

Applicant's Guide

Products evaluation process for ITS, Electrical and Traffic Engineering specified and innovative products

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Contents

- 1 Introduction1**
- 1.1 General 1
- 1.2 Background..... 1
- 1.3 Purpose of product evaluation 1
- 1.4 Types of approval 2
- 1.5 Confidential information 2
- 1.6 Definitions 2
- 2 Scope3**
- 3 Product evaluation process.....4**
- 3.1 General 4
- 3.2 Application 5
- 3.3 Phase 1 – Business requirement assessment 6
- 3.4 Phase 2 – Product assessment 8
- 3.5 Review of sample product 9
 - 3.5.1 *Compliance with performance requirements*..... 10
- 3.6 Integration into the department’s systems 10
 - 3.6.1 *STREAMS certification process* 10
 - 3.6.2 *Traffic Surveys certification process*..... 10
- 3.7 Interim approval 10
- 3.8 Field evaluation..... 10
 - 3.8.1 *General*..... 10
 - 3.8.2 *Functional safety* 11
 - 3.8.3 *Test site* 11
 - 3.8.4 *Testing and commissioning*..... 11
 - 3.8.5 *Maintenance* 11
 - 3.8.6 *Test period and scheduling* 12
 - 3.8.7 *Interim arrangements* 12
 - 3.8.8 *Intellectual property* 12
 - 3.8.9 *Funding of test*..... 12
 - 3.8.10 *Test results* 12
- 3.9 Managing certificate..... 12

1 Introduction

1.1 General

This *Applicant's Guide* outlines the Department of Transport and Main Roads product evaluation process for ITS, Electrical and Traffic Engineering specified and innovative field products. The scope of the field products is limited to traffic engineering, electrical, ITS field devices technology or equipment and associated processes.

It is Transport and Main Roads' primary reference for manufacturers and/or suppliers (Applicants) seeking approval or acceptance of specified or innovative products for road transport infrastructure.

This *Applicant's Guide* will cover two groups of products:

- **specified product** – a product that is covered by Transport and Main Roads [Technical Specifications](#), and/or
- **innovative product** – a product which:
 - has no existing departmental Technical Specification or associated guidance, or
 - has a departmental Technical Specification but is being nominated for use in an application different from the purpose in the Technical Specification, or
 - is the result of combining two or more specified products in a way not previously specified.

1.2 Background

Traditionally, Transport and Main Roads had undertaken product compliance evaluation internally. This *Applicant's Guide* lays out the process to enable Transport and Main Roads prequalified consultants (Consultant) to assist Transport and Main Roads with evaluation of certain products. To obtain a list of prequalified consultants, contact Transport and Main Roads via email at ITSElectricalProductApprovals@tmr.qld.gov.au.

The evaluation process typically requires an Applicant to provide documentation that demonstrates compliance with Transport and Main Roads Technical Specifications, relevant test reports and sample of product for review. Transport and Main Roads has established a prequalified panel of Consultants which is able to undertake product compliance checks for certain products. The Consultant will provide the Applicant with a compliance check report and an evidence-based compliance recommendation.

Where a product complies with all departmental requirements, Transport and Main Roads may proceed with product evaluation.

1.3 Purpose of product evaluation

This process benefits manufacturers, suppliers, contractors, consultants, designers and road agencies by:

- efficient procurement of products
- effective performance monitoring
- consistency in the operation and maintenance of products

- full compatibility with existing Transport and Main Roads systems and infrastructure
- compliance with legal and statutory requirements, and
- improved road safety.

1.4 Types of approval

There are two types of product approval issued by Transport and Main Roads for specified products. These are:

- **product approval** – this is applied where Transport and Main Roads will conduct an evaluation process on a specified product and the product satisfies relevant evaluation requirements – Transport and Main Roads will issue an approval certificate, and
- **product acceptance** – a product has undergone a product evaluation process and it has been issued an approval certificate by another road authority or a recognised third party. If this certificate is accepted by Transport and Main Roads, an acceptance letter will be sent to the Applicant. This will enable the accepted product to be adopted in Transport and Main Roads projects.

