SPARK – North East Link – Primary Package

Inspection and Test Plan (ITP)

ITP Title: Subsoil Drainage Installation

ITP Number: NEL-CNT-SDC-2990-PQA-ITP-0094 Rev 3

LOT Number: _____

Primary Asset Location Code: _____

Discipline: **Drainage**

Spark NELP Approval Record

Function	Position	Name	Signature	Date
Prepared By	Quality Representative	Richard Conti		15-08-22
Reviewed By	Project Engineer	Ben Kellett	Ben Kellett 	17-08-22
Approved By	Quality Manager	Greg Iro	 Digitally signed by Greg Iro Date: 2022.08.17 14:21:37 +10'00'	

Notes:

1. *Ensure all Records or Checklist References are attached and that each Inspection Requirement is clearly named, signed, and dated.*
2. *Ensure every Records or Checklist References attached are legible*
3. *This Inspection Test Plan may be generic – ensure the requirement is demographically clear to your scope of work*
4. *Verification Inspections where applicable for the IREA stated as "Witness" or "Hold" shall be formally notified for their engagement and with sufficient advance notice time (3 days or as agreed with the Sub-IREA Representative and/or the Nominated Authority)*
5. *All Nominated Authority Hold Points are Witness Points for Sub-IREA*
6. *The Sub-IREA representative is not required to physically sign-off on ITPs*

INSPECTION AND TEST PLAN (ITP)

Project: SPARK – North-East Link Primary Package **Client:** State of Victoria and the North-East Link State Tolling Corporation

ITP Title: Subsoil Drainage Installation

Description: This ITP captures all sub-soil drainage as part of Road / Bridge / Retaining Wall Works.

References:
IFC Drawings, Construction Quality Management Plan (CQMP), Project Scope and Delivery Requirement (PSDR)

Standards: VicRoads Section 702, VicRoads Standard Drawing 1601

ITP No: NEL-CNT-SDC-2990-PQA-ITP-0094 **Rev No**: 3

Lot No:..... **Location**:..... **Ch**:..... **to**..... **Offset**:..... **to**..... **Layer**:

Item No.	Resp. Person	Inspection and Test Activity	Specification Reference	Acceptance Criteria	Test Method	Test Freq.	Inspection/Verification (Name, signature & date)				Records/ Documents	Field Notes / Comments
							Sub-Contractor	Spark NEL Engineer	Nominated Authority	IREA		
1.0	**Preliminaries (Include all aspects of Materials, Approvals, IFC Drawings, etc. Ensure all required permits have been raised prior to commencing works)**											
1.1	PE	Construction Package Approval	PSDR Part F6 2 (a) to (h)	Construction Documentation shall be submitted and approved prior to commencing work at site.	R	PW	NR	**HP**	NR	NR	IFU Construction Package InEight Reference: #_____	
1.2	PE	IFC Drawings Issued	Construction Management Plan	IFC Drawings, approved plans, technical specifications issued for construction.	R	PW	NR	**WP**	NR	NR	Design Package Number: #_____	
1.3	PE	All Equipment Calibrated (NATA Approved)	CQMP Section 11.1	Equipment calibration certificates filed in InEight. Ensure all equipment associated with the relevant works is calibrated	R	PW	**HP**	**WP**	NR	NR	[ ] InEight Reference: [ ] Not Applicable	
1.4	PS	Survey Set-Out	CQMP Survey MP	Confirm and visually inspect all survey set out points are in accordance to IFC Drawings.	R	PW	**HP**	**HP**	NR	NR	[ ] Photos of Survey Marks [ ] Survey Records	
1.5	PE	Sub-Contractor(s) Quality Documents + Inspection Test Plans	CQMP 8.2.2.4	Ensure Sub-Contractor(s) have submitted signed ITP's and Checklists along with all relevant supporting documents.	R	PW	**HP**	**HP**	NR	NR	[ ] InEight References: [ ] Approved ITP Review Checklist [ ] Not Applicable	
2.0	**Material Compliance**											
2.1	SE	Method of Compaction	VicRoads Section(s) 702.09	The method of compaction shall be in accordance with the Contractor's quality	V	PW	**HP**	**HP**	**HP**	**WP**	[ ] InEight Hold Point Reference:	

INSPECTION AND TEST PLAN (ITP)

Project: SPARK – North-East Link Primary Package **Client:** State of Victoria and the North-East Link State Tolling Corporation

ITP Title: Subsoil Drainage Installation

Description: This ITP captures all sub-soil drainage as part of Road / Bridge / Retaining Wall Works.

