SWIPP User Manual

(Version 5.7)

October 2017

Page left intentionally blank

Document Information

Date	Version	Updated by	Changes
10/2015	5.1	Ron Minnema	General changes to Version 5.0
10/2015	5.2	Ron Minnema	General changes to Version 5.1 incorporating feedback from GHD
11/2015	5.3	Ron Minnema	General changes to Version 5.2 following SWIP work shops
01/2016	5.4	Ron Minnema	Formula changes, Appendix 1
08/2016	5.5	Ron Minnema	Alterations to Appendix 2
07/2017	5.6	Ron Minnema	General update following the release of the SWIPP 2017 update#1
10/2017	5.7	Ron Minnema	BCR's updated in exercises 1 to 4

Page left intentionally blank

Table of Contents

Appendices

Appendix 1 – Calculations

Appendix 2 – Business Rules

Appendix 3 – SWIPP Examples

Appendix 4 – SWIPP Exercises

Page left intentionally blank

Glossary of terms

ARRB	ARRB Group Ltd (formerly Australian Road Research Board)
BCR	Benefit Cost Ratio
DSi	Number of Deaths and Serious injury casualties
EEM	Economic Evaluation Manual (NZTA)
HRRRG	High-risk Rural Roads Guide (NZTA)
KAT	KiwiRAP assessment tool
KiwiRAP	The New Zealand Road Assessment Programme
LOS	Level of Service
MSQA	Maintenance, Supervision and Quality Assurance
NOC	Network Outcomes Contract
NLTP	National Land Transport Programme
NMA	Terminology used within SWIPP to refer to a NOC - Projects managed locally
NSP	National Safety Project – Projects managed nationally
NZTA	New Zealand Transport Agency
Transport Agency	New Zealand Transport Agency
RCA	Road Controlling Authority
RSRM	Road Safety Risk Manager (ARRB)
SPPWF	Single Payment Present Worth Factor
SWIPP	Safety Works Investment Prioritisation Process
USPWF	Uniform Series Present Worth Factor

Page left intentionally blank

# Introduction

<u>SWIPP Database</u>

The Safety Works Investment Prioritisation Process (SWIPP) database tool is a web based application for State highways that has been developed by for use by:

- SWIPP Users to:

  - ➢ Assist with the development of a Forward Works Minor Improvements (Safety) programme otherwise referred to as Work category 341: Minor improvements.

  - ➢ Assess the safety benefits of projects using different treatments.

  - ➢ Collate projects and submit a group of projects as part of an annual bid for funds as part of the NLTP for moderation and prioritisation by the SWIPP Administrator.

  - ➢ Track the progress of individual projects and groups of projects that form part of the approved funding allocation for a NMA.

- The SWIPP Administrator to:

  - ➢ Moderate and prioritise the annual bid for funding Minor Improvements (Safety) projects.

  - ➢ Moderate and prioritise a Contingency safety programme should additional funds become available over and above the annual baseline allocation.

  - ➢ Manage changes to the approved allocation for each NMA.

  - ➢ Ensures that the Approved projects in SWIPP matches the list of Approved projects in the NZTA's Minor Improvements Template that is a condition precedent of funding.

  - ➢ On the first working day of each month provides an updated copy of the Minor Improvements Template to Investment and Finance.

  - ➢ On the first working day of each month provides an updated copy of the Minor Improvements Template to all System Management Managers, and other parties involved in the delivery of the programme.

  - ➢ Provides an Administrator role for those RCA's that comprise the Northern Safety Alliance, i.e. Whangarei City Council, Kaipara District Council, Far North District Council.

<u>Manuals</u>

SWIPP comprises two Manuals, i.e.:

- SWIPP Manual (this Manual) – for Users as illustrated by Figure 1.

- SWIPP Admin Manual – for the Administrator
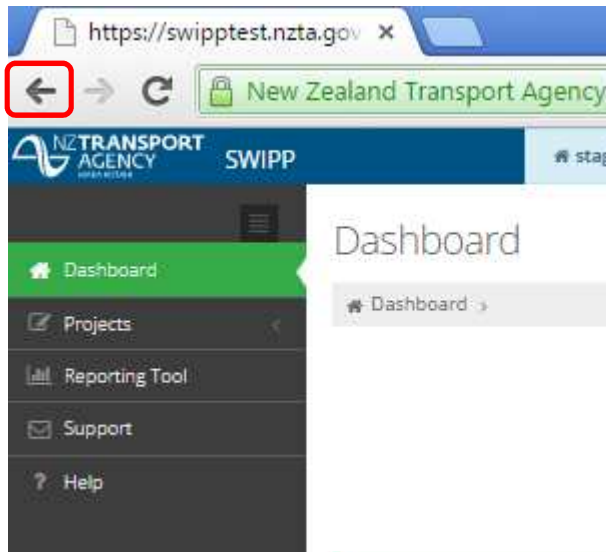
1. The Sidebar comprises a number of Modules.

    • Dashboard.

    • Projects.

   • Reporting Tool.

    • Support.

    • Help.

2. The first three Modules are detailed within this manual whereas the latter two aren't as they are self-explanatory.

3. Navigation is achieved by clicking onto the relevant button or using the back arrow immediately above the Sidebar shown thus

Figure 1: Sidebar as displayed for Users

Process

Figure 2 illustrates the key steps involved in creating a project through to formal advice of funding approval prior to the delivery of those projects.
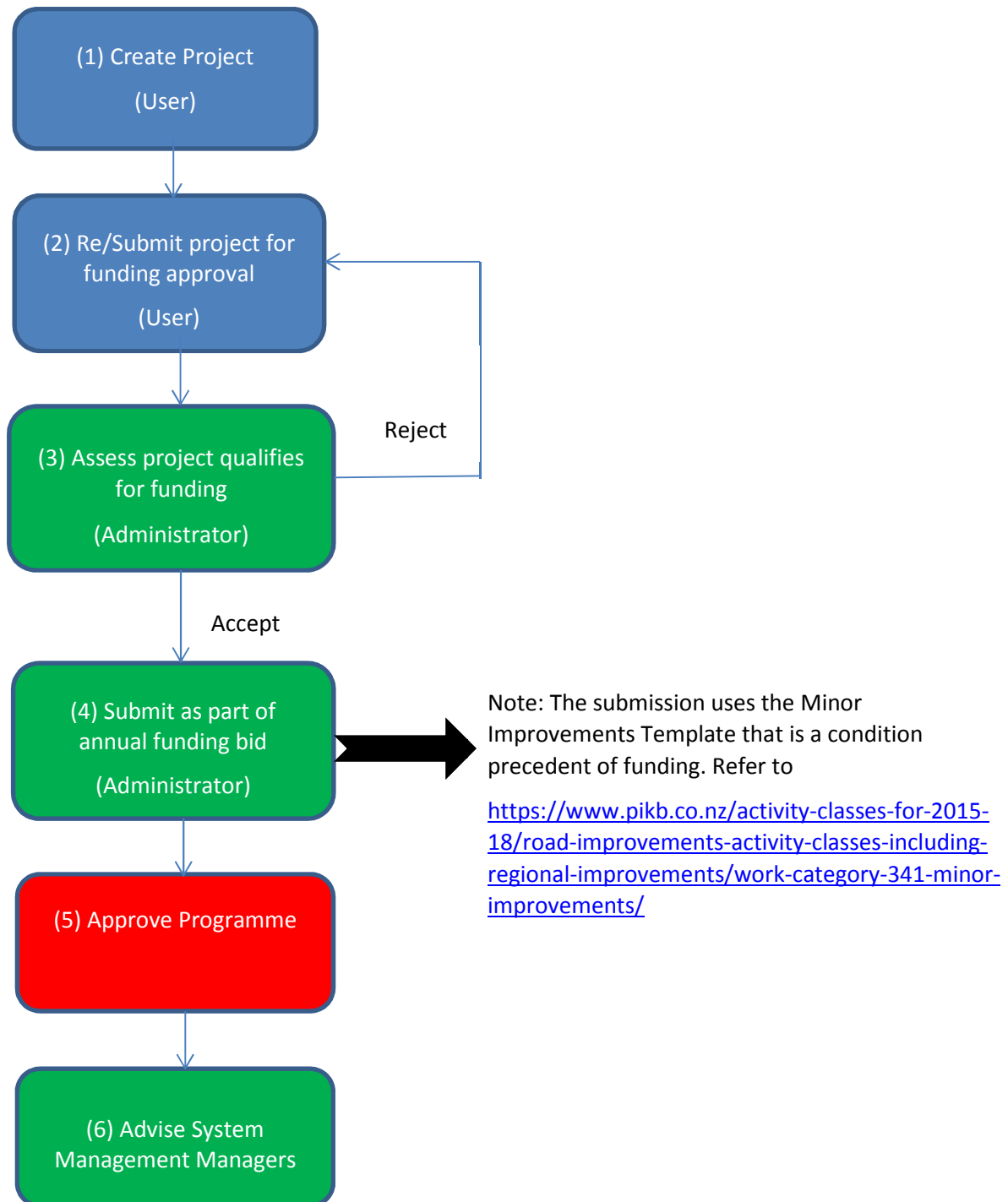
Figure 2: SWIPP Approval Process

Note: The key dates for (3), (4), (5) and (6) are covered by the Annual Plan Instructions

Commands

Commands in this Manual are shown highlighted in CAPS' (e.g. EXPORT PROJECT) and supplemented with a screen shot with the command highlighted thus

Page left intentionally blank

1. Login

The Administrator will set up SWIPP access for Users, allowing the User to access the NMA's they have rights to create projects for. The process for a new User to gain access to SWIPP is outlined in Table 1. Once set up, all Users will LOGIN at Step 7.

Table 1: Login Request and Setup Process

Step	Description	Refer to Figure
1	New User contacts the Administrator for access to SWIPP.	-
2	Users receives e-mail link from the Administrator to set up their password.	3
3	The User clicks the link to enable the SWIPP Password Reset, which is sent to the User's e-mail address.	3,4
4	Users receive an e-mail that **is valid for 60 minutes** which enables them to set their password in SWIPP.	5
5	Users confirm e-mail and password within SWIPP.	6
6	Once the SWIPP Login is activated, a User can Login using the e-mail and password referred to in Step 6	7
7	Bookmark SWIPP address in your internet browser.	-
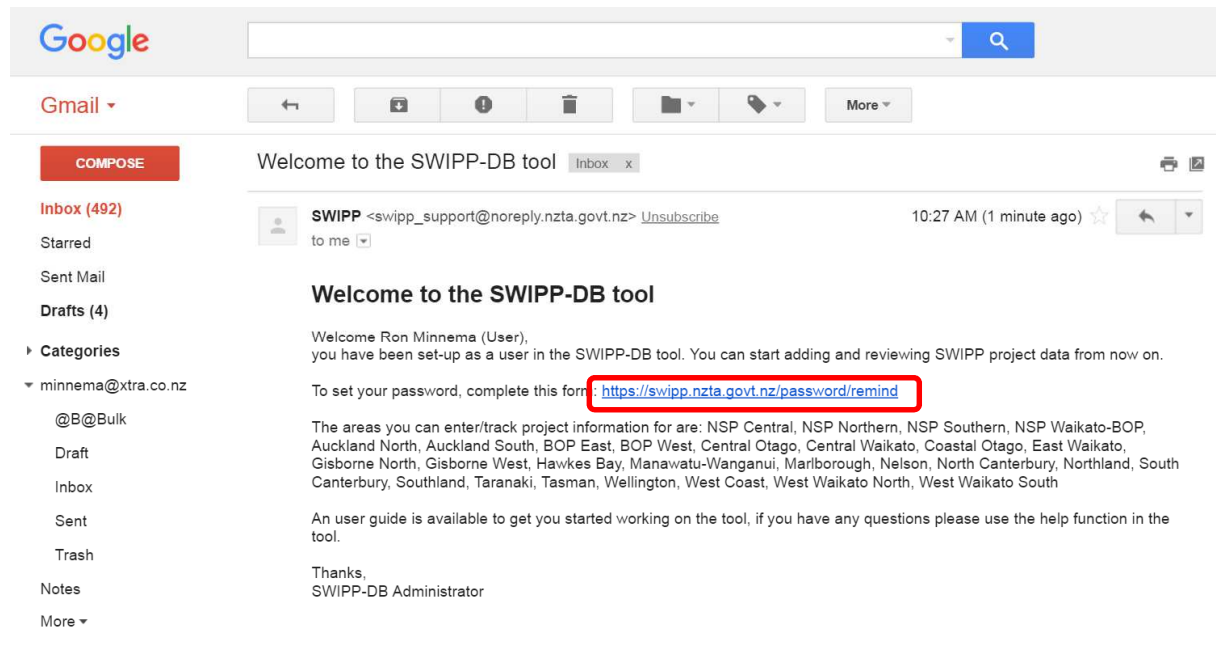
Figure 3: E-mail Password Link