Transport and Main Roads reserves the right to reject a product with an approval certificate from another road authority or a recognised third party if the product does not meet Transport and Main Roads requirements.

Various categories of products that have complied to specific technical requirements have been approved or accepted by Transport and Main Roads. Current departmental-approved and accepted products lists are available at:

1. [traffic engineering, traffic management and road safety](#), and
2. [Intelligent Transport Systems and electrical](#).

1.5 Confidential information

At the request of the Applicant, Transport and Main Roads will keep confidential information in strict confidence and use it solely for the purpose of product evaluation purposes.

1.6 Definitions

Table 1.6 lists terms and acronyms used in this *Applicant's Guide* and defines their meaning.

Table 1.6 – Terms and definitions

Terms / acronyms	Meaning
Applicant	A company, manufacturer, supplier, person, Transport and Main Roads District or Region or Major Projects / Alliance wishing to have a product evaluated
BRP	A Business Review Panel chaired by the Executive Director (Operational Technologies), for the purposes of assessing the innovation merits to be considered further by Transport and Main Roads
Consultant	A Transport and Main Roads prequalified consultant to be engaged by the Applicant to provide a compliance check report against departmental requirements
ITS	Intelligent Transport System

Terms / acronyms	Meaning
Field Product	Traffic engineering, electrical, or ITS field devices technology or equipment and associated processes
PRP	A Product Review Panel constituted by the nominated Director as deemed necessary, for the purposes of reviewing the assessment of a product
Registered testing authority	<ul style="list-style-type: none"> • An authority registered by the National Association of Testing Authorities (NATA) to test in the relevant field, or • An organisation outside Australia recognised by NATA through a mutual recognition agreement, or • A competent third party recognised by Transport and Main Roads as capable of performing specialised product tests
SIL	Safety Integrity Level – a measure of safety system performance, in terms of probability of failure on demand
Specified product	A product that is covered by departmental Technical Specifications
STREAMS	Transport and Main Roads ITS platform: it is departmental policy that ITS applications are managed through STREAMS
STREAMS certification	A multilayered process by which STREAMS compliance of a product is verified from basic ability to interface with STREAMS (Level 1) to satisfactory performance within STREAMS over a specified number of years (Level 2) – details of STREAMS certification is outside the scope of this <i>Applicant's Guide</i> but are obtainable directly from Transmax
Test	A process whereby product performance is compared against Applicant claims / specification and/or departmental technical requirements
Transmax	STREAMS developer and certifier
Trial	A formal, structured process to assess the in-service performance of a treatment, usually by the limited application of the treatment on the road network for a specified period with an evaluation of performance based on prescribed criteria
TS	Traffic Surveys system – some ITS devices are managed through this system – this system is managed by Transport and Main Roads
User Group	A group with a common interest in a product whose members may include all or any of the following: Transport and Main Roads, energy supply authority, federal / state / local government entities, industry, and the like

2 Scope

The document is limited to traffic engineering, electrical, ITS field devices technology, or equipment, and associated field products processes for road transport infrastructure. It is understood that, whilst it may not be the case all the time, many such products would require a trial before large-scale deployment is undertaken.

The process may be customised by Transport and Main Roads as appropriate for the product type or the method of initiating evaluation. Request for product approval / acceptance may emanate from suppliers / manufacturers, or from within Transport and Main Roads, upon recognition or perception of a need.

Major undertakings, such as those with a significant research and development component or those that require significant investment in infrastructure or business processes, are out of scope and require different evaluation and procurement models.

Transport and Main Roads is not able to undertake this product evaluation process for all Traffic Engineering Technology, ITS and Electrical products that it uses. Priority for product types to be evaluated takes into consideration the level of use, costs and safety risk. Where Transport and Main Roads has issued approval / acceptance for a specific product type (for example, traffic signal controllers), the department will restrict purchases of that product type to the products that have been approved.

3 Product evaluation process

3.1 General

The innovative product will be examined to identify key advantages, disadvantages, or emerging trends of the technologies. These findings will be compared with Transport and Main Roads requirements. This will include life expectancy of existing technologies or predicted lifecycle of new technologies; entry, exit barriers and fitness for purpose. An overview of the product evaluation process is shown in Figure 3.1.