References:
IFC Drawings, Construction Quality Management Plan (CQMP), Project Scope and Delivery Requirement (PSDR)

Standards: VicRoads Section 702, VicRoads Standard Drawing 1601

ITP No: NEL-CNT-SDC-2990-PQA-ITP-0094 **Rev No**: 3

Lot No: **Location**: **Ch**: **to** **Offset:** **to** **Layer**:

Item No.	Resp. Person	Inspection and Test Activity	Specification Reference	Acceptance Criteria	Test Method	Test Freq.	Inspection/Verification (Name, signature & date)				Records/ Documents	Field Notes / Comments
							Sub-Contractor	Spark NEL Engineer	Nominated Authority	IREA		
				procedures and shall be submitted for review by the Nominated Authority. Where no fines concrete is used as filter material the Contractor shall submit quality procedures for review by the Nominated Authority which detail the method of placing the no-fines concrete to prevent segregation and the formation of a slurry layer at the surface of the concrete which may prevent the passage of water into the filter material.							InEight Document Reference No.: [ ] Not Applicable	
2.2	SE	Material – Drainage pipe, granular filter and geotextile materials	VicRoads Section(s) 702.04, 702.05, 702.06 & IFC Drawings PSDR Part B Section 5.4 and 5.5	Drainage pipes comply with specified requirements of Category 1: • Perforated plastics Class 1000 • Precast concrete Class "2" • Perforation size to be less than 1.5mm and minimum length of 150mm/m2. Drainage pipes must be made of reinforced concrete and rubber-ring jointed, or other equivalent products approved by the State. Granular filter material must be obtained from a VicRoads accredited source. No Fines concrete must meet the following requirements: • Be a Type GP cement • Comply with section 703 • W/C range of 0.35 to 0.5 Geotextile filter to have the following characteristics: • Minimum robustness G(1) of 900	V	X1	**HP**	**HP**	NR	NR	[ ] Delivery Dockets for Bedding Materials [ ] Manufacturers Compliance Certificates for pipes and geotextile materials [ ] NATA Test Report(s)	

INSPECTION AND TEST PLAN (ITP)

Project: SPARK – North-East Link Primary Package **Client:** State of Victoria and the North-East Link State Tolling Corporation

ITP Title: Subsoil Drainage Installation

Description: This ITP captures all sub-soil drainage as part of Road / Bridge / Retaining Wall Works.

References:
IFC Drawings, Construction Quality Management Plan (CQMP), Project Scope and Delivery Requirement (PSDR)

Standards: VicRoads Section 702, VicRoads Standard Drawing 1601

ITP No: NEL-CNT-SDC-2990-PQA-ITP-0094 **Rev No**: 3

Lot No:..... **Location**:..... **Ch**:..... **to**..... **Offset**:..... **to**..... **Layer**:

Item No.	Resp. Person	Inspection and Test Activity	Specification Reference	Acceptance Criteria	Test Method	Test Freq.	Inspection/Verification (Name, signature & date)				Records/ Documents	Field Notes / Comments
							Sub-Contractor	Spark NEL Engineer	Nominated Authority	IREA		
				• EOS(2) of 85-230 microns • Minimum elongation of 45% **Refer** Table 702.131 on the last page of this ITP.								
3.0	**Construction Activities**											
3.01	SE	Excavation	VicRoads Section(s) 702.08	Trench walls excavated to allow geotextile filter to be in close contact with the wall. The bottom of the trench has been compacted and is not more than 50 mm below the specified level of the invert of the pipe. There are no departures from the grade of the base of the trench that would allow ponding of water. Excess excavation made good by backfilling with like material. Loose material has been removed. Where existing subsurface drains are intercepted, an adequate outlet has been provided for the drain. Redundant subsurface drains have been removed and backfilled with Type A per section 204, or specified pavement material when found in new road pavement.	V	PW	**WP**	**WP**	NR	NR	[ ] InEight Hold Point Number: _____ [ ] Excavation and Penetration Permit No: _____	
3.02	PE	Inspection of Base Trench	VicRoads Section(s) 702.08	The base of the trench shall be inspected to verify compliance prior to placing bedding in completed excavations. The Nominated Authority shall be notified at least 24 hours prior to the inspection.	V	PW	**HP**	**HP**	**HP**	**WP**	HP Release InEight Reference: #_____	

INSPECTION AND TEST PLAN (ITP)

Project: SPARK – North-East Link Primary Package **Client:** State of Victoria and the North-East Link State Tolling Corporation

ITP Title: Subsoil Drainage Installation

Description: This ITP captures all sub-soil drainage as part of Road / Bridge / Retaining Wall Works.

References:
IFC Drawings, Construction Quality Management Plan (CQMP), Project Scope and Delivery Requirement (PSDR)

Standards: VicRoads Section 702, VicRoads Standard Drawing 1601

ITP No: NEL-CNT-SDC-2990-PQA-ITP-0094 **Rev No**: 3

Lot No:..... **Location**:..... **Ch**:..... **to**..... **Offset**:..... **to**..... **Layer**:

Item No.	Resp. Person	Inspection and Test Activity	Specification Reference	Acceptance Criteria	Test Method	Test Freq.	Inspection/Verification (Name, signature & date)				Records/ Documents	Field Notes / Comments
							Sub-Contractor	Spark NEL Engineer	Nominated Authority	IREA		
3.03	SE	Subsurface drains in expansive soils	IFC Drawings	Where subsurface drains are installed in expansive soils (swell >2.5%) the drainage pipe must not touch the expansive material. Additionally, 150mm or more of capping must be provided below the floor of the trench.	V	X1	**HP**	**HP**	NR	NR	[ ] Completed ITP [ ] NATA Swell Report for Subgrade [ ] Not Applicable	
3.04	SE	Bedding	VicRoads Section(s) 702.09	A bedding of granular filter material of thickness between 25 mm and 50 mm has been placed across the bottom of the trench. The bedding has been tamped and screeded or graded to level.	V	PW	**HP**	**HP**	NR	NR	[ ] Completed ITP [ ] Not Applicable	
3.05	SE	Installation	VicRoads Section(s) 702.09 VicRoads Standard Drawing 1601 IFC Drawings PSDR Part B Section 5.4 and 5.5	Subsurface drainage pipes have been laid to the depth shown on drawings. All road drainage pipes and culverts must be designed such that the top of the drain is at least 200 millimetres below the underside of pavement, except where capping or selected material is required beneath the pavement. The top of drain must be at least 200 millimetres below the underside of capping or selected material. The diameter of pipes placed under pavements must not be less than 375 millimetres and the height of box culverts must be not less than 300 millimetres. Except for drainage systems related to the Tunnel, or where agreed to by the State or the Returned Asset Owner (as applicable),	V	PL	**WP**	**WP**	NR	NR	[ ] Completed ITP	

INSPECTION AND TEST PLAN (ITP)

Project: SPARK – North-East Link Primary Package **Client:** State of Victoria and the North-East Link State Tolling Corporation

ITP Title: Subsoil Drainage Installation

Description: This ITP captures all sub-soil drainage as part of Road / Bridge / Retaining Wall Works.