Figure 4: SWIPP Password Reset Link
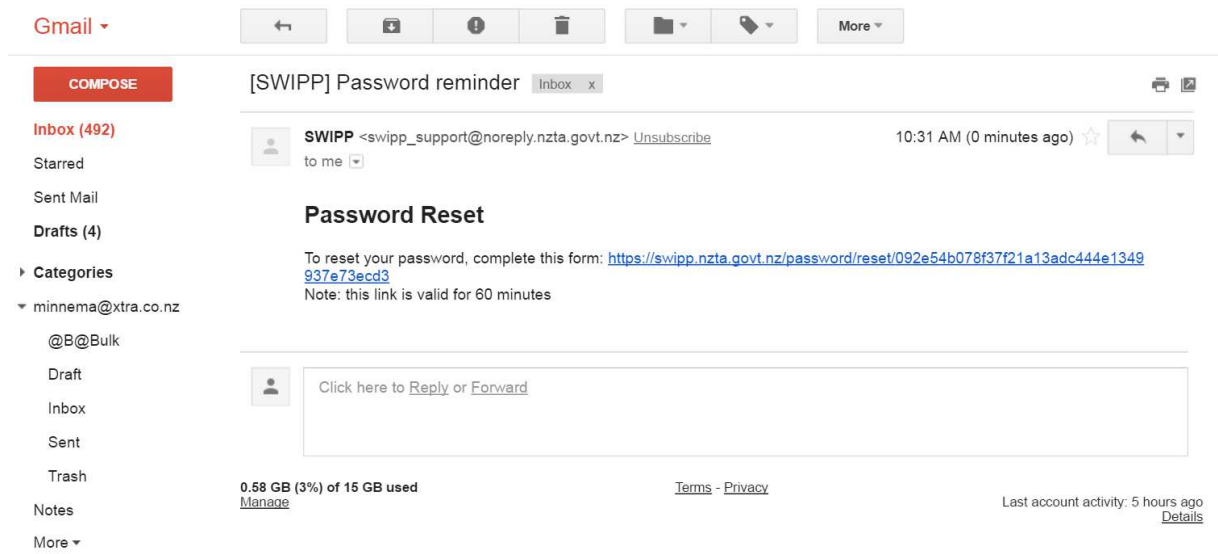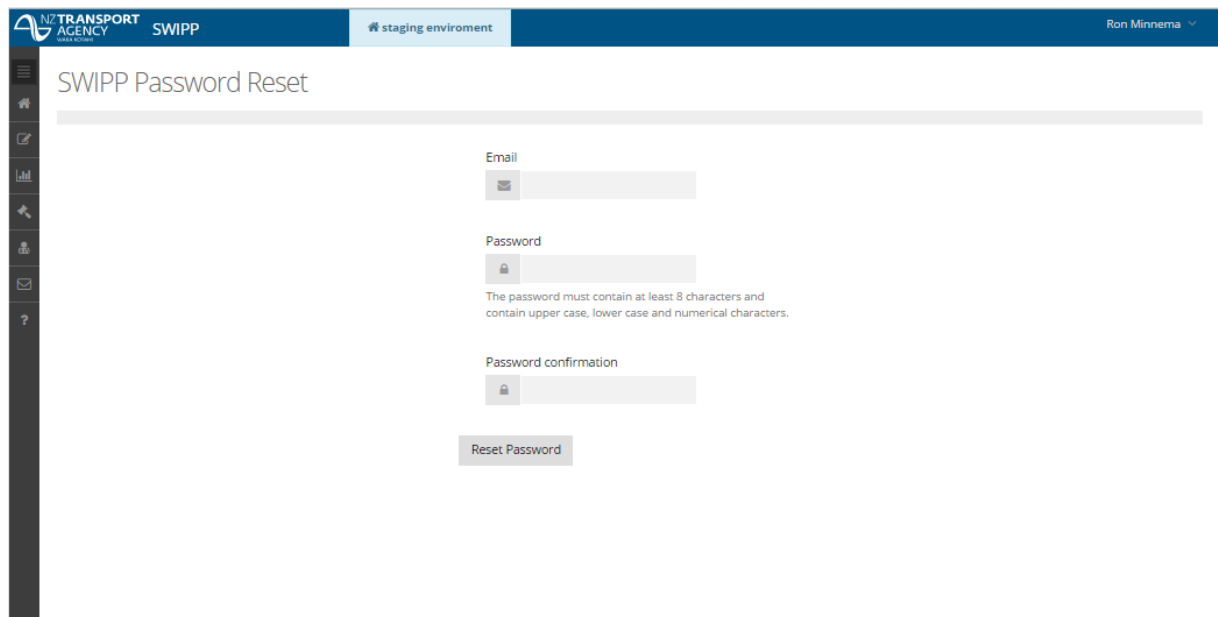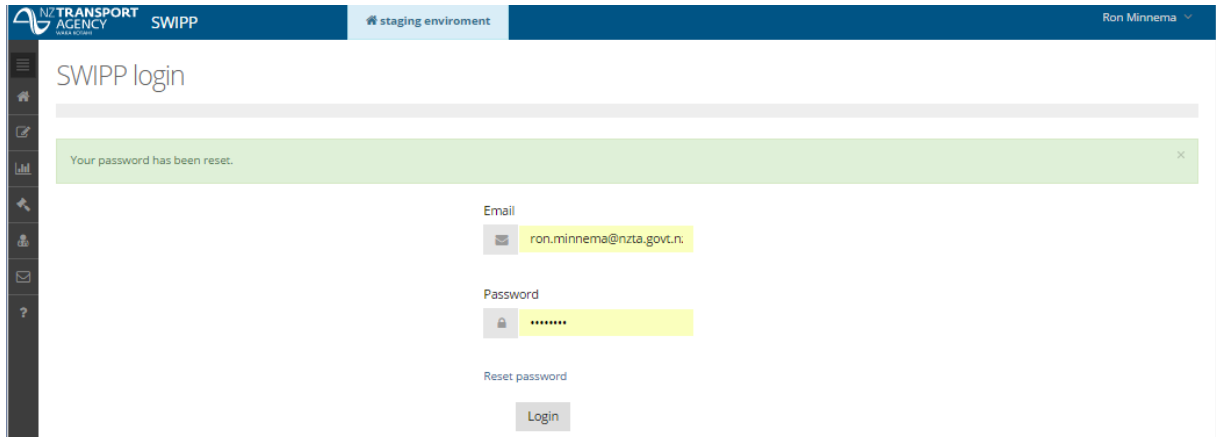

Figure 5: E-mail Password Reset


Figure 6: SWIPP Password Reset

Figure 7: SWIPP Login

2. Dashboard

Once logged in, the User will be taken to the 'Dashboard' that provides an overview of:

- The Latest Activity.

- The Progress of Approved projects, i.e. projects for which funding has been approved.

- Unsubmitted Projects.

- Submitted Projects..

- Exporting projects to a CSV file.

- Prioritisation Report (Minor Improvements Template)
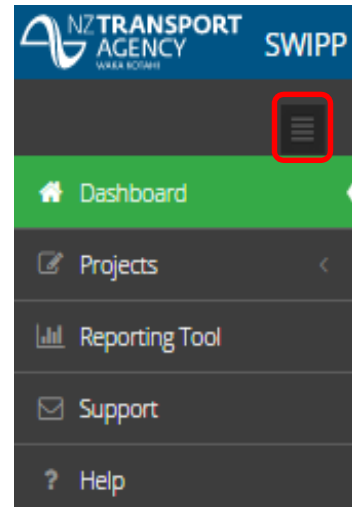
Clicking the icon [ ] expands/ contracts the Menu

2.1. Latest Activity

The 'Latest Activity' as illustrated by Figure 8 displays the projects within the NMA's that have recently been worked on, when they were worked on and by whom.
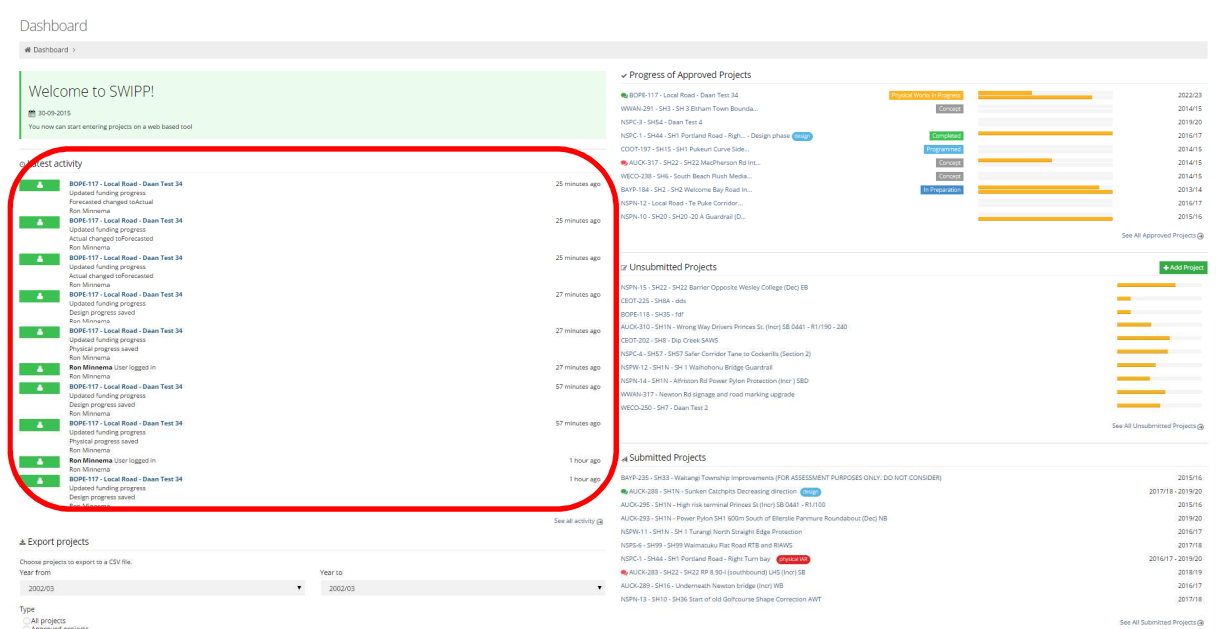
Figure 8: Latest Activity

2.2. Progress of Approved Projects

The 'Progress of Approved Projects' is illustrated in Figure 9 and displays:

- The status, i.e. Concept, In Preparation, Programmed, Physical Works in Progress, Completed.

- Design Progress (%) – hover over to display %.

- Physical Works progress (%) – hover over to display %.
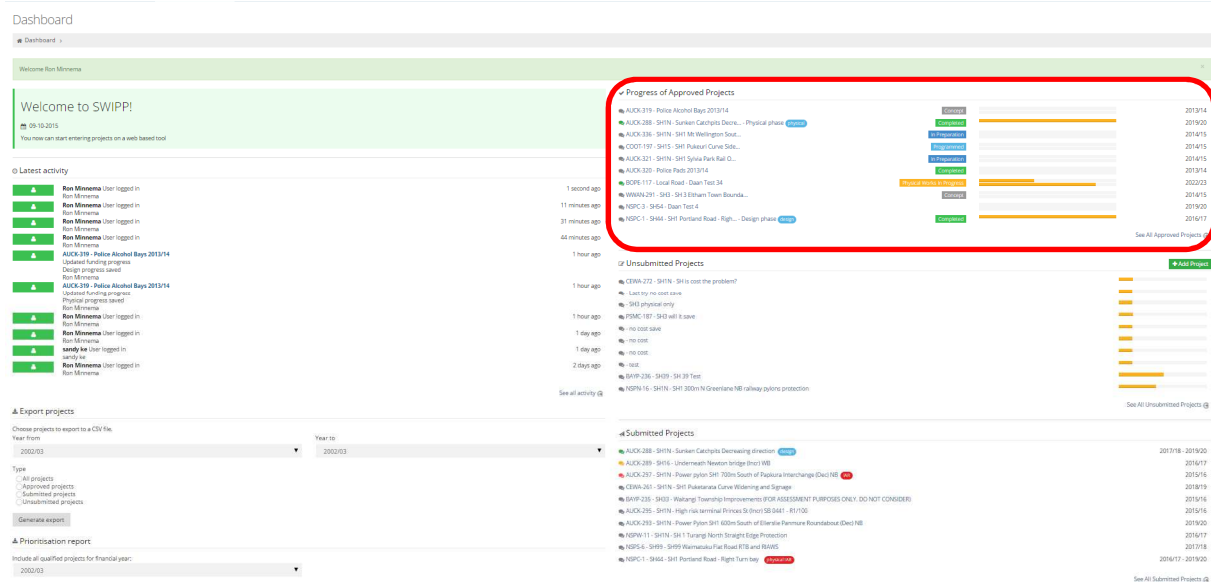
- Funding approved for financial year.

Figure 9: Progress of Approved Projects

GENERATE EXPORT (Figure 10) exports projects to a CSV file that allows the User to vary the selection criteria that includes: year (from/to) and the type of project, i.e.:

- All projects

- Approved projects

- Submitted projects

- Unsubmitted projects

Figure 10: Generate export

DOWNLOAD PRIORITISATION REPORT (Figure 11) populates the Minor Improvements Template using data from QUALIFIED projects for the selected year.

Figure 11: Prioritisation Report

2.3 Unsubmitted Projects

'Unsubmitted Projects' (Figure 12) are projects that are still under preparation prior to being submitted to the Administrator who will assess it to determine whether it qualifies for funding. .

Figure 12: Unsubmitted Projects

EDIT an unsubmitted project by clicking on the project name and the User will be taken to the Project Overview page (Figure 13).

Figure 13: Project Overview

DELETE PROJECT (Figure 14) deletes the Un-submitted Project.

Figure 14: Delete Project

SUBMIT (Figure 15) results in a project being submitted by the User to the Administrator who will assess it to determine whether it qualifies for funding.

Figure 15: Submit Project

Users can communicate with the Administrator by clicking COMMENTS (Figure 16)..

Figure 16: Comments

SAVE (Figure 17) will save the changes and **should be done regularly.**

Figure 17: Save Project

To copy a project first <mark>View the Project Sheet</mark> (Figure 18).