Applicants shall offer evidence that their Quality Assurance system complies with departmental requirements and will be able to maintain the consistent accepted quality of the approved / accepted product.

Transport and Main Roads reserves the right to reject a product at any stage before, during and/or after the evaluation process. Where a trial has been conducted, the evaluation findings may be provided to the Applicant prior to the decision on product approval. When a product has been rejected, Applicants may resubmit an application only when Transport and Main Roads determines significant improvements have been made to the product to warrant reconsideration.

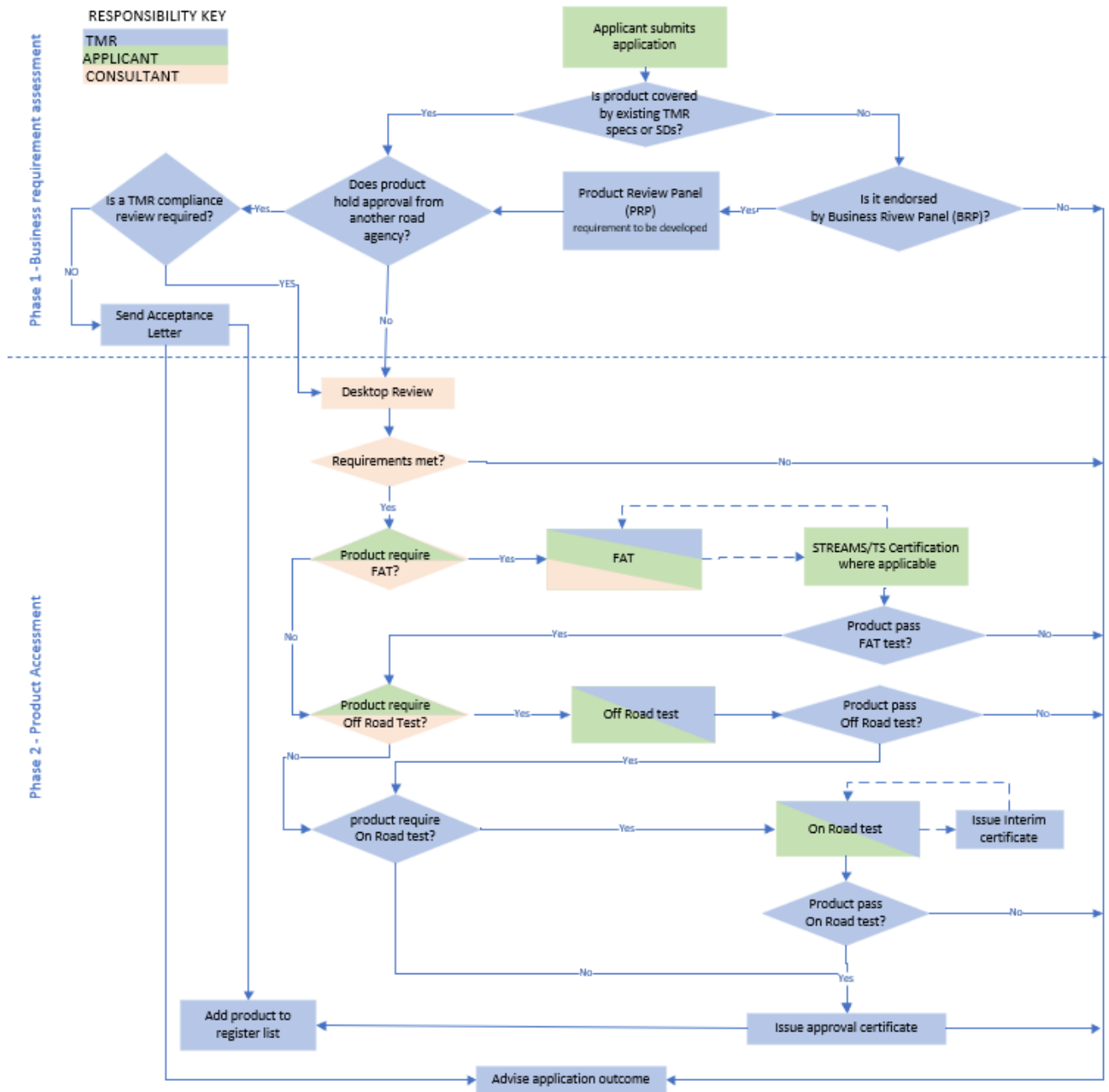
Applicants must not claim that a product has been approved / accepted by Transport and Main Roads based on acceptance of a product for trial but must await receipt of a formal product approval certificate or acceptance letter.

