Verify	This ITP Signed & Sub-contractor ITC	WP	Site Engineer / Site Supervisor/Principal's Representative				

Fulton Hogan	Inspection and Test Plan - Control and Supervision of the Works	Doc ID: ITP 015 REV: 2

Client: Melbourne Airport	**Contract No:** CP21009	**Prepared By:** Faiyaaz Ahmed
Project: APAM Runway 16/34 Overlay	**Reviewed By:** Jamal Khodr	**Date:** 27/06/2023
Construction Process: Aeronautical Ground Lighting (AGL) – Cabling Works	**Approved By:** Adrian Barbagallo	**Date:** 27/06/2023
Specifications: Melbourne Airport RWY 16/34 Overlay Project – Works Specifications		
Structure / Component: AGL Electrical Systems - Cabling		

Item No.	Task/Activity Description	Inspection/Test					HP/ WP/ AP/ IP/ TP/ SCP	Responsibility Site Engineer Principal's Representative Surveyor Foreman	Checked by:			
		Frequency	Acceptance Criteria	Reference Documents	Inspection/ Test Method	Record of conformity			Subcontractor	Principal's Rep.	FH	Date
2.0	**Material / Equipment Approvals**											
2.1	Cable Condition verification	Prior to commencing any activities	Upon delivery of the cable drums, they must be visually inspected for damage incurred during transport or storage. The seal on the inner and outer cable end must be examined and the condition of armouring, serving or sheath inspected for damage, corrosion or leakage of impregnating oil. Any damage discovered must be reported to the Contract Administrator.	Appendix K- Technical Specifications 3.11.1	Visual Inspection	This Signed ITP	IP	Site Supervisor				
2.2	Cabling Record	Each lot	Measure and record the insulation resistance of each primary cable drum prior to installation. The cable drum identification (drum number, date, time, etc) and any unique markings for each cable run must be included as "As Constructed" information on the drawings and in the Operation and Maintenance Manuals.	Appendix K- Technical Specifications) 3.11.2	Test/ Record	This ITP signed	IP	Site Engineer/Site Supervisor				

Fulton Hogan	Inspection and Test Plan - Control and Supervision of the Works	Doc ID: ITP 015 REV: 2

Client: Melbourne Airport	**Contract No:** CP21009	**Prepared By:** Faiyaaz Ahmed
Project: APAM Runway 16/34 Overlay	**Reviewed By:** Jamal Khodr	**Date:** 27/06/2023
Construction Process: Aeronautical Ground Lighting (AGL) – Cabling Works	**Approved By:** Adrian Barbagallo	**Date:** 27/06/2023
Specifications: Melbourne Airport RWY 16/34 Overlay Project – Works Specifications		
Structure / Component: AGL Electrical Systems - Cabling		

Item No.	Task/Activity Description	Inspection/Test					HP/ WP/ AP/ IP/ TP/ SCP	Responsibility Site Engineer Principal's Representative Surveyor Foreman	Checked by:			
		Frequency	Acceptance Criteria	Reference Documents	Inspection/ Test Method	Record of conformity			Subcontractor	Principal's Rep.	FH	Date
2.3	Primary Cable	Prior to Start	New Primary cabling shall comply with the requirements of the FAA advisory circular 150/5345-7 and ICAO Aerodrome design manual part 5. - 6mm^2 cable with polyethylene jacket and copper tape screen - Rated for 5000V - 7 Strands	- Appendix K- Technical Specifications) 2.6.1	Aconex	Datasheet	**HP***	Site Engineer				

Fulton Hogan	Inspection and Test Plan - Control and Supervision of the Works	Doc ID: ITP 015 REV: 2

Client: Melbourne Airport	**Contract No:** CP21009	**Prepared By:** Faiyaaz Ahmed
Project: APAM Runway 16/34 Overlay	**Reviewed By:** Jamal Khodr	**Date:** 27/06/2023
Construction Process: Aeronautical Ground Lighting (AGL) – Cabling Works	**Approved By:** Adrian Barbagallo	**Date:** 27/06/2023
Specifications: Melbourne Airport RWY 16/34 Overlay Project – Works Specifications		
Structure / Component: AGL Electrical Systems - Cabling		