Figure 18: View Project Sheet

Then select <mark>COPY</mark> (Figure 19) will copy a project so that only the fields that need changing will need to be populated. This is especially useful when:

- Copying a project from another NMA .

- Creating numerous generic projects.

NSPK-8 - SH1 Shoemaker Road - Left turn lane National level crossing upgrade Program - KiwiRail BOP East

Figure 19: Copy Project

Save Copied Project (Figure 20) will result in a screen similar to that below requiring confirmation the Project Name and Region before Saving. The project will be saved as an un-submitted project which will enable further editing to be under taken by the User.

Figure 20: Save Copied Project

2.4 Submitted Projects

'Submitted Projects' (Figure 21) are projects that have been submitted to the Administrator to assess whether they qualify for funding. Once the project has been submitted it cannot be edited.

Figure 21: Submitted Projects

VIEW details of the project by clicking on the project name as for Un-submitted Projects.

REQUEST IMMEDIATE APPROVAL (Figure 22) allows the User to request immediate funding approval for urgent projects which will result in a SWIPP system generated e-mail being sent to the Administrator.

Figure 22: Request Immediate Approval

Page left intentionally blank

3 New Project

CREATE a new project by clicking on New Project in the SWIPP Sidebar. Users will be taken to a new Projects overview containing the following TABs that are available to Users when editing a project, i.e.:

- General
- Location
- Crash History
- Treatment Effects
- Crash Analysis
- Cost Estimates
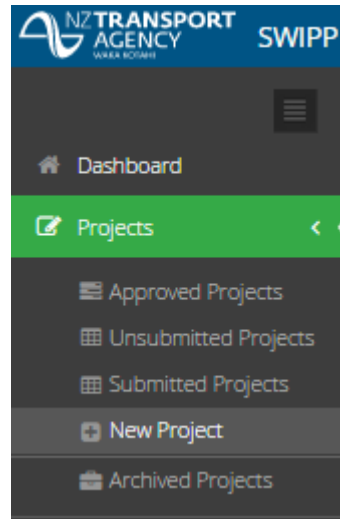
Each TAB is illustrated as follows with a description of the fields that are to be populated. Users need to click on the desired TAB to move between categories.

3.1 General TAB

SAVE   To save project details click Save at the bottom right of the worksheet (Applies to all worksheets) as illustrated by Figure 23. Projects will be saved as an Unsubmitted Project.
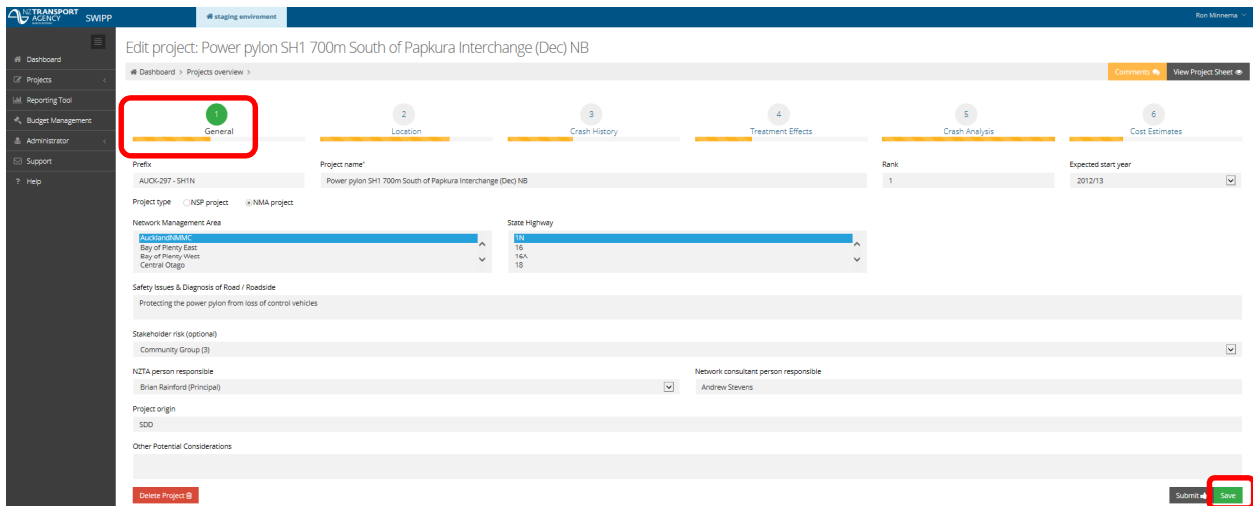
Figure 23: General TAB

Notes:

Prefix	This is an auto generated prefix that will identify the project. The prefix will appear after you have saved your entry for the first time. It consists of the code of the selected NSP or NMA, a unique project number for that area, and the selected State Highway.
Project Name	The name of the project should be modelled on the examples (right click cell) to ensure compliance with the Annual Plan Instructions.
Rank	The local rank should only be given to those projects where the DSI provided does not support the risk. **It is expected that in any bid for funding, there may be no more than three projects that are ranked using this method. In many bids no projects will be ranked using 'Rank'.**
Expected Start Year	The year for which funding is being requested.
NSP Project	National Safety Project – Projects managed nationally
NMA Project	User selects the NMA where the project resides - Projects managed locally
State Highway	Select which State Highway the project is located on. The list only shows the State highways for the selected NMA. There is also the option to choose Local Road for when the Transport Agency is working with an RCA to resolve a significant safety issue.
Region	RTC Region automatically selected based on NMA. Can be over written.
Safety Issues & Diagnosis of Road/Roadside	A brief description of the issues at the project location.
Stakeholder risk (optional)	Description of the concerns that underlie the project that can be left blank.
NZTA people responsible	The Transport Agency staff responsible for the project who will all receive all communications from SWIPP and the Administrator via e-mail
Network Consultant person responsible	The Network Consultant responsible for the project.
Project Origin	A brief description of the projects origin, .e.g. Crash Reduction Study.
Other Potential Considerations	Describe any other options considered and discarded and any Design Departures from recognised safety standards for OIA purposes, e.g. WRB installed at back of footpath as narrowness of foopath makes it impractical to construct immediately behind kerb.

3.2 Location TAB
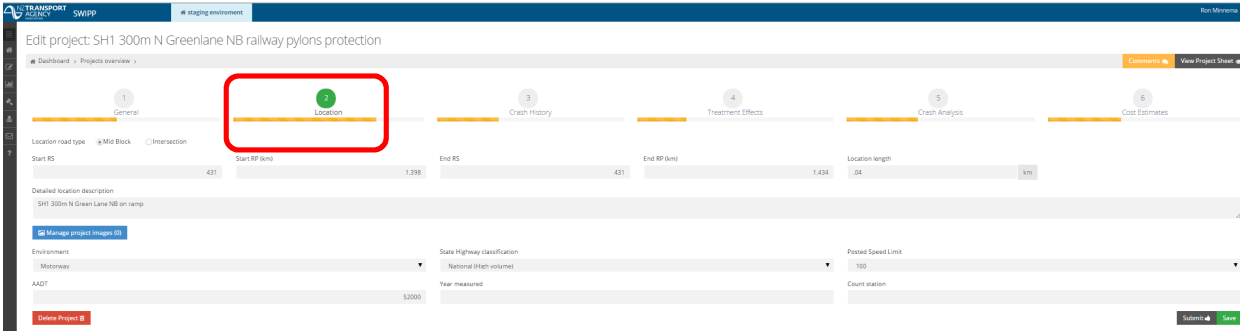
Figure 24: Location TAB

Notes:

Location road type	Midblock or intersection
Start/ End RS/ RP	The extent of the State highway project defined by Route Position
Location length (km)	This is the **manually calculated distance that the physical works will influence a reduction in risk** and is used to calculate the Actual (Existing) DSi per kilometre per year (Appendix 1). E.g. the extent of the State highway project may be 0.5km, but the Location length may be 1km.
Manage project images	The user has the option to upload pictures illustrating the safety issues at the project location.
Detailed location description	Additional text description if required to supplement the Start/End RS/RP
Environment	Select either Motorway, Rural, or Urban from the drop down menu. These fields and associated costs are used to calculate the BCR.
One Network Road classification	Select One Network road classification from the drop down menu.
Posted speed limit	Select from the drop down menu. Note that 100 km/h is the default.
AADT	Annual Average daily traffic.
Year measured	Year that the AADT was measured.
Count station	Describe Count Station where AADT was measured, e.g. ID:02900034

3.3 Crash History
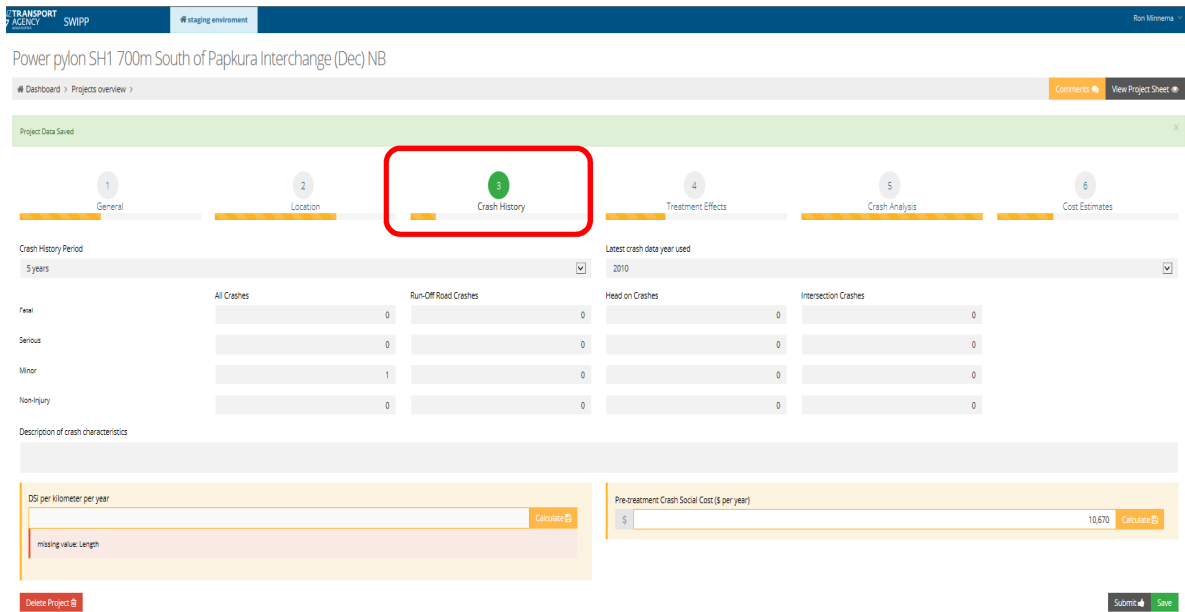
Figure 25: Crash History TAB

Notes:

Enter crash statistics into the table provided (the sum of the Run-Off Road, Head-On, and Intersection crashes cannot be greater than the total)

- Description of crash characteristics

  Details around the type and cause of crashes at the project location, particularly looking at significant trends or the key issues.

- CALCULATE DSi per kilometre per year

  Calculates the Di per kilometre per year using 'All crashes'.

  For equation refer to Appendix 1

  If a parameter is missing an error message will be displayed highlighting the missing value, e.g.

- CALCULATE Pre-treatment Crash Social Cost ($ per year)
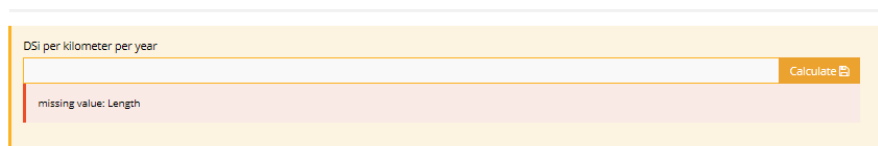
  Calculates the Pre-treatment Crash Social Cost per year taking into account the Environment, Posted Speed Limit, FSMNI costs.