Applicant wishing to quote Transport and Main Roads approval or acceptance of a product must do so by:

1. quoting the product approval certificate number, and
2. quoting the product approval expiry date, and
3. noting any exceptions / conditions or qualifications included in the certificate or acceptance letter date, and
4. noting any exceptions / conditions or qualifications included in the certificate, and
5. noting any exceptions / conditions or qualifications included in the letter.

The Applicant must notify Transport and Main Roads of any changes to their product and/or specifications within 14 days of the change.

Figure 3.1 – Overview of the product evaluation process



3.2 Application

To initiate the product evaluation process, the Applicant is required to complete an application form (Applicant Guide Appendix) with relevant attachment, and forward it by postal mail or email to:

Office of Executive Director (Operational Technologies)
 Department of Transport and Main Roads
 GPO Box 1412
 Brisbane Queensland 4001

Email: ITSElectricalProductApprovals@tmr.qld.gov.au.

The application must be signed by authorised personnel or a Director of the party making the application. For a specified product, the Applicant is to provide all evidence of documentation that demonstrates compliance with departmental requirements (for example, Compliance evaluation forms, relevant test reports and certificates, certified drawings, manuals, and procedures).

Information supporting the submissions is required in hard copy or in electronic format via email. If submitting via email, the subject title should be 'RE: Application for evaluation of Product_Name by Supplier_Name'.

Drawings are required in a format suitable by viewing using standard office software (such as Microsoft Office™ or Adobe™) in .jpg or .tif format or .pdf in addition to .dwg format and documentation is required in English.

Information required includes, but is not limited to, the following:

- Application form: 'specified product' or 'innovation product'
- product specifications where applicable
- compliance evaluation report including compliance evaluation form and relevant evidence where applicable
- relevant test certificate, manuals, procedures, certified drawings
- product drawings showing components parts and photographs, and
- product approvals obtained from other road authorities in Australia or a recognised third party where applicable.

All hardware and software necessary for evaluation of the product shall be provided by the Applicant and licensed to Transport and Main Roads for the duration of the evaluation process.

3.3 Phase 1 – Business requirement assessment

The need for innovative products arises from the overarching requirement to meet Transport and Main Roads [strategic objectives](#).

The department identifies key strategic priorities to:

- improve safety of the road environment
- achieve reliable delivery of the roads program, and
- preserve increasing road assets.

These priorities justify innovative products which increase safety, efficiency, traveller security, traveller information or result in better protection of the environment and assets as potential candidates for priority consideration.

Coupled to this is the need for continuous product performance improvement and the desire to optimise whole-of-life costs. Obsolescence and shortcomings of products in service, changes in legislation, new Technical Specifications and improved technologies resulting in lower lifecycle costs are typical issues that may result in the need for innovative products.

Transport and Main Roads may establish a Business Review Panel (BRP) for an innovative product to assess its alignment with departmental strategies. Once a product has been endorsed, the BRP may establish a Product Review Panel (PRP), depending on the product to be evaluated.