Item No.	Task/Activity Description	Inspection/Test					HP/ WP/ AP/ IP/ TP/ SCP	Responsibility Site Engineer Principal's Representative Surveyor Foreman	Checked by:			
		Frequency	Acceptance Criteria	Reference Documents	Inspection/ Test Method	Record of conformity			Subcontractor	Principal's Rep.	FH	Date
2.4	Primary connectors	Prior to Start	Primary connector kits shall be in full compliance with the latest edition of FAA AC 150/5345-26. Field attached primary cable plug and sockets must be utilised to connect primary cables and to attach primary cables to SITs. The plug and socket arrangement consists of a moulded thermoplastic rubber housing, filled with insulating silicone to fill any voids, and fitted with a cable gland for improved sealing. The primary plug and socket connectors must consist of FAA type L-823, Type 1 Class B specification AC 150/5345-26D plug Style 3 and receptacle Style 10, suitable for use with the shielded primary cable type. The primary cable connectors include the use of silicone compounds to provide watertight seal and ensure electrical insulation. Connectors must be EFLA KDL series for screened cable, or approved equivalent. Connectors must be equipped with compression glands at their cable ends, and snap-on locking ring to secure the plug and sockets together.	Appendix K- Technical Specifications) 3.11.4 & 2.6.4	Verify	Datasheet	**HP***	Site Engineer				

Fulton Hogan	**Inspection and Test Plan - Control and Supervision of the Works**	**Doc ID:** ITP 015 **REV:** 2

Client: Melbourne Airport	**Contract No:** CP21009	**Prepared By:** Faiyaaz Ahmed
Project: APAM Runway 16/34 Overlay	**Reviewed By:** Jamal Khodr	**Date:** 27/06/2023
Construction Process: Aeronautical Ground Lighting (AGL) – Cabling Works	**Approved By:** Adrian Barbagallo	**Date:** 27/06/2023
Specifications: Melbourne Airport RWY 16/34 Overlay Project – Works Specifications		
Structure / Component: AGL Electrical Systems - Cabling		

Item No.	Task/Activity Description	Inspection/Test					HP/ WP/ AP/ IP/ TP/ SCP	Responsibility Site Engineer Principal's Representative Surveyor Foreman	Checked by:			
		Frequency	Acceptance Criteria	Reference Documents	Inspection/ Test Method	Record of conformity			Subcontractor	Principal's Rep.	FH	Date
2.5	Secondary Cable	Prior to Start	New Secondary cabling shall comply with the requirements of the Department of Transport YSVE4005 issue 2, V5-2842 and ICAO Aerodrome Design Manual Part 5 - 6mm^2 Cable with black nylon jacket. - Rated for 600V - 56 strands	-	Aconex	Datasheet	**HP***	Site Engineer				

2.6	Secondary cable connectors	Each lot	Connection of the existing secondary cable to the new SIT must be by FAA type L-823: – Secondary cable: Type 2 Class A plug Style 1 and receptacle • Style 8 (elevated lights) • Style 7 (other) The secondary lead must be not less than 4 mm 2 copper twin conductor and must be insulated for not less than 600 Volts AC and have a length of not less than 1 metre. The secondary lead must be compatible and suitable for connection in the field to the secondary circuits using hexagonal crimp links and overlapping heat shrink sleeve style joints. Details of required compression sleeves must be provided prior to installation. Provide details prior to installation of the type and construction of the proposed secondary cable joint. The details must fully describe the joint construction and its electrical characteristics. Certified test certificates detailing the electrical characteristics of the completed joint must accompany the joint details.	Appendix K- Technical Specifications) cl.3.12.4 & 2.6.4	Visual inspection	This ITP signed & Sub-contractor ITC	**HP**	Site Engineer / Foreman				
2.7	Conduit cleaning	Prior to start	Provide clear written details of the proposed cleaning method and equipment to be utilised to the Contract Administrator for approval prior to commencing the works.	Appendix K- Technical Specifications) cl 3.12.2	Verify	This ITP signed / Aconex Reference of Cleaning Methodology	**HP**	Site Engineer				

Fulton Hogan	Inspection and Test Plan - Control and Supervision of the Works	Doc ID: ITP 015 REV: 2

Client: Melbourne Airport	**Contract No:** CP21009	**Prepared By:** Faiyaaz Ahmed
Project: APAM Runway 16/34 Overlay	**Reviewed By:** Jamal Khodr	**Date:** 27/06/2023
Construction Process: Aeronautical Ground Lighting (AGL) – Cabling Works	**Approved By:** Adrian Barbagallo	**Date:** 27/06/2023
Specifications: Melbourne Airport RWY 16/34 Overlay Project – Works Specifications		
Structure / Component: AGL Electrical Systems - Cabling		