  For equation refer to Appendix 1
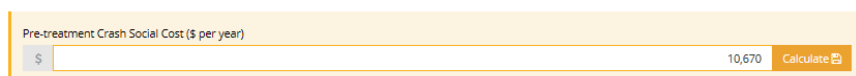
3.4 Treatment Effects
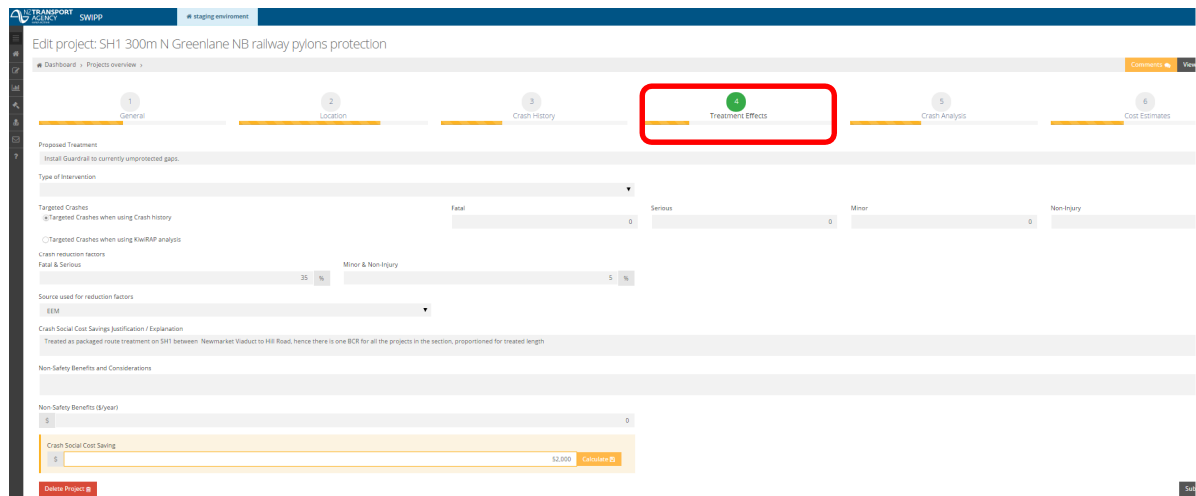
Figure 26: Treatment Effects TAB

Notes:

Proposed Treatment	Enter a description of the proposed treatment. **For projects where the DSi = 0 add a justification for the project, e.g. With the proposed treatment the Level of Service for a Pedestrian Crossing Point will change from D to B or a BCR of at least 2.0**
Type of Intervention	This is the category that the proposed treatment falls under. The User has the option to select "other" and then provide a textual description of the intervention type.
Targeted Crashes	The User can choose one of the following options to enter the: • Number of crashes as listed in the Crash History to be targeted by the proposed treatment. This number cannot be greater than 'All crashes' in the Crash History TAB. • Percentage of crashes targeted when using KiwiRAP.
Crash reduction factors (CRF)	For 'Targeted Crashes when using Crash History' the CRF is applied to the number of Fatal/ Serious/ Minor/ Non-injury crashes that will be addressed by the proposed treatment. For 'Targeted Crashes when using KiwiRAP analysis the CRF is applied to the % of all Fatal/Serious/ Minor/ Non-injury crashes that will be addressed by the proposed treatment.
Source used for reduction factors	For example the EEM; HRRRG:RSRM; KiwiRAP, NSP provided, Other (Please specify), or the proportional difference between the Predicted DSi (Existing Situation vs 'What If') as illustrated in the Crash Analysis TAB.
Crash social costs and justification	Further explanation may be added supporting the rational for the adopted Crash Reduction Factors.
Non-Safety Benefits and Considerations	Outline non-monetised safety benefits and include any Design Departures.

Administrator comments and recommendation	The Administrator may provide comments here supporting the decision to fund a project. This field is exported to the Notes Column in the Minor Improvements Template. This field can be viewed by Users but not over written.
Non-Safety Benefits ($/year)	As stated
CALCULATE Crash Social Cost Saving	To ensure that the Pre-treatment Crash Social Cost per year is calculated click Calculate. This needs to be done to update the BCR ratio and will be automated in the next update of SWIPPDB.

3.5 Crash Analysis

The crash analysis page allows the User to enter Road Protection Scores calculated for the project from KAT.
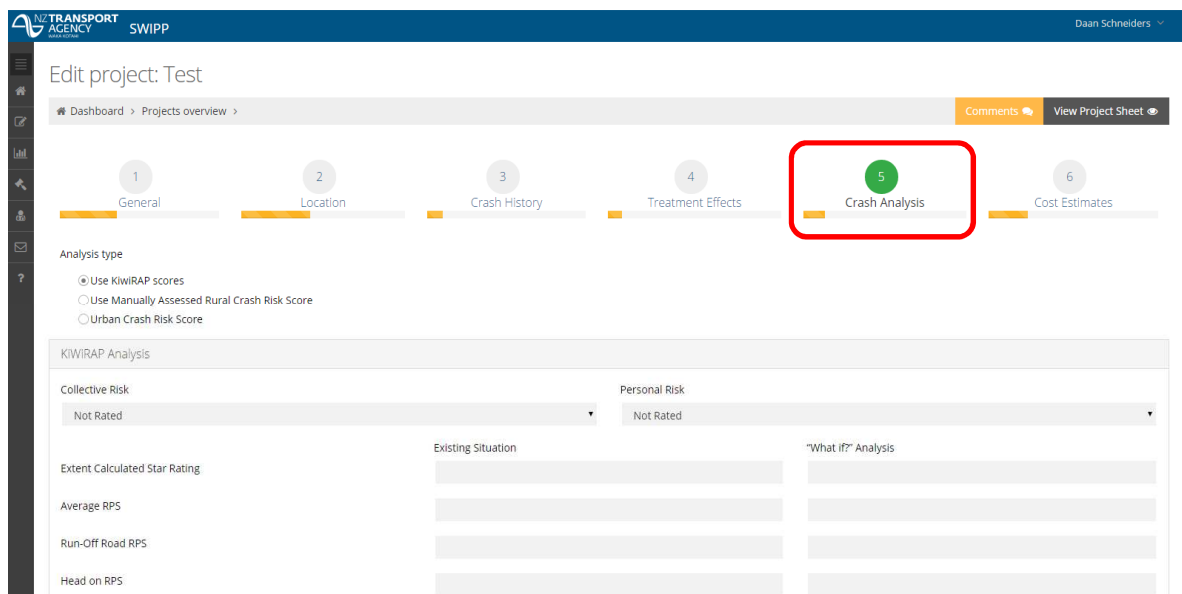
Figure 27: Crash Analysis TAB

Notes:

• KiwiRAP Scores	The user needs to perform the calculations in KAT and enter the outcomes into the SWIPP tool. The actual predicted DSi for the existing and "What if?" situation is calculated based on the RPS values entered. **Eq 4 – 15 (Appendix 1) uses the AADT, project length and the Predicted DSi for the Existing Situation.** Refer to the HRRRG for further guidance on the use of KAT.
• Manually Assessed Rural Risk Score/	If no KiwiRAP analysis was done the user can select a manually assessed Rural Crash Risk score or Urban Crash Risk score. In this situation Users can consider

Urban Crash Risk Score	submitting a project using alternative risk metrics such as a Benefit Cost Ratio that is typically used for low costs projects or for example 'With the installation of the Pedestrian Refuge the LOS with reduce from D to B'. These scores have no effect on the DSI saved/10 years/ $100m spent and may be removed in future updates of SWIPP.

3.6 Cost Estimates
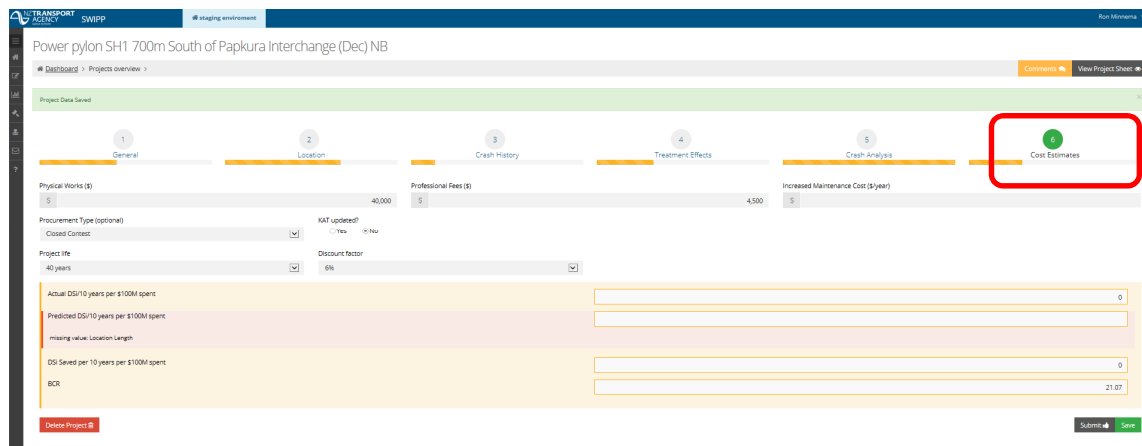
Figure 28: Cost Estimates TAB

Physical Works ($)	All Physical Works.
Professional Fees ($)	Professional services associated with the project including, e.g. Project Management, Investigations, Design, MSQA.
Increased Maintenance cost ($)	If there is no increased maintenance cost then '0' shall be entered.
Procurement Type (Optional)	This is optional.
KAT Updated	Default = No. Applicable to rural State highways. If the proposed treatment solution alters the KAT RPS scores then a KAT engineering update shall be completed. Future SWIPP updates may require this field to be set to YES to enable the project to be submitted and may be subject to audit.
Project Life	The analysis period used as the basis for the USPWF and SPPWF factors used in the BCR calculations.
Discount Factor	6%
Actual DSi/10 yrs/ $100M spent	In English 'X REPORTED Fatal and Serious casualties that will be TARGETED over the next 10 years by spending $100m on the proposed treatment. Refer to Appendix 1.

Predicted DSi/10 yrs/ $100M spent	In English 'X PREDICTED Fatal and Serious casualties that will be TARGETED over the next 10 years by spending $100m on the proposed treatment. Refer to Appendix 1.
DSi Saved/10 yrs/ $100M spent	In English 'X Fatal and Serious casualties that will be SAVED over the next 10 years by spending $100m on the proposed treatment and is the metric that is used by National Office for PRIORITISING projects. Refer to Appendix 1.
BCR	Benefit Cost Ratio, and is automatically calculated. Refer to Appendix 1. BCR changes only when the Project Life Period and the Increased Maintenance Costs are populated.

4 Unsubmitted Projects

In this Module Users can:

- Edit existing unsubmitted projects
- Delete existing unsubmitted projects
- Submit a project for assessment by the Administrator.
- View the Project Sheet.
- Copy a Project.

After the User saves a new project the project has a status of Unsubmitted. It will appear in the Unsubmitted project list on the Dashboard and in the Unsubmitted project table. Each project displays the following fields and the project lists can be sorted on the underlined fields:

- Prefix
- Name
- Rank
- NMA
- SH
- Start RS/RP, End RS/RP
- DSI saved per 10 years/ $100m spent
- Expected Start Year
- Tools

Users can filter on the projects displayed using:

o Filter NSP's   o Filter NMA's   o Filter SH's   o Filter Years

Figure 29: Un-submitted Projects

EDIT   Click on the project name to EDIT

Figure 30:Edit Projects

ADD   Add a new project

Figure 31: Add Projects

TOOLS   Users can choose which fields are displayed, e.g. Prefix, Name, Rank, NMA, SH, Start RS/RP, DSi

Figure 32: Tools

==DELETE== Deletes a project and once deleted it's information is no longer available
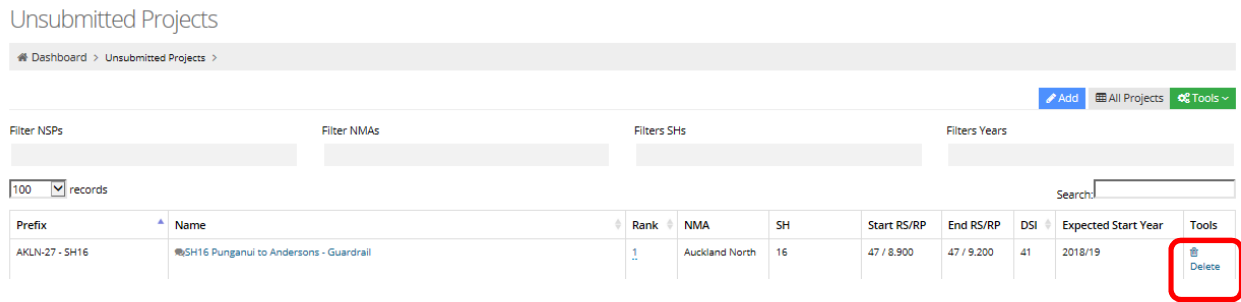
Figure 33: Delete Project

==SUBMIT== A project needs to be SUBMITTED by the User to the Administrator who will determine whether:

- The project qualifies for funding on the basis of the information provided that will include adhering to the Business Rules (Appendix 2) to ensure consistency of analysis, ensure high risk corridors are being targetted, and to ensure that the programme reflects the State highway Regional Road Safety Strategy.

- Further information may be requested to enable assessment to be completed.

A 'Funding Request' window will open (Figure 34):

- Requesting whether the Design funding can be split over multiple years (or not) and in which year funding for Design and Physical works is to be applied for.

- A message seeking confirmation that the User still wishes to submit the project if the DSi saved/ 10 years/ $100m spent is zero. This generally applies to those projects where SWIPP cannot easily calculate a DSI and alternative risk metrics are to be submitted.
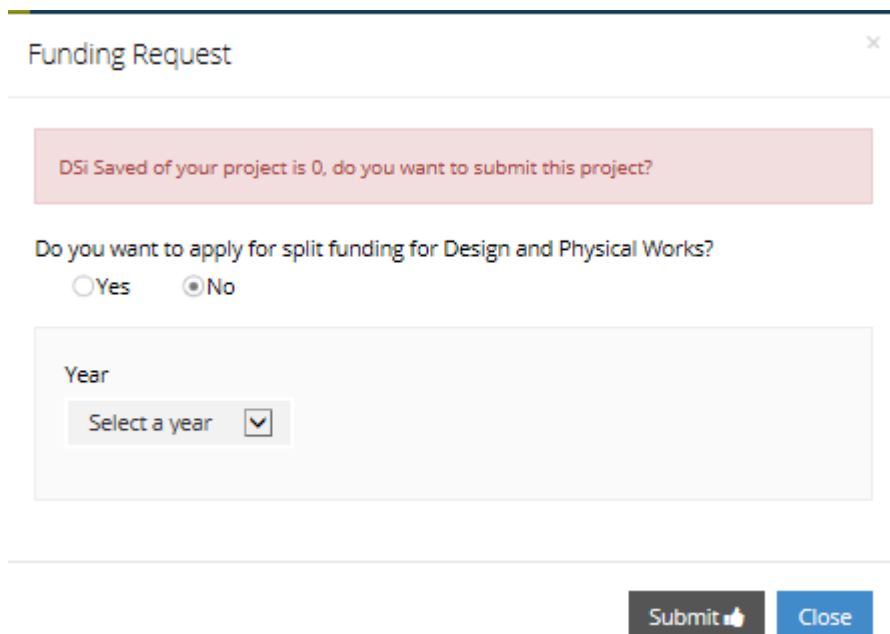
Figure 34: Funding Request

The minimum required information in order to SUBMIT a project are the fields that are required to populate the Minor Improvements Template, i.e.:

• Project Name	• Start/ End RS and RP's
• NMA	• One Network Road classification
• State Highway	• Proposed Treatment
• Region	• Type of Intervention
• Safety Issues & Diagnosis of Road / Roadside	• Physical works ($)
• Project Origin	• Professional fees ($)

At any time prior to the Administrator qualifying the project for funding the User can UNSUBMIT the project to make changes and then resubmit.