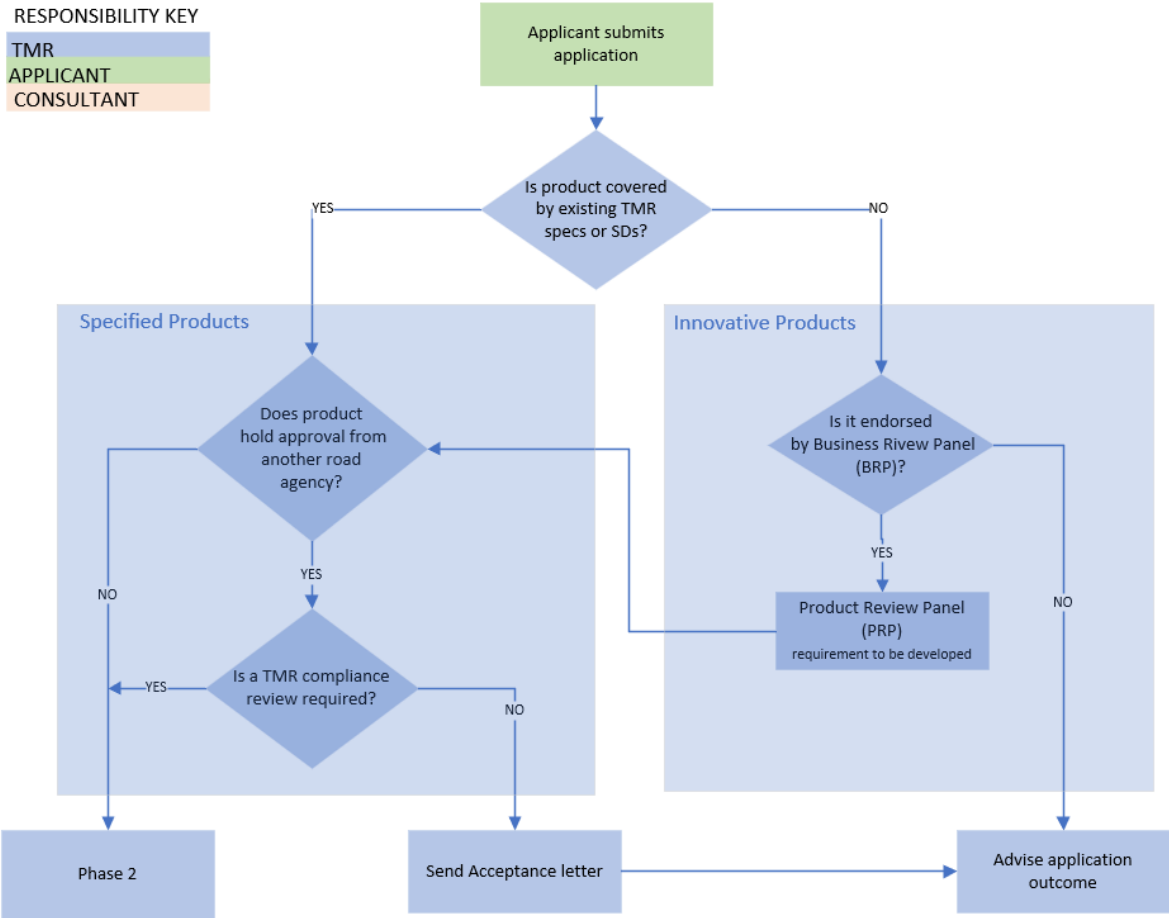
Activities of the PRP commence once a product has passed the BRP endorsement.

PRP activities may include, but are not limited to:

- assessing a product
- recommending product evaluation to progress / not progress to preliminary tests and trial stages
- reviewing trial outcomes
- reviewing supplier's compliance to departmental quality system requirements
- reviewing supplier's compliance to the department's environmental management system requirements
- recommending approval / rejection of product(s)
- recommending changes to the product evaluation methodology
- submitting learnings to incorporate in future evaluations
- preserving integrity of the evaluation process, and/or
- assessing the product approvals obtained from other road authorities in Australia where applicable against departmental requirements.

Figure 3.3 illustrates the business requirement assessment process.