Item No.	Task/Activity Description	Inspection/Test					HP/ WP/ AP/ IP/ TP/ SCP	Responsibility Site Engineer Principal's Representative Surveyor Foreman	Checked by:			
		Frequency	Acceptance Criteria	Reference Documents	Inspection/ Test Method	Record of conformity			Subcontractor	Principal's Rep.	FH	Date
3.0	**Cable Installation**											
3.1	Cable Route	Each Lot	Cabling route installed as per path shown in construction drawings.	IFC Drawings	Verify	This ITP signed	**HP***	Site Engineer				
3.2	Secondary cable slots	Each lot	Cable slots should not be sawn until the laying of the secondary cables is in readiness to proceed and the slots must be filled and sealed immediately after the laying of the cables. Slots must be the shortest direct routes when sawn in flexible pavement.	Appendix K- Technical Specifications) cl.3.12.1	Verify	This ITP Signed	**HP***	Site Engineer / Site Supervisor				
3.3	Cabling in existing conduits	Each lot	Where new cabling is installed in existing conduit, prior to the installation of the cable, conduits shall be thoroughly cleaned to remove dirt, debris and grout that may exist within the conduits. Inspection of ducts following cleaning of duct banks prior to installation of new pits	Appendix K- Technical Specifications) cl.3.12.2 & 3.10.2	Verify	This ITP signed / Aconex Reference of Cleaning Methodology	**WP**	Site Engineer / Foreman / /Principal's Representative				

Fulton Hogan	Inspection and Test Plan - Control and Supervision of the Works	Doc ID: ITP 015 REV: 2

Client: Melbourne Airport	**Contract No:** CP21009	**Prepared By:** Faiyaaz Ahmed
Project: APAM Runway 16/34 Overlay	**Reviewed By:** Jamal Khodr	**Date:** 27/06/2023
Construction Process: Aeronautical Ground Lighting (AGL) – Cabling Works	**Approved By:** Adrian Barbagallo	**Date:** 27/06/2023
Specifications: Melbourne Airport RWY 16/34 Overlay Project – Works Specifications		
Structure / Component: AGL Electrical Systems - Cabling		

Item No.	Task/Activity Description	Inspection/Test					HP/ WP/ AP/ IP/ TP/ SCP	Responsibility Site Engineer Principal's Representative Surveyor Foreman	Checked by:			
		Frequency	Acceptance Criteria	Reference Documents	Inspection/ Test Method	Record of conformity			Subcontractor	Principal's Rep.	FH	Date
3.4	Primary Cabling Connections / Joints	Each Lot	PVC insulated yellow-green lugged flexible copper cable must be used for continuity of the screened primary cable. Plug and socket connections must be connected with the earth cable terminals aligned as per the manufacturer's instructions. Refer to detail on the drawings for configuration and method of installation. Joints for primary cables must be suitable and must maintain the insulation and dielectric properties of the primary cable when installed in any location within the airfield lighting system. The joint must be waterproof and must allow the jointed cable to be installed within the SIT pits without causing damage or undue strain on the joint, as per the specification.	Appendix K- Technical Specifications) cl.3.11.4	Verify	This ITP Signed & Sub-contractor ITC	**IP**	Site Engineer / Site Supervisor				

Fulton Hogan	Inspection and Test Plan - Control and Supervision of the Works	Doc ID: ITP 015 REV: 2

Client: Melbourne Airport	**Contract No:** CP21009	**Prepared By:** Faiyaaz Ahmed
Project: APAM Runway 16/34 Overlay	**Reviewed By:** Jamal Khodr	**Date:** 27/06/2023
Construction Process: Aeronautical Ground Lighting (AGL) – Cabling Works	**Approved By:** Adrian Barbagallo	**Date:** 27/06/2023
Specifications: Melbourne Airport RWY 16/34 Overlay Project – Works Specifications		
Structure / Component: AGL Electrical Systems - Cabling		