VIEW PROJECT SHEET (Figure 35) enables Users to View all Project data.
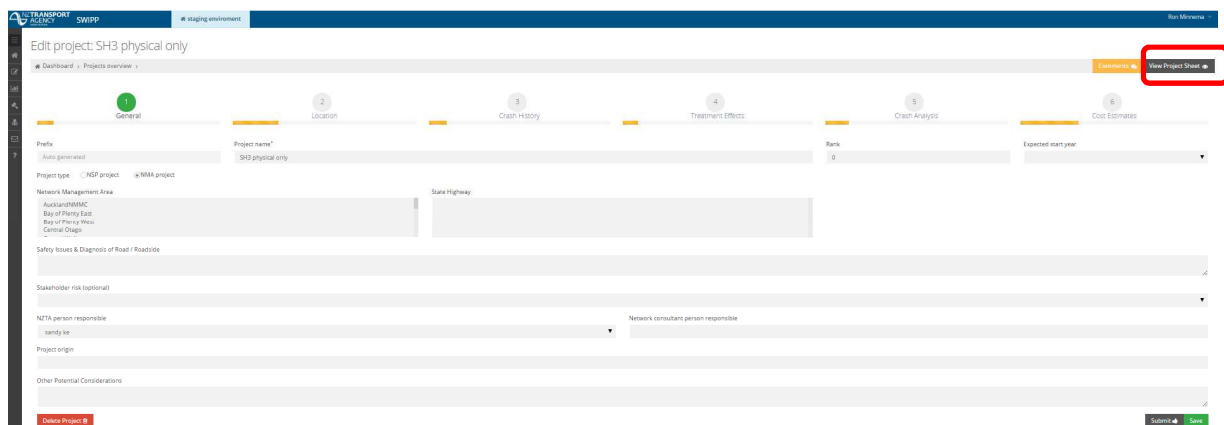
Figure 35: View Project Sheet

Within the Project Sheet the User can PRINT/ EXPORT Project data or COPY a Project – Refer to Figure 18..

5 Submitted Projects

In this Module Users can :

- View projects a projects status, i.e.:

    o Submitted – Non qualified.

    o Submitted - Qualified.

- Un-submit projects

- Print the Project Sheets.

- Copy a Project

- Request Immediate Funding Approval
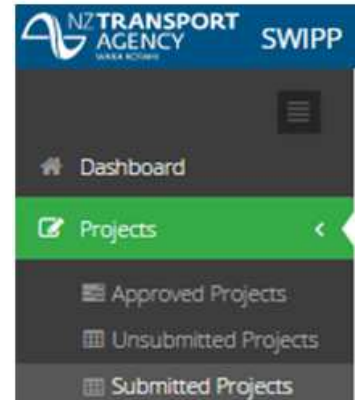
After a project has been submitted, it will become a Submitted Project. It will appear in the Submitted project list on the Dashboard and **cannot be edited.**

Projects are displayed as for Un-Submitted projects.

UNSUBMIT will result in the project appearing in the un-submitted projects list which will enable the User to undertake some editing as illustrated by Figure 36.

Figure 36: Submitted Projects

VIEW Project Sheet (Figure 37) can be viewed by clicking on the Project Name.

Figure 37: Project Sheet

Within the Project Sheet the User can PRINT/ EXPORT Project data or COPY a Project – Refer to Figure 18.

REQUEST IMMEDIATE APPROVAL   Immediate funding approval can be requested after a project has been submitted for urgent projects as illustrated by Figure 38. A project should only be submitted following consideration of the Business Rule in Appendix 2.
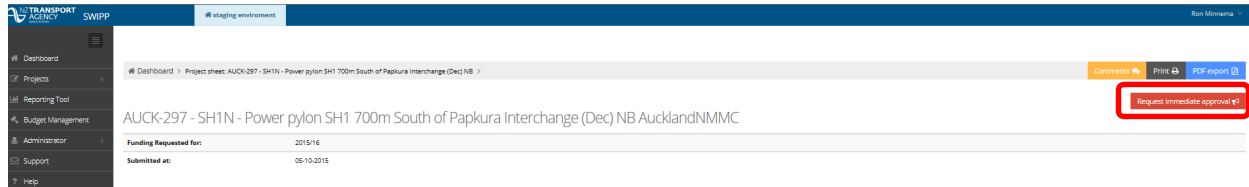
Figure 38: Submitted Projects – Request Immediate Approval

This will result in an e-mail being sent to the Administrator requesting approval as displayed by Figure 39.

Figure 39: Submitted Projects - E-mail request for immediate funding approval

The Administrator will assess the request and will do one of two things, either:

- Accept the project as submitted, qualify it for funding, and approve.
- request further information.

If the later occurs the 'NZTA people responsible' (Refer to the General TAB) will each receive a message with a comment status as displayed in the following table.

Administrator Comment	Required Action by User	Symbol colour	Symbol
OK	Nil	Green	
Action Required	Yes, complete project for resubmitting	Red	
In Progress (Consider deleting in next SWIPP Upgrade as seldom used)	Yes, complete project for submitting	Orange	

The symbols will be displayed on the Dashboard as displayed in Figure 40.

Figure 40: Dashboard Summary

The User can either:

- UNSUBMIT (Figure 41) the project and update the information prior to resubmiting, OR
- Respond to the Administrator by sending a COMMENT by following the steps shown in Figures 42 to 45.
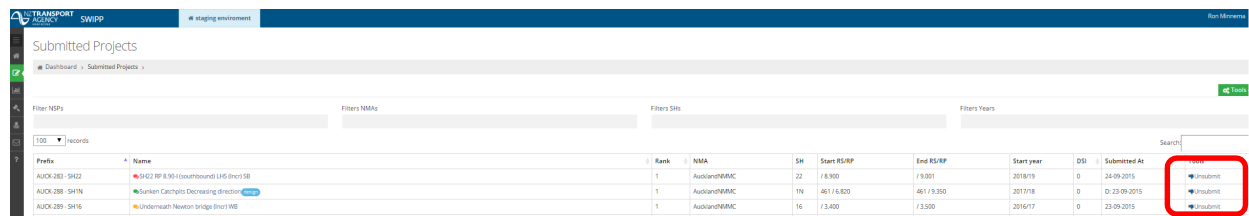
Figure 41: Un-submit
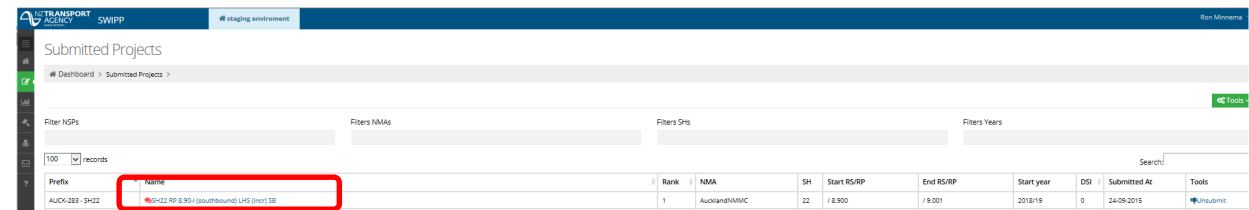
 Figure 42: Step 1: Select Project

The Project Sheet will be displayed as follows whereupon the User will select COMMENTS
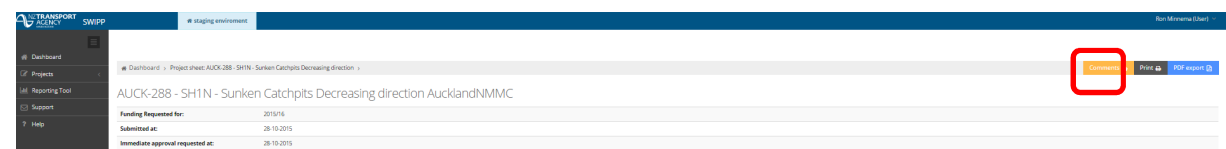
Figure 43: Step 2: Select Comments

The User will receive a message similar to that illustrated by Figure 44.
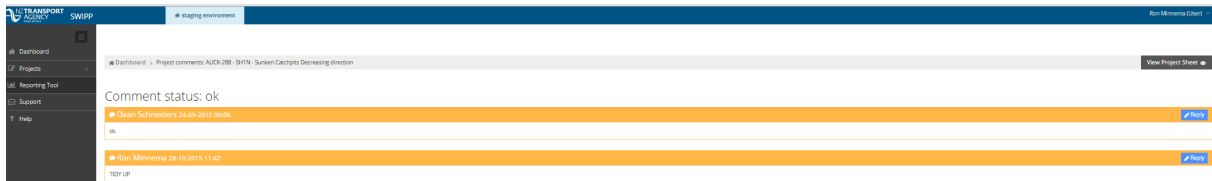
Figure 44: Step 3: Comment Status

The '**NZTA People responsible'** will respond by clicking REPLY and will be presented with the screen shot as illustrated by Figure 45, which will require them to 'Comment' and then Submit the Comment to the Administrator.
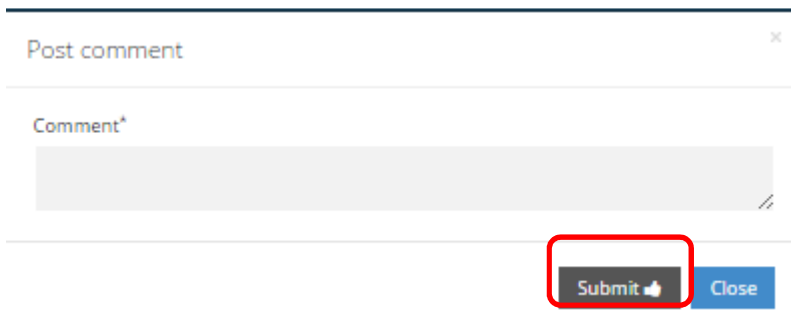
Figure 45: Step 4: Submit Comment

Projects that are approved by the Administrator will result in a message being sent to the 'NZTA people responsible' similar to that illustrated in the following figure. These messages are sent out daily at 1am NZ time to all Users that have had projects approved/ declined.

From: SWIPP [mailto:swipp@mail187-3.suw11.mandrillapp.com] On Behalf Of SWIPP
Sent: Wednesday, 17 February 2016 1:03 a.m.
To: Steve James
Subject: [SWIPP] Project(s) approved/declined

Projects approved/declined

Hi,
Your following projects have been **approved** by a SWIPP administrator:

- TASM-6 - SH60 - T - SH60 Mariri Causeway Hazard Protection Section 3
- TASM-13 - SH6 - SH 6: Bridge Side Protection Improvements Section 1
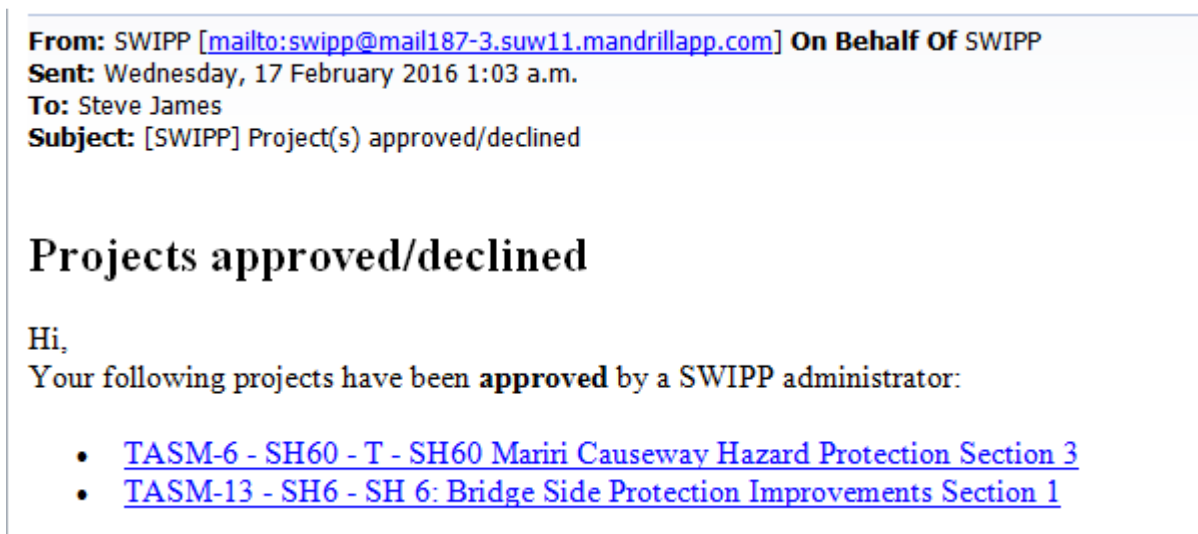
6 Approved Projects

In this Module Users can:

- View projects that have been approved

- View the progress of projects

- View a project's Status

- Enter monthly forecast/ actual expenditure for individual projects

- Archive a completed project
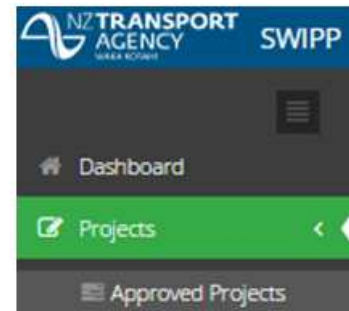
Projects:

- Are displayed and can be filtered as for Un-Submitted projects.