Figure 3.3 – Phase 1: Business requirement assessment activity

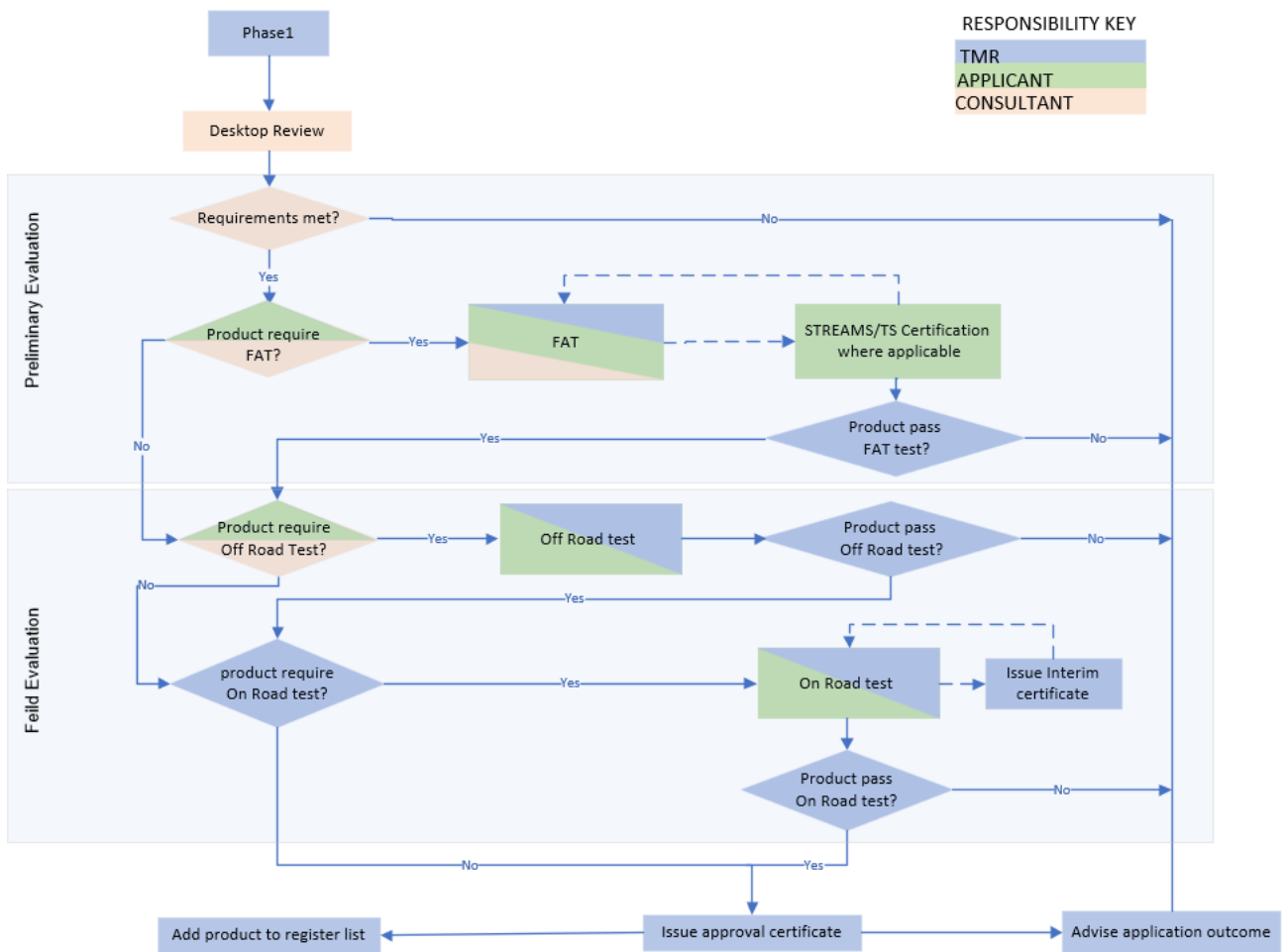


3.4 Phase 2 – Product assessment

Transport and Main Roads may determine the compliance evaluation report required for certain product types as part of the application documentation. Where required, the Applicant will directly engage a Transport and Main Roads nominated prequalified Consultant to undertake a formal compliance evaluation of the product, the consultant will provide a detailed compliance report to the Applicant. All costs associated with the engagement of a Consultant shall be borne by the Applicant.

Figure 3.4 illustrates the product assessment process.