Item No.	Task/Activity Description	Inspection/Test					HP/ WP/ AP/ IP/ TP/ SCP	Responsibility Site Engineer Principal's Representative Surveyor Foreman	Checked by:			
		Frequency	Acceptance Criteria	Reference Documents	Inspection/ Test Method	Record of conformity			Subcontractor	Principal's Rep.	FH	Date
3.5	Secondary Cabling connections	Each Lot	Joints in secondary twin core cabling and for the connection of secondary cable to secondary plug/ socket leads must be of the compression link type. The compression links must be staggered hence reducing the overall diameter of the joint and each link insulated using a length of heat shrink material. The inner sleeve must be lined with a material that will, homogeneously bond to the cable insulation. A further heat shrink tube lined with a material that will homogeneously bond to the cable and inner heat shrink sleeves must be fitted over the initial layer.		Verify	This ITP Signed & Sub-contractor ITC	**IP**	Site Engineer/ Site Supervisor				
3.6	Elevated Lights	Each Lot	The secondary cable must be retained so that being dislodged from its mounting the secondary cable plug socket connection will be disconnected with the socket retained within the mounting base thus presenting no bare secondary conductor.	Appendix K- Technical Specifications) cl.3.12.3	Verify	This ITP Signed	**HP***	Site Engineer / Site Supervisor				

Client: Melbourne Airport	**Contract No:** CP21009	**Prepared By:** Faiyaaz Ahmed
Project: APAM Runway 16/34 Overlay	**Reviewed By:** Jamal Khodr	**Date:** 27/06/2023
Construction Process: Aeronautical Ground Lighting (AGL) – Cabling Works	**Approved By:** Adrian Barbagallo	**Date:** 27/06/2023
Specifications: Melbourne Airport RWY 16/34 Overlay Project – Works Specifications		
Structure / Component: AGL Electrical Systems - Cabling		

Item No.	Task/Activity Description	Inspection/Test					HP/ WP/ AP/ IP/ TP/ SCP	Responsibility Site Engineer Principal's Representative Surveyor Foreman	Checked by:			
		Frequency	Acceptance Criteria	Reference Documents	Inspection/ Test Method	Record of conformity			Subcontractor	Principal's Rep.	FH	Date
3.7	Cable pulling	Each Lot	When drawing cable into conduits only chalk type or other approved lubricants not injurious to PVC sheathing may be used. Petroleum based substances such as grease or oil are not permitted.	Appendix K- Technical Specifications) cl.3.11.1	Verify	Datasheet	**IP**	Site Engineer				
3.8	Cable slot sealing		Cable slots must be sealed with open cell backing rod and a Bitumen modified, moisture curing, polyurethane sealant (DOWSIL 890-SL within flexible pavement or approved equivalent). Where secondary cables are installed in existing rigid pavement (concrete) areas the existing slot sealant must be completely removed, cleaned and the new secondary cables installed in the slot. The slot must then be sealed with DOWSIL 888	Appendix K- Technical Specifications) cl.3.12.2	Verify	This ITP Signed	**HP***	Site Engineer				
3.9	Series Isolation Transformers (SIT)	Prior to Start	The SIT earthing connector must be bonded to the local earth electrode. Refer to detail on the drawings for configuration and method of installation. SITs for lights must be housed in pits, fixed to removable trays, as detailed on the Drawings	Appendix K- Technical Specifications) cl.3.13	Verify	Datasheet This ITP signed & Sub-contractor ITC	**IP**	Site Engineer				

Fulton Hogan	Inspection and Test Plan - Control and Supervision of the Works	Doc ID: ITP 015 REV: 2

Client: Melbourne Airport	**Contract No:** CP21009	**Prepared By:** Faiyaaz Ahmed
Project: APAM Runway 16/34 Overlay	**Reviewed By:** Jamal Khodr	**Date:** 27/06/2023
Construction Process: Aeronautical Ground Lighting (AGL) – Cabling Works	**Approved By:** Adrian Barbagallo	**Date:** 27/06/2023
Specifications: Melbourne Airport RWY 16/34 Overlay Project – Works Specifications		
Structure / Component: AGL Electrical Systems - Cabling		