- Cannot be edited.

PROGRESS of projects can be viewed by clicking the percentage under the Progress column **if desired by Users** in lieu of other Financial Reporting packages such as SAP. SWIPP does not communicate directly with SAP.

Figure 46: Approved Projects

There are two types of Progress: (1) Design Progress (%); (2) Physical Works Progress (%) and Monthly Cost Estimates that can be updated monthly and are shown in Figure 47 in the coloured boxes.

Design and Physical Works Progress can be updated by dragging the SLIDE BAR.
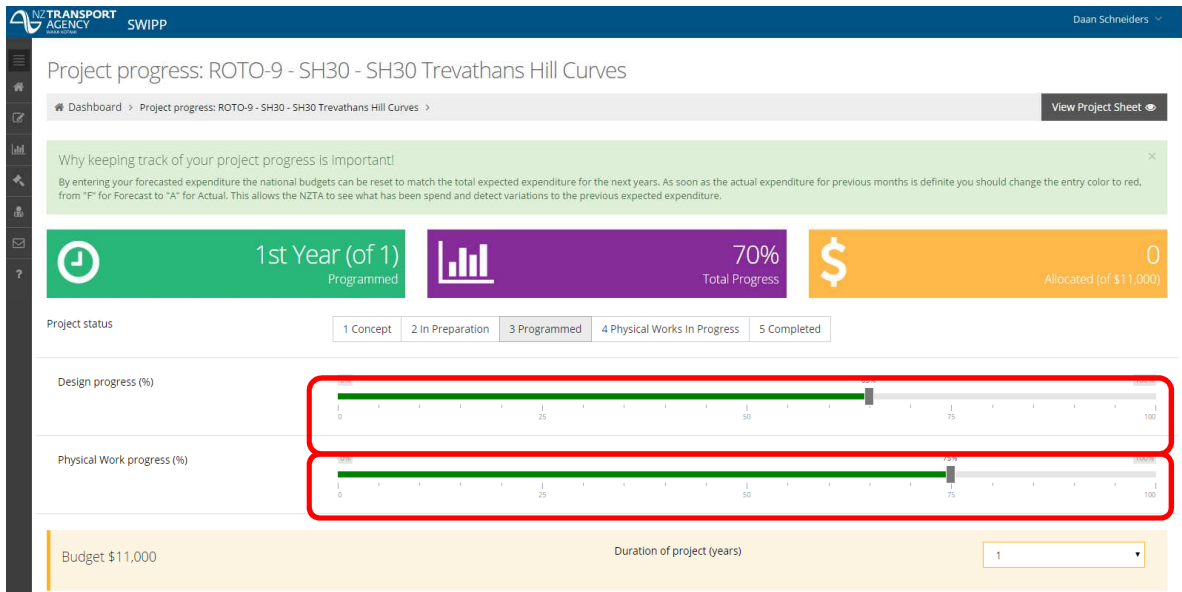
Figure 47: Projects Progress

The total progress is the average progress of the Design Progress (%) and Physical Works Progress (%).

Project Status options include:

- Concept
- In Preparation
- Programmed
- Physical Works in Progress
- Completed

Monthly Cost Estimates (Forecast and Actual) can be tracked against the approved funding as shown by Figure 48.
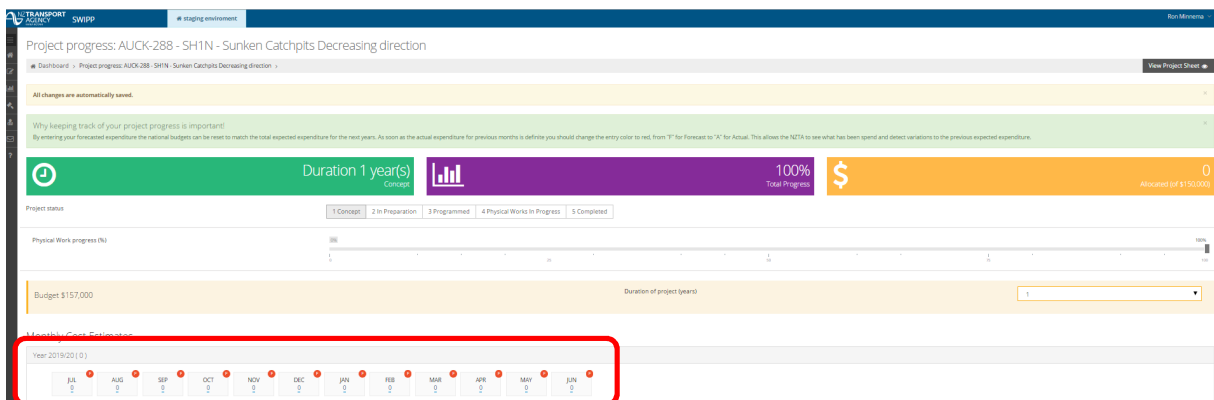
Figure 48: Monthly Progress

Clicking on a month and entering the MONTHLY EXPENDITURE for work completed that month and click the tick icon to save changes as illustrated by Figure 49.
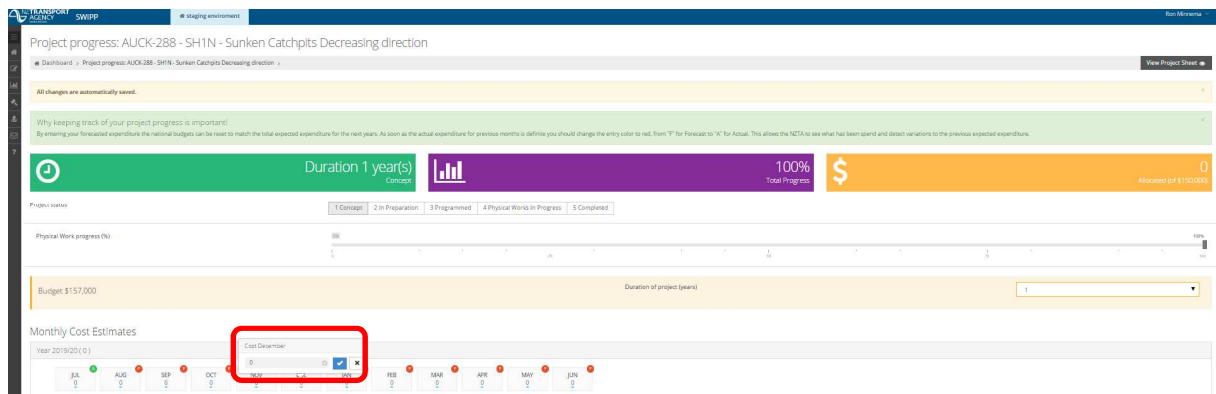
Figure 49: Monthly Expenditure

Update the FORECAST and ACTUAL EXPENDITURE (Figure 50) by clicking on the icon on the top right of the month.
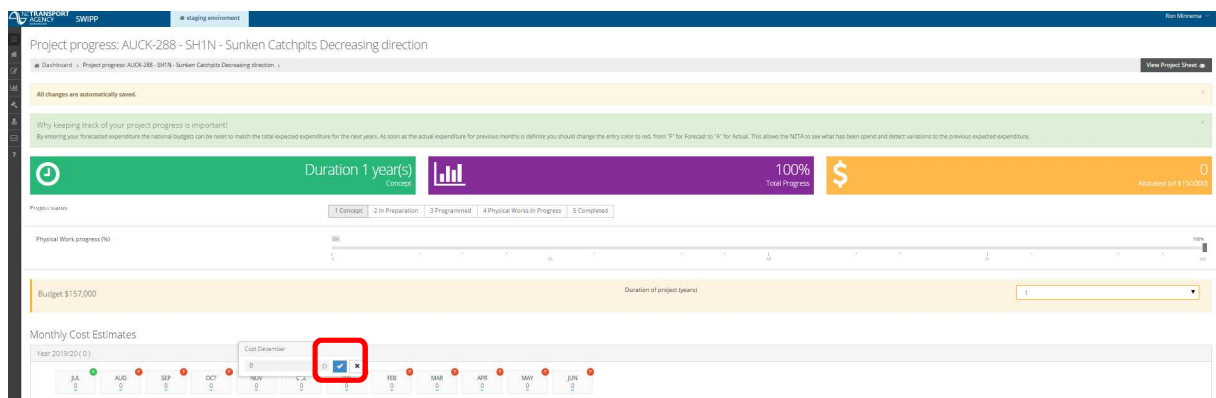
Figure 50: Forecast and Actual Expenditure

Updating the forecast will enable accurate reports to be extracted from the Reporting module. Reminders will automatically be sent to:

- Users if Progress Updates have not been completed as Actuals within the first two weeks of the following month. (Note that the time period can be changed by the Administrator).

- Administrators if Progress Updates have not been completed as Actuals within the first two weeks of the following month. (Note that the time period can be changed by the Administrator).

SEND TO ARCHIVE archives APPROVED projects from previous financial years as illustrated by Figure 51.
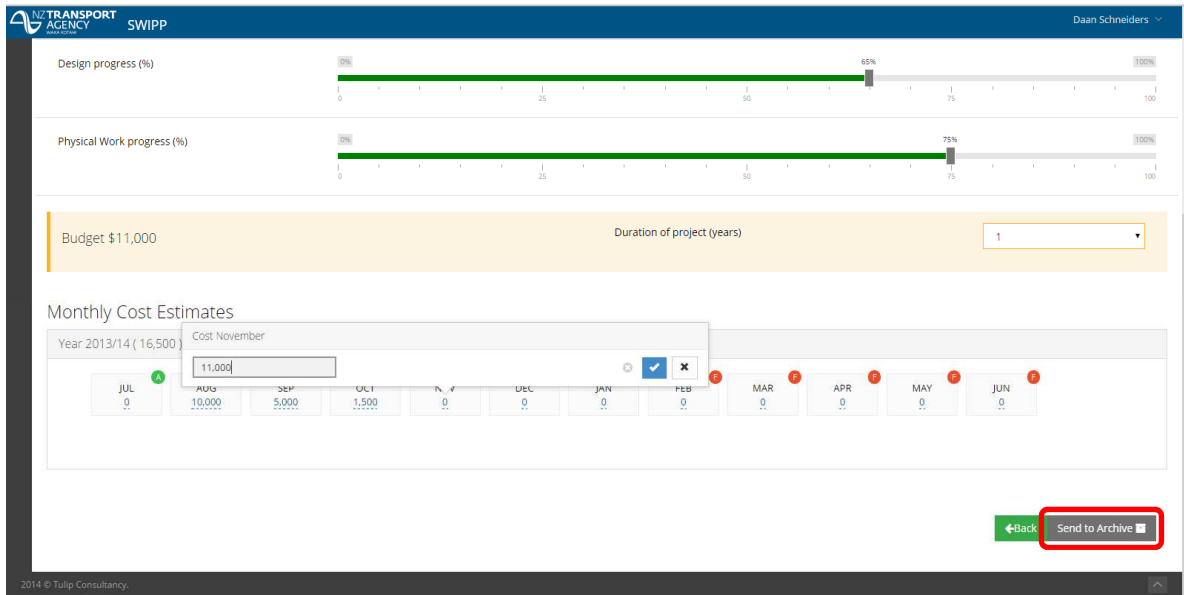
Figure 51: Send to Archive

7 Archived Projects
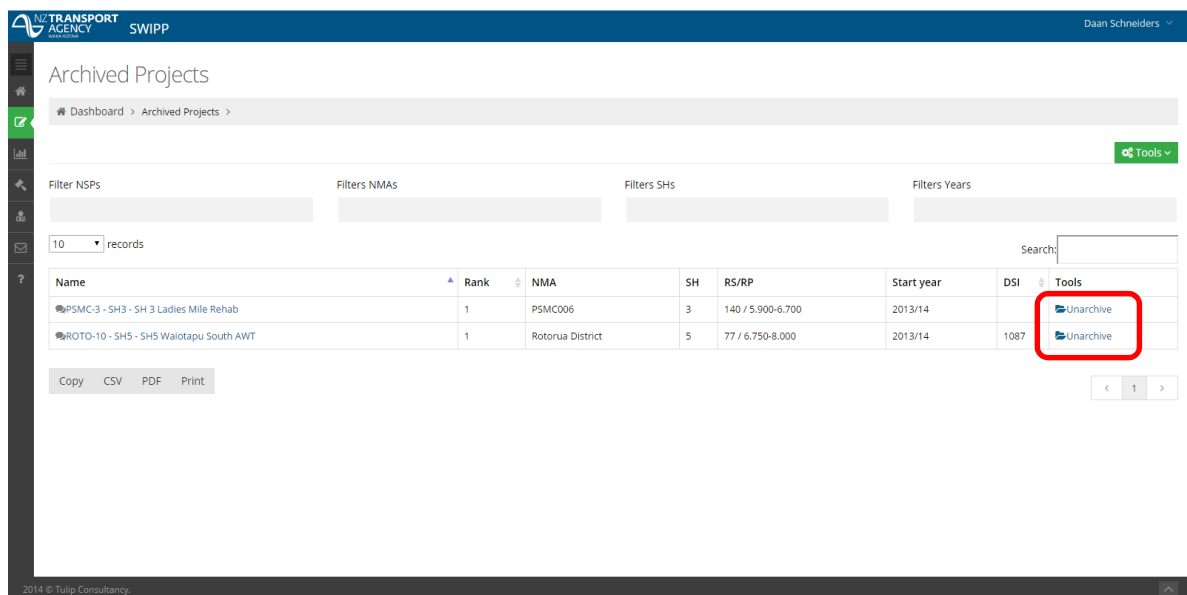
In this Module Users can:

- View projects that have been Archived

- View the Project Details

- Un-archive Projects
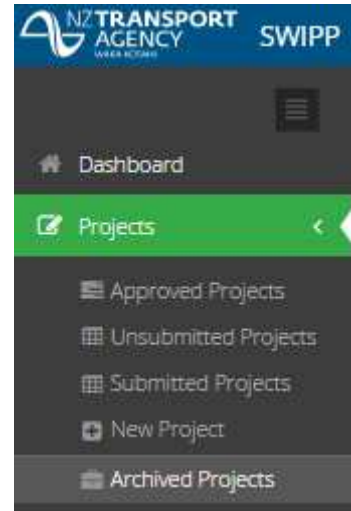
Projects can be viewed by clicking the Project Name which will takes Users to the PROJECT SHEET as discussed previously.