Figure 3.4 – Phase 2: Product assessment activity



3.5 Review of sample product

The department may request a preliminary visual inspection at the supplier or departmental facilities. The Applicant is to deliver the product to the venue nominated by Transport and Main Roads.

The sample product is subjected to detailed visual inspection and operational checks by the representative(s) of Transport and Main Roads. The sample product shall be fully checked and adjusted by the Applicant before delivery to the representative and is deemed to be ready for the intended operation when received. Where applicable, the product shall be fitted with a flexible cable and power plug for testing without the need for TMR to modify the product. The Applicant shall code or identify the sample in a permanent manner, and this coding or identification is quoted on all test certificates relating to this item of product. The Applicant provides all customised or special test products, devices, fixtures, software or hardware that are required for inspection or testing.

The representative(s) of Transport and Main Roads conducts inspections and tests as necessary to ascertain the operation, suitability, safety, reliability and other aspects of the product for its intended use in accordance with applicable requirements.

3.5.1 Compliance with performance requirements

As a result of the preliminary evaluation, the department may request further information from the supplier to assist the assessment process. The department may also request the supplier to address and/or rectify certain issues to enable the product acceptance process to progress further.

Product assessment will be suspended if any non-conformance with the performance requirements is found.

In cases of minor non-conformance, the supplier may make remedial changes to the product, to the satisfaction of the department and resubmit, following which product assessment may be resumed.

In cases of major non-conformance, the product approval process shall be terminated. A new approval application will be required before the product is returned to Transport and Main Roads premises for product approval. The new application shall provide a detailed report on the causes of the previous non-conformances and the remedial actions taken.

3.6 Integration into the department's systems

Where applicable, the Applicant should demonstrate that their product can integrate to the department's systems by providing either of the following certifications.

3.6.1 STREAMS certification process

Transmax conducts STREAMS certification for products that require connectivity to STREAMS as per Transport and Main Roads' Technical Specification requirement. An identical sample of the same product would need to be submitted to Transmax for the purposes of the tests.

3.6.2 Traffic Surveys certification process

Transport and Main Roads conducts Traffic Surveys (TS) certification which is required for all products that would be connected to the Transport and Main Roads network. An identical sample of the same product would need to be submitted to Transport and Main Roads for the purposes of the tests.

3.7 Interim approval

Transport and Main Roads may grant interim approval of a product where the product has passed preliminary tests and risk associated with overcoming outstanding issues is low. The department will implement a mechanism for further performance monitoring of the product as part of the interim approval.

Depending on the product, interim approvals may be granted on the basis of product type tests conducted by a registered testing authority. Interim approval will be limited to a specific project / location and issues for each installation. The assessment period for interim approval is typically one year but, where a product is granted interim approval and not immediately deployed, the product shall retain that status until its field trials have been conducted.

3.8 Field evaluation

3.8.1 General

A decision to proceed to a field evaluation is subject to a test funding agreement being put in place.

During the formal tests, the Applicant may be required to perform any of the following test activities:

- development of verification methods for performance requirements
- risk assessments and functional safety assessments as appropriate

- development of safe work procedures as required
- project management
- development of installation / design / site selection considerations
- procurement of test product and supplementary work and test equipment
- specification of requirements for connection to Transport and Main Roads' system
- product demonstration / presentation
- installation, testing and maintenance of test setup
- monitoring of performance, simulations and conduct of further, or a selection of, type tests, and/or
- reporting and analysis of results or input in development of Technical Specifications.

Outcomes of most of these activities form a basis for inclusion in the development of the department's Technical Specifications.

Pertinent issues are expanded in the following sections.

3.8.2 Functional safety

Products deemed by the department to be performing safety-related functions must meet functional safety requirements including Safety Integrity Level (SIL) records as defined in AS 61508 (set) *Functional safety of electrical / electronic / programmable electronic safety-related systems*. Where required, functional safety certification will be conducted by third parties deemed competent by Transport and Main Roads.

3.8.3 Test site

Where possible, selection of test site(s) will be by mutual agreement between Transport and Main Roads and the Applicant. Environmental considerations may mean that products are tested in both tropical and other climatic conditions experienced in Queensland, or elsewhere in the country if jointly tested with other road authorities. The Applicant may propose a test site after considering their resourcing and other market considerations. Transport and Main Roads reserves the right of final decision on test location(s).