Item No.	Task/Activity Description	Inspection/Test					HP/ WP/ AP/ IP/ TP/ SCP	Responsibility Site Engineer Principal's Representative Surveyor Foreman	Checked by:			
		Frequency	Acceptance Criteria	Reference Documents	Inspection/ Test Method	Record of conformity			Subcontractor	Principal's Rep.	FH	Date
3.10	Sit Ratings	Prior to start	New Principal supplied SITs must be installed for the new and modified lighting systems as per Table 3 in Appendix K- Technical Specifications) cl.3.13.1	Appendix K- Technical Specifications) cl.3.13.1	Verify	Datasheet This ITP signed	**IP**	Site Engineer				
3.11	Labelling and Tagging	Each lot	All new airfield lighting primary cabling supplying the AGL must be identified and clearly labelled as detailed on the drawings and in the specification Every cable end shall be provided with a means of identification showing the designation, number and cross-sectional area of cores and rated voltage of the cable.	Appendix J- IFC Drawings Appendix K- Technical Specifications) cl.3.11.5	Verify	This ITP Signed	**HP***					

4.0	**General Works**											
4.1	Existing cabling	Each Lot	Slot routes must be planned and coordinated to ensure that existing operational secondary cables are not crossed and cut during the slotting process. If the position of a new light is such that it is not possible to avoid existing secondary cables then the advice of the Contract Administrator must be sought prior to proceeding.	Appendix K- Technical Specifications) 3.12.2	Verify	This ITP Signed	**IP**	Site Engineer / Site Supervisor				
4.2	Pit Fit out	Each Lot	Ensure that all installation requirements are as detailed in drawings including: - Pit ID plate & label - Conduit directions markers - Earth Bar - SIT tray	IFC Drawings 12554937-E045 & E050	Verify	This ITP Signed		Site Engineer				
5.0	**Post Construction**											

5.1	Airfield lighting primary cable insulation and circuit resistance testing	Each Lot	The procedure to be followed when conducting the electrical tests on the primary circuits follows the procedures outlined in the ICAO Aerodrome Design Manual Part 5 Second Edition 2017 Section 15.9. The procedure is summarised in project specification Appendix K- Technical Specifications) section 6.3.2 In addition to insulation resistance tests, all circuits must be tested for circuit continuity and the circuit resistance recorded at the same intervals as the insulation resistance measurement is undertaken. The Contractor must ensure that the insulation resistance value achieved on completion of Works is not less than that measured prior to commencement. Circuit continuity and the circuit impedance tests must be cond from the ALER, a monthly check on its performance (insulation) must be maintained and all readings recorded. Airfield lighting primary cable insulation and circuit resistance testing to be completed for all New and Existing Primary Circuits connected to this Airfield Lighting System at the time of Commissioning as 1 test per circuit.	Appendix K- Technical Specifications) 6.3.2 &6.7	Verify	Commission-ing Checklist / Test Report	**TP**	FH Engineer / AGL Subcontractor				

Fulton Hogan	Inspection and Test Plan - Control and Supervision of the Works	Doc ID: ITP 015 REV: 2

Client: Melbourne Airport	**Contract No:** CP21009	**Prepared By:** Faiyaaz Ahmed
Project: APAM Runway 16/34 Overlay	**Reviewed By:** Jamal Khodr	**Date:** 27/06/2023
Construction Process: Aeronautical Ground Lighting (AGL) – Cabling Works	**Approved By:** Adrian Barbagallo	**Date:** 27/06/2023
Specifications: Melbourne Airport RWY 16/34 Overlay Project – Works Specifications		
Structure / Component: AGL Electrical Systems - Cabling		

5.2	As-built Documentation	Prior to Practical Completion	Submission of as built report showing cabling route submitted to the Principal's Representative prior to practical completion.	Appendix K- Technical Specifications) Section 6	Verify	As-built Submission Reference on Aconex	**SCP**	Site Engineer				

Final Inspection

The signature below verifies that this ITP has been completed in accordance with the Fulton Hogan's Quality system Procedures and verifies lot compliance with specifications.

Print Name: **Position:** **Signature:** **Date:** / /

Legend:

HP	Hold Point	Work shall not proceed past the HP until released by the Principal's Representative	**IP**	Inspection point	Formal Inspection to be done and recorded
HP*	Fulton Hogan Hold Point	Work shall not proceed past the HP* until released by Fulton Hogan	**TP**	Test Point	Product compliance test to be undertaken and recorded/reported
WP	Witness Point	An inspection which must be witnessed by the Principal's Representative	**SCP**	Survey conformance point	A qualified surveyor to check product/section/structure and report
AP	Approval Point	Written or verbal approval given by the Principal's Representative			

Notes	