UNARCHIVE shifts the project from ARCHIVE to UNSUBMITTED as illustrated by Figure 52..

Figure 52: Archived Projects

Page left intentionally blank

8 Reporting Tool

In this Module Users can:

o Generate Reports for selected NMA's/ NSP's in graphical/ tabular format using a number of variables, i.e.:

   o Approved cost (Actual/ Forecast).

   o Submitted cost.

   o Unsubmitted cost.

   o Date Range.

   o Selected NSP's

   o Selected NMA's

   o Selected SH's

   o Selected Regions

o Export the Graph in PDF, PNG and SVG format. (PDF is recommended as it has a Download/ Print function.

o Export the Table in XLSX format.
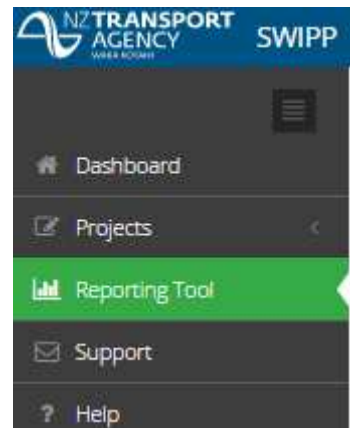
GENERATE REPORT must be selected to generate a Graph or Table after selecting the variables to be included in the report as illustrated by Figure's 53 and 54.
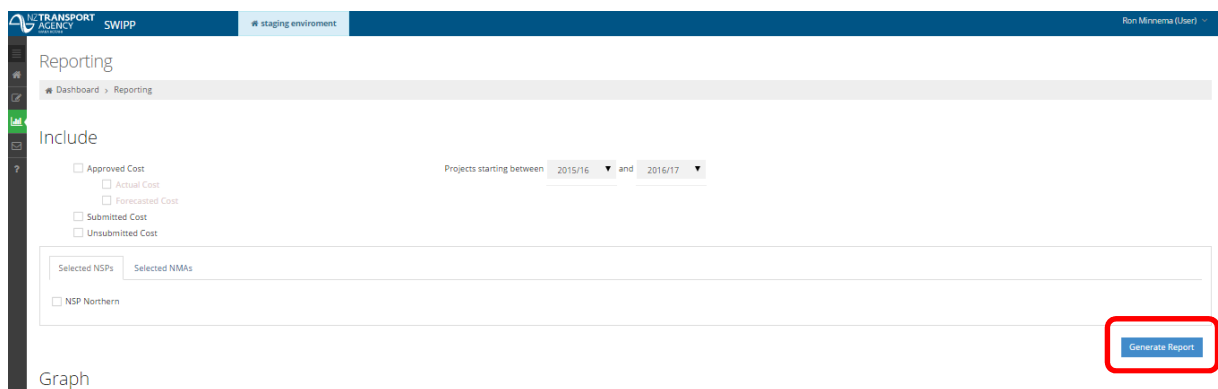
Figure 53: Generate Report

Figure 54: Graph

Notes:

- The Approved, Submitted, and Unsubmitted Cost are shown as a yearly totals.

- The Actual and forecasted cost for each month within a financial year are the total of the Actual/ Forecast expenditure for the previous month added to the Actual/ Forecast expenditure for the current month.

The Graph illustrates the variables listed, i.e.:

- Number of projects

- Number of projects commenced

- Number of projects completed

- Average progress

- Approved cost

- Actual costs to date

- Forecast cost

- Average DSI/ 10 years/ $100m spent

- BCR

Users have the option of displaying:

- The Total number of projects comprising Large and Minor projects

- Large projects, > $300k

- Minor projects, <= $300k

In addition the details of the projects can be viewed by clicking the '+'button (Figure 55) resulting in the display illustrated in Figure 56.

Figure 55: Table Summary

Figure 56: Table Detailed

Clicking the project in the Table will result in the PROJECT SHEET being displayed as illustrated by Figure 57.

Figure 57: Project Sheet

Page left intentionally blank

Appendices

Page left intentionally blank

Appendix 1 – Calculations

1. ACTUAL (Existing) DSi per kilometre per year	
$$\dfrac{1.33 * \text{(All Fatal \& Serious Crashes)}}{\text{Location Length (km)} * \text{Crash Period (years)}}$$ Note: DSi = deaths and serious injuries AND 1.33 = 1.33 DSi typically per fatal and serious crash	**(Eq 1)**
2. ACTUAL (Existing) DSi/10 years per $100M spent	
$$1.33 * \left(\dfrac{\text{(All Fatal \& Serious Crashes)} * 10 \text{ years}}{\text{Crash Period (years)}}\right) * \dfrac{\$100m}{\$\text{Total Cost}}$$ Note: DSi = deaths and serious injuries AND 1.33 = 1.33 DSi typically per fatal and serious crash	**(Eq 2)**
3. Pre-treatment Crash Social Cost ($/year)	
[(All Crashes – F & s/Crash Period *Fatal Split *Fatal Under Reporting Factor *Cost per Fatal Crash + (All Crashes – F & S/Crash Period *Serious Split *Serious Under Reporting Factor *Cost per Serious Crash + All Minor Crashes/Crash Period*Minor Under Reporting Factor *Cost per Minor Crash + All Non-Injury Crashes/ Crash Period*Non-Injury Under Reporting Factor *Cost per Non-Injury Crash]/ Crash History Period	(Eq 3)
4. Crash Social Cost Saving per year based on ACTUAL (Existing) Crashes)	
(Targeted FS Crashes * Social Cost FS) + (Targeted MNI Crashes * Social Cost MNI) If from Crash History: Targeted FS Crashes =[(Targeted F + Targeted S)/ Total FS] *Crash Reduction FS Targeted MNI Crashes =[(Targeted M + Targeted NI)/ Total MNI] *Crash Reduction M + NI If from OTHER than Crash History: Targeted FS Crashes =Percentage Targeted FS * Crash Reduction FS Targeted MNI Crashes = Percentage Targeted MNI * Crash Reduction MNI	(Eq 4)

5.	**PREDICTED DSI**	
	Run Of Road Prediction F&S + Head-On Prediction F&S + Intersection Prediction F&S	(Eq 5)
	Run Of Road Prediction F & S (Fatal & Serious)	
	if Head-On RPS = 0 (RunOfRoad RPS/Average RPS)***IC10***0.32[See Note 1]	(Eq 6)
	if AADT > 30000 0.55*(RunOfRoad RPS/Average RPS)***IC10***0.32	(Eq 7)
	if AADT <= 30000 ((0.000481* AADT/1000* AADT/1000)-(0.024947* AADT/1000)+0.864791)*(RunOfRoad RPS/Average RPS)***IC10***0.32	(Eq 8)
	Note: 1 - Ratio of Fatal and Serious Casualties to All Run-off Road Crashes (2005-2009)	
	Head On Prediction (F & S) Fatal & Serious	
	if Run off Road RPS = 0 (HeadOn RPS /Average RPS)***IC10***0.9[See Note 2]	(Eq 9)
	if AADT > 30000 (1 - 0.55)*(HeadOn RPS/Average RPS)***IC10***0.9	(Eq 10)
	if AADT <= 30000 (1-((0.000481* AADT/1000* AADT /1000)-(0.024947* AADT /1000)+0.864791))*(Head On RPS/Average RPS)***IC10***0.9	(Eq 11)
	Note:2 - Ratio of Fatal and Serious Casualties to the All Head-On Crashes (2005-2009)	
	Intersection Prediction (F + S) Fatal & Serious (Intersection RPS/Average RPS)***IC10***0.4[See Note 3]	(Eq 12)
	IC10 - *Injury Crashes over 10 years* (67.549652-7.891884***SRP**^{2}+1.084689***SRP**^{3})*(AADT *365* Treatment Length *10)/100000000	(Eq 13)
	SRP - *Star Rating Prediction*	
	If Averaged RPS > 25 -0.02* Average RPS+ 2.5	(Eq 14)
	If Average RPS <= 25 -0.000269*(Average RPS)^3+0.016262*(Average RPS)^2 -0.373079*(Average RPS)+5.374117	(Eq 15)
	The minimum **SRP** = 1 and the maximum **SRP** = 5	
6.	**Predicted DSi/10 years per $100M spent** (The predicted DSi/10 years per $100M spent is based on the KiwiRAP analysis for the existing situation)	
	Predicted DSi * $100M/ Total Project Cost	(Eq 16)

7. DSI Saved/ 10 Years		
If Actual Crashes AND Predicted DSi <>0 :	$\dfrac{(\text{Actual Crashes} + \text{Predicted DSi}) * \text{Targeted F \& S}}{2}$	(Eq 17)
If Predicted DSi = 0: (Source: KiwiRAP analysis)	Actual Crashes * (Targeted F & S)	(Eq 18)
If Actual Crashes = 0 (Source: Crash History)	Predicted DSi * (Targeted F & S)	(Eq 19)
Where: Actual Crashes =	$10 * (1.7^{\text{(See Note 4)}} * (\text{Fatal + Serious Head-On/year}) +$ $1.21^{\text{(See Note 5)}} * (\text{Fatal + Serious Run-Off Road/year}) +$ $1.3^{\text{(See Note 6)}} * (\text{Fatal + Serious Intersection/year}))$	(Eq 20)
Targeted Fatal & Serious =	Percentage Fatal & Serious Crashes Targeted* Crash reduction Factor Fatal & Serious	(Eq 21)
1 - Ratio of Fatal and Serious Casualties to all head-on crashes (2005-2009) 2 - Ratio of Fatal and Serious Casualties to all run off road crashes (2005-2009) 3 - Ratio of Fatal and Serious Casualties to all intersection crashes (2005-2009) 4 - Ratio of Fatal and Serious Casualties to each fatal and serious head-on crash (2005-2009) 5 - Ratio of Fatal and Serious Casualties to each fatal and serious run off road crash (2005-2009) 6 - Ratio of Fatal and Serious Casualties to each fatal and serious intersection crash (2005-2009)		
8. DSI Saved per 10 Years per $100m spent		
DSI saved * $100m/ Total Project Cost		(Eq 22)
9. Benefit Cost Ratio (changes		
(Social Cost Savings + Non Safety Benefits) * Lifetime/ Total Cost * Start		(Eq 23)
Lifetime = (1-(1+DF)^(-(PL+1)))/(ln(1+DF))-(1-(1+DF)^(-1))/(ln(1+DF))		(Eq 24)
Start = (1+DF)^(-1)		(Eq 25)
(DF = discount factor), PL = Project Life		

Page left intentionally blank

Appendix 2 – Business Rules

Table 1: SWIPP User Project Checks

Item	Element	Comments
1	Seal Widening	Seal widening is generally carried out: • In conjunction with AWT's on roads with the following One Network classifications (National [High Volume], National, Regional) on the proviso that it can be shown that the DSI's saved/10 years/ \$100m spent > 140 • As a standalone safety project at sites where there are safety issues and the risk will be reduced by seal widening.
2	AWT	Where a project is to be undertaken in conjunction with an AWT: • A 'AWT Pre Design Project Scope' template shall be completed and filed. Refer to the following link: Minor Improvements (Safety) Programme - AWT PreDesign Project Scope Review Template.doc https://infohub.nzta.govt.nz/otcs/cs.dll/properties/13613202 • It will be considered for funding taking into account the following: ➤ The seal width is below the 7m minimum for 2 x lanes AND ➤ from a cost benefit side value for money is provided given the widening is being undertaken as part of an AWT AND ➤ funding of the project is not at the expense of deferring a significant portion of the programme that involves projects with a high DSI saved/ 10 years/ \$100m spent. • The cost estimates relating to the safety components shall be included in SWIPP
3	RIAWS	A RIAWS Checklist shall be completed and filed. Refer to the following InfoHUB link: https://infohub.nzta.govt.nz/otcs/cs.dll/properties/13618871
4	Ice Warning signs	'Ice electronic warning signs' are not to be installed unless: • There is confidence in the technology working. • Criteria is developed that can be applied nationally.
5	Treatment Effects – Proposed Treatment	• Check that where multiple countermeasures are implemented that the Crash Reduction Factors are not overstated and that the methodology outlined in the following link is used. http://www.arrb.com.au/admin/file/content13/c6/RiskReporterIssue11.pdf • Liaise with the Maintenance Contract Managers to ensure that the effects of on-going maintenance (practically and costs) have been considered.
6	Crash History	• Latest crash data year used, e.g. 2016 • Crash History Period - In general the time period should be the last five years unless the road is carrying less than 5000 vpd (Some exceptions to this guide may be justified) then ten years may be appropriate.