3.8.4 Testing and commissioning

Responsibility for test activities will be test-specific. Installation and maintenance are the responsibility of the Applicant but will proceed as directed by Transport and Main Roads. This offers the prospective supplier opportunity to best demonstrate product performance or advantage in any of the operating conditions expected without due concern to the possibility of incorrect installation by others.

Product sample(s) for test will be provided to Transport and Main Roads free of charge.

3.8.5 Maintenance

Maintenance arrangements will be agreed in advance of the test. Unless agreed otherwise, the Applicant is expected to maintain the product during field evaluation.

Response time for faults during testing must not jeopardise the test. Spare units shall be available at the time of first response and a log of all the repairs done during the test must be kept.

The log must capture, as a minimum, the following: the nature of the fault, the time the device was out of commission, time to repair, cause of the fault and the corrective action taken at the site and/or to product design.

Unless agreed otherwise, equipment damage and/or wear in the test shall be at the Applicant's expense. Damage to other property caused because of the test shall be at the Applicant's expense.

3.8.6 Test period and scheduling

The test may take up to a year, depending on the product. Occasionally, the test may require even longer periods of time, in cases where conditions of interest are seasonal or envisaged test conditions have not materialised.

Transport and Main Roads reserves the right to schedule tests as priority dictates and may test similar products at the same time / location to optimise resourcing and compare product performance.

3.8.7 Interim arrangements

Interim control / monitoring and communication arrangements may be required at commencement of the test for devices that are intended to eventually connect to STREAMS, TS and/or another departmental telecommunications network. This allows Transmax to develop and test the required services that support the devices, including device drivers as necessary, without delaying the field evaluation.

3.8.8 Intellectual property

Transport and Main Roads reserves the right to retain and publish results and/or learnings from trials. Any intellectual property concerns the Applicant may have must be raised at the onset of the product evaluation.

3.8.9 Funding of test

Installation is the responsibility of the Applicant. The Applicant may be required to fund the test and/or any tests by third parties, including STREAMS / TS certification, depending on the nature of the product and its application to departmental objectives.

3.8.10 Test results

If the field evaluation is satisfactory, Transport and Main Roads shall advise the Applicant of the test results. If the product fails or does not provide reliable performance during field evaluation due to a design failure, the test shall be suspended. Failures are defined as performance that does not meet specification, being free of misuse, careless handling, operation outside the limits of temperature or supply voltage, or caused by failure of other associated product(s).

Transport and Main Roads may request the Applicant to investigate product failures or performance issues and provide an investigation and corrective action report to Transport and Main Roads. The report shall detail the cause(s) for the product failures or performance issues, and the supplier's proposed remedial actions to eliminate these causes.

3.9 Managing certificate

Approval / acceptance enables standing offer arrangements to be put in place depending on demand envisaged for the product. Use of an approved / accepted product in any project is subject to other considerations specific to that project and any limitations / conditions described on the product approval / acceptance certificate.

A product approval certificate or acceptance letter is issued to the Applicant and the product added to the departmental approved / accepted products list.

The Applicant is required to notify the department within 14 days of any changes relating to an approved product, including variations to firmware and sources of components.

The product approval / acceptance certificate will be valid for up to a maximum of three years. Batch approval certificates for pit products are valid for five years.

The department reserves the right to renew / withdraw or qualify approval of a product and update the approved products list accordingly at any time.

The manufacturer is to be notified of expiry of the product approval certificate three calendar months before expiry and invited to submit a new application.

Where withdrawal of a product's approval is intended, the manufacturer is to be notified in writing and given two weeks in which to respond. Failure to respond will result in the withdrawal of the product's approval: however, an immediate withdrawal of the product's approval will take effect if Transport and Main Roads believes a product is defective and/or presents an immediate performance or health safety risk. Transport and Main Roads will issue notices of withdrawal.

A product's approval / acceptance may be reinstated, provided significant improvements in performance or any shortcoming noticed have been rectified to the satisfaction of the nominated Director.