References:
IFC Drawings, Construction Quality Management Plan (CQMP), Project Scope and Delivery Requirement (PSDR)

Standards: VicRoads Section 702, VicRoads Standard Drawing 1601

ITP No: NEL-CNT-SDC-2990-PQA-ITP-0094 **Rev No**: 3

Lot No: **Location**: **Ch**: **to** **Offset:** **to** **Layer**:

Item No.	Resp. Person	Inspection and Test Activity	Specification Reference	Acceptance Criteria	Test Method	Test Freq.	Inspection/Verification (Name, signature & date)				Records/ Documents	Field Notes / Comments
							Sub-Contractor	Spark NEL Engineer	Nominated Authority	IREA		
				all longitudinal, transverse drainage and subsurface drainage systems must be free draining. The incorporation of drainage systems that rely on pumping or siphoning is not permitted. Corrugated metal pipes, pipe arches and arches must not be used. All outlets to drainage systems must be provided by an underground drainage network.							
3.06	SE	Placing Granular Filter Material and Geotextile	VicRoads 702.09	Filter material has been placed in accordance with the approved method of placement. No segregation of no fines nor formation of a slurry at the surface. No-fines concrete placed and compacted within 1 hour of mixing. Geotextile has been lapped over granular filter material by 150mm or more as per SD1601	V	PL	**WP**	**WP**	NR	NR	[ ] Completed ITP [ ] Compaction Test [ ] Not Applicable	
3.07	PE	Flushing	VicRoads 702.09	A flush test has been carried out in the presence of a representative nominated by the Nominated Authority.	V	PL	**HP**	**HP**	**HP**	**WP**	[ ] Record of flushing test [ ] Not Applicable	
3.08	SE	Access points & inspection openings	VicRoads 702.10	An access point has been provided at the beginning and end of each run and an inspection point at 100-150m intervals. Where stormwater pits have been used as access points, the invert at the beginning of the run has been located above the outlet of	V	PL	**WP**	**WP**	NR	NR	[ ] Completed ITP	

INSPECTION AND TEST PLAN (ITP)

Project: SPARK – North-East Link Primary Package **Client:** State of Victoria and the North-East Link State Tolling Corporation

ITP Title: Subsoil Drainage Installation

Description: This ITP captures all sub-soil drainage as part of Road / Bridge / Retaining Wall Works.

References:
IFC Drawings, Construction Quality Management Plan (CQMP), Project Scope and Delivery Requirement (PSDR)

Standards: VicRoads Section 702, VicRoads Standard Drawing 1601

ITP No: NEL-CNT-SDC-2990-PQA-ITP-0094 **Rev No**: 3

Lot No:..... **Location**:..... **Ch**:..... **to**..... **Offset**:..... **to**..... **Layer**:

Item No.	Resp. Person	Inspection and Test Activity	Specification Reference	Acceptance Criteria	Test Method	Test Freq.	Inspection/Verification (Name, signature & date)				Records/ Documents	Field Notes / Comments
							Sub-Contractor	Spark NEL Engineer	Nominated Authority	IREA		
				the pit and >100mm above the outlet of the pit at the end of the run.								
3.09	SE	Marker Posts	VicRoads 702.11 PSDR Part B Section 5.4	At all fill batter and drain outlets, supply and erect marker posts as shown on the drawings. Posts must be 75mm diameter x 1500mm treated pine posts inserted 600mm into the ground.	V	PL	**WP**	**WP**	NR	NR	[ ] Completed ITP [ ] As Built Documents	
3.10	SE	Inspection of Subsurface Drainage Lines	VicRoads 702.09 (i) PSDR Part B section 5.5(b)	All subsurface drainage lines constructed shall be inspected, after completion of the flushing test as stated in clause 702.09(h) and prior to placement of asphalt, by an independent testing organisation using closed circuit television (CCTV) to verify that the flow of water is not obstructed by waste construction material left inside and to check for visible signs of defects. Placement of asphalt shall not proceed until the CCTV inspection and flushing test have been completed, damaged or deformed subsurface drainage pipe has been removed and replaced and the waste and defects free condition of subsurface drainage lines has been verified by the Nominated Authority.	V	PL	**HP**	**HP**	**HP**	WP	[ ] CCTV Report	
4.0	**Post Operations (Include Inspection and Testing)**											
4.1	SE	Verification and lot records Complete	CQMP Section 8.2.6.2	Ensure completed work checklists, inspection and test results and contractor conformance records are progressively and permanently saved and stored as soon as possible after they are received. Completed construction lot records are transferred to	V	PL	**HP**	**HP**	NR	NR	[ ] Lot Map Lot Record	

INSPECTION AND TEST PLAN (ITP)

Project: SPARK – North-East Link Primary Package **Client:** State of Victoria and the North-East Link State Tolling Corporation

ITP Title: Subsoil Drainage Installation

Description: This ITP captures all sub-soil drainage as part of Road / Bridge / Retaining Wall Works.

References:
IFC Drawings, Construction Quality Management Plan (CQMP), Project Scope and Delivery Requirement (PSDR)

Standards: VicRoads Section 702, VicRoads Standard Drawing 1601

ITP No: NEL-CNT-SDC-2990-PQA-ITP-0094 **Rev No**: 3

Lot No:..... **Location**:..... **Ch**:..... **to**..... **Offset**:..... **to**..... **Layer**:

Item No.	Resp. Person	Inspection and Test Activity	Specification Reference	Acceptance Criteria	Test Method	Test Freq.	Inspection/Verification (Name, signature & date)				Records/ Documents	Field Notes / Comments
							Sub-Contractor	Spark NEL Engineer	Nominated Authority	IREA		
				the project Quality Team for final record verification prior to being closed								
4.2	PE	NCR Close out (if applicable)	CQMP Section 8.3	All NCR's presented for closure	R	PL	**HP**	**HP**	**HP**	WP	HP Release InEight Reference: #_____ NCR InEight Reference: #_____ NCR Module	
5.0	**Quality**											
5.1	QSR	Identification and control of non-conforming products or services (if applicable)	CQMP Section 8.3	Review and confirm closure of NCR's and associated RFI's prior to closing of construction lot	R	PL	NR	**HP**	NR	NR	NCR closed with related documentation	
5.2	QSR	Check all quality records for lot closure	CQMP Section 8.3	All applicable quality records are complete	R	PL	NR	**HP**	NR	NR	Compiled documents (all data reports and records)	

Legend:				
Responsibility	**Method**	**Inspection / Verification**	**Test Frequency**	**Other**

INSPECTION AND TEST PLAN (ITP)

SS: Site Supervisor SE: Site Engineer PE: Project Engineer SPE: Senior Project Engineer GE: Geotechnical Engineer PS: Project Surveyor	PSM: Project Systems Manager QSR: Quality Site Rep. STR: Structural Engineer SSR: Site Safety Rep. EMR: Environmental Management Rep. NA: Nominated Authority (Release of HP) IREA: Independent Reviewer (Observer)	V: Verify I: Inspection R: Review T: Test S: Survey	HP: Hold Point WP: Witness Point NR: Not Required	PW: Prior to Works PL: Per Lot F: Full or 100% Inspection or Testing X1: Inspect or Test at Specified Frequency X2: Random Inspection or Test	QP: Quality Plan RFI: Request for Information NCR: Non-Conformance VC: Verification Checklist XXXX: Sequential Number from Doc Control
DDD – Types: B – Building, C – Civil, G – General, M – Mechanical & Electrical, I – Motorway Operations System (ITS), S – Structure, O – Tolling, T – Tunnel, U – Urban Design & Landscape					

Supplier/Subcontractor: (If applicable) Name	**Signature and Date**	**Spark-NELP REP**	**Name**	**Signature and Date**

Lot closure comments:

Spark NELP QA Rep: **Name**_____ **Signature:** _____**Date:** _____

Table 702.131 Minimum Frequency of Testing

Test	Minimum Frequency of Testing
Grading	On each production day – one per 500 tonnes
Unsound Rock Content	On each production day – one per 500 tonnes
Sand Equivalent	One per 5000 tonnes of product
pH	One per 5000 tonnes of product
Total Dissolved Solids (glass fines only)	One per 5000 tonnes of product