7	Treatment Effects - Staging	• Check that staging of interventions has been considered, e.g. wide centreline followed by Wire Rope Barrier.
8	ATP	In addition to the technical requirements to install edge line ATP it is expected that the project will be discussed with local cycling representatives before proceeding
9	Inter regional routes	Where State highways span two different NMA's and that section of State highway has the same SafetyNET treatment philosophy it is expected that the adjoining treatment philosophies will be similar.
10	New Signs	Where funding is being sought for new signs it shall be supported by the DSI saved / 10 years/ $100m spent. Qualifying activities may include: • Signs at specific locations such as Active Warning Signs • On routes – review and upgrade all curve warning signage/ chevron boards to address a Loss of Control Type problem on bends. • Mass Action
11	Benefit Cost Ratio's	This risk metric may be used as an alternative to DSI saved/ 10 years/ $100m spent for low cost projects where a DSI cannot easily be calculated, e.g. 'With the installation of the Pedestrian Refuge the LOS with reduce from D to B'. It will not generally be accepted for high cost projects, e.g. > $50k projects should be able to be supported by a DSI saved/ 10 years/ $100m spent.

12	Price Level Increases	• Once the annual funding bid is approved for the financial year System Management Managers shall manage their projects within the approved allocation including projects that are approved within SWIPP subsequent to the funding approval.
		• A review will be undertaken annually in November that may result in:
		   o Surplus funds being distributed between System Management Areas across all three activities.
		   o Funds being compulsory surplused where the Forecast expenditure is signficantly less than the Approved Allocation.

13	Capital Works Projects	Projects shall not be submitted to complete a Capital Works Project.
14	Professional Services Fees	These shall be included as part of the total project cost and shall NOT be entered as a single line item covering all projects. The exception may be a project that involves professional services fees for investgations only may be approved on the provisio that: • The project focuses on a particular issue. • A number of physical projects being identifed that will be the subjetc of a seperate funding application.
15	High Risk Motorcycling Routes	Minor Improvements State highway Safety projects that are on High Risk Motorcycling routes (using the NZTA methodology from an investment perspective) shall be checked as follows - Where the project involves the construction of barriers the project scope shall be checked to ensure that allowance has been made to for the inclusion of Continuous Motorcycling Protection Systems (CMPS) for rigid/ semi rigid barriers and Discontinuous Motorcycling Protection Systems (DMPS) for flexible barrier systems such as WRSB should they be required

Table 2: SWIPP User Programme Checks

No	Element	Comments
1	Programme Shape	The majority of the projects should reflect the Regional Road Safety Strategy
2	Treatment Philosophies	The proposed treatments should in general reflect the agreed treatment philosophy as per SafetyNET.
3	Roads and Roadsides Business Case	Where projects are on sections of road that are covered by the SJRRPBC Programme 6 Regional Delivery Teams shall discuss the timing and delivery of the project with the Safer Roads Alliance.
4	Mulitiple projects on same section of road	Multiple projects that cover the same section of road may be considered if: • they use different crash data • the treatments for the projects are seperated into route and isolated sites • they could be constructed independdently of each other For example a route treatment comprising ATP/ signage upgrade ($280k) combined with local seal widening on the outside of bends ($75k) would be considered for funding approval.
5	Crash History	Generally sites with 1 x crash will not form part of the funding bid. Exceptions may include: • Projects where multiple non-injury crashes have been converted to DSI equivalents which may result in the Crash Histort Table being populated with 1 or 2 serious crashes. • Mass Action treatments where the project is part of a prioritised implementation strategy, e.g. bridge approach guardrail strategy where the upgrades have been assessed and prioritised using risk factors.
6	Treatment Effects	Briefly describe (where relevant, and in 20 words or less), e.g: • The proposed treatment will target 6 HA type crashes of the 8 reported intersection crashes.
7	Treatment Effects - Prioritisation	It is expected that Regional Delivery Teams will consider the hierarchy of treatments e.g. for route treatments – signs, ATP, localised seal widening on curves, seal widening, barriers
8	Treatment Effects - Non-Safety Benefits and Considerations	Desribe briefly any alternative options and the reason they have been discarded OR for the proposed option any Design Departures. This is particularly important information should the NZTA be required to respond to a Official Information Request.
9	Cost Estimates	The total cost of a project (professional services + physical works costs) shall not exceed $300k.
10	90/10 Rule	90% of the programme shall be targetted to reducing deaths and serious injuries as per the Safer Journeys vision. Up to 10% of the programme may be focussed on projects that are NOT supported by a DSI but are the right thing to do. These will typically be low cost projects and shall be locally ranked.

Table 3: Administrator Checks

No	Element	Comments
1	Work Category	Check that the submitted project qualifies for funding under W/C 341 Minor Improvements, and that the proposed project is not being submitted to complete a Capital Works Project.
2	Programme size	The size of the submitted funding bid should be equivalent to what a NOC could reasonably expect to deliver over 18 months
3	Assessment	The funding bid shall comprise projects that reflects the Regional Road Safety as required by the State highway safe network management activity manual.
		The bulk of the projects that comprise the funding bid shall be supported by a DSI saved/ 10 years/ $100m spent.
		The balance of the projects that comprise the funding bid should be supported by alternative risk metrics, e.g. LOS using the Pedestrian Crossing Facility Calculation Tool, BCR, Meets criteria as per Traffic Note 'x', high road environment risk as defined in 'SAFER Journeys for Rural Schools', Simplified procedures – SP11 Walking and Cycling Facilities, conflict studies, crash prediction models .
		In general support will not be given to projects where the DSI saved/ 10 years/ $100m spent is based on one crash UNLESS an acceptable explanation is provided, i.e. the one crash is based on a DSI equivalent.
		Where corridor treatments are proposed these will be checked to ensure they reflect the agreed treatment philosophies in SafetyNET.
		Projects that meet the above criteria will 'qualify' for funding.
4	Funding Allocation	The amount of funding allocated to a REGION will take into account:
		a. The annual funding allocated for safety $\quad \text{X} \quad \dfrac{\text{No. F \& S casualties (Region) over 5 yrs}}{\text{No. F \& S casualties (National) over 5 yrs}}$
		b. Whether the region has made available surplus funds to other regions, i.e. the amount of surplus will be added to a) and then adjusted based on the following criteria
		c. Whether the region has been advanced funds over and above the intial funding allocation, i.e. the amount of advanced funds will be subtracted from a).
		d. The track record of the region spending previous funding allocations.
		e. Whether the Region has spent the funds allocated for approved projects on those projects.

Appendix 3 - SWIPP Examples

Page left intentionally blank

Case 1: Stock Underpass

Notes

1. Challenges:

    a. Difficulty in assessing the DSi saved/ 10 years/ $100m invested

    b. Locations of stock underpasses unknown at the time the funding bid is being submitted

2. Proposed Solution:

    a. Submit project with '0' DSi as it isn't required as the Transport Agency is required to provide financial assistance in accordance with

    https://www.pikb.co.nz/home/ao-local-transport-programme/ao-local-transport-programmes-process/5-draft-update-transport-programme-and-input-to-tio/new-and-improved-roads/stock-crossings/

    b. Submit funding request based on the average number of stock underpasses installed in the previous few years

3. Recommended SWIPP example: 2015/16 Taranaki Stock Underpass, i.e. Tara-87-SH45

Case 2: Pedestrian Crossing Point

Notes

1. Challenges:

    a. Difficulty in assessing the DSi saved/ 10 years/ $100m invested

2. Proposed Solution:

    a. Submit project with alternative risk metrics, e.g. Road carrying 16,000 vpd with 'x' pedestrians crossing at the said location has an existing LOS D for pedestrians. With the installation of the pedestrian refuge, lighting, and kerb protrusions the LOS will improve to 'B' or..

    b. Installation of a pedestrian refuge ($10k) approx. will result in a BCR of 3.6.

3. Recommended SWIPP example: n/a

Case 3: Mass Action

Notes

1. Challenges:

    a. Difficulty in assessing the DSi saved/ 10 years/ $100m invested

2. Proposed Solution:

    a. Determine the number of crashes that have occurred at various sites that will be prevented by the installation of guardrail

    b. Assess the collective benefit of reducing the risk by the installation of guardrail, i.e. similar to a Package BCR

    c. Total cost of Package < $300k

3. Recommended SWIPP example: SH 2 Mass Action G/R Gisborne, i.e. GISN-15-SH2

Case 4: Crash Cluster

Notes

1. Challenge:

    a. Difficulty in demonstrating a risk metric to enable a bid for funding treatment options to be submitted as SWIPP provides heavy bias to Fatal and Serious Crashes only and minimal weighting to the likelihood that a Minor crash could have resulted in a fatality or serious injury.

2. Proposed Solution:

    a. Convert the Minor Injury Rural 2 lane Mid-block Crashes to DSi equivalents using the severity indices for the appropriate crash types. Where the site is mid-block and rural the crash indices in the following example can be used. If urban than the crash indices will need to be sourced from the High Risk Intersection Guide.

3. Recommended SWIPP example follows:

CRASH CLUSTER EXAMPLE – CONVERT 3 MI CRASHES TO DSi equivalents

1. Background Data (Key data only)
   a. Location Road Type – Mid-block
   b. Location Posted Speed Limit – 100 km/h
   c. Location AADT – 3700 vpd
   d. Location Environment – Rural
   e. Crash History - 3 Minor Injury LOC type crashes occured within 250m radius within a 5 yr period
   f. Treatment Effects – Reseal, improved signage, remark el and cl and extend guardrail
   g. Cost Estimates – Physical Works ($200k), PS ($25k)

2. EXISTING SWIPP Outputs (reproduced in part)

   A fictitious project called 'Crash Cluster Example' has been created within https://swipptest.ntza.govt.nz

   Attachment 1 shows screen shots for the following figures, i.e:

   - Figure 1 illustrates the 3 x Minor Injury Run Off Road crashes being input into Crash History
   - Figure 2 illustrates the proposed treatment and the Crash Reduction Factors
   - Figure 3 illustrates that the DSi saved per 10 years per $100m spent = 0

   Conclusion: The metric is insufficient to apply for funding!

3. PROPOSED SWIPP Outputs (reproduced in part)

   Attachment 2 shows screen shots for:

   - Converting the existing 3 Minor Injury ROR crashes to a DSi equivalent
   - Figure 4 illustrates the Crash History using DSi equivalents
   - Figure 5 illustrates the proposed treatment and the Crash Reduction Factors
   - Figure 6 illustrates that the DSi saved per 10 years per $100m spent = 537

   Allowing for some error as this is reasonably broad brush the analysis illustrates the relative benefits of this project to others.

Attachment 1: EXISTING SWIPP Outputs (reproduced in part)

Figure 1: Crash History

Notes:

- DSi per kilometre per year NOT calculated as no F and S crashes
- 3 Minor Run Off Road Crashes

Figure 2: Treatment Effects

Notes:

- 3 Minor Injury Crashes being targetted using Crash History
- Crash Reduction Factor = 45%

Actual DSi/10 years per $100m spent	0
Predicted DSi/10 years per $100m spent	1311
DSi saved per 10 years per $100m spent	0
BCR	2.32

Figure 3: Cost Estimates

Notes:

- No DSi saved per 10 years per $100m spent!

Attachment 2: PROPOSED SWIPP Outputs (reproduced in part)

Convert the existing 3 DA Minor Injury ROR crashes to DSi equivalents using the Severity Indices from Table 1, i.e:

3 - DA type crashes x 0.275 = 0.825 DSi which needs to be rounded up/down to the nearest whole number in this case One '1'

Table 1: Severity Indices for Two Lane Rural Road

Environment	Crash Movement Type							
Rural 2-lane	A	B	C	D	E	F	G	H
	0.334	0.503	0.243	0.275	0.237	0.114	0.255	0.429
	J	K	L	M	N	P	Q	-
	0.317	0.219	0.275	0.283	0.600	0.621	0.339	

Notes

- The severity indices is the ratio of the number of crashes of the nominated movement type that result in a serious injury or fatality

- Refer to Figures 1 to 3 for the key movement types

Loss of Control type crashes account for 54% of all F&S crashes on rural roads (2005-2009). Of the 54% of LOC type crashes 69% occur on curves and 26% on straights. The main movement types are:

Figure 1: LOC Type Crashes all NZ Rural Roads (2005-2009) (Source: HRRRG)

Head On type crashes account for approximately 21% of all F&S crashes on rural roads (2005-2009),with most crashes occuring on curves. The main movement types are:

Figure 2: Head On Type Crashes all NZ Rural Roads (2005-2009) (Source: HRRRG)

Intersection type crashes account for approximately 13% of all F&S crashes on rural roads (2005-2009),with most crashes involving traffic crossing dfrom different roads. The main movement types are:

Figure 3: Intersection Crashes all NZ Rural Roads (2005-2009) (Source: HRRRG)

Figure 4: Crash History using DSi's

Figure 5: Treatment Effects using DSi's

Actual DSi/10 years per $100m spent	1182
Predicted DSi/10 years per $100m spent	1311
DSi saved per 10 years per $100m spent	**537**
BCR	9.07

Figure 6: Cost Estimates using DSi's

Case 5: Schools Study

Notes

1. Challenges:

    a. Difficulty in responding to schools for requests for engineering treatments such as reduced speed limits

2. Proposed Solution:

    a. Stage 1 involves undertaking an area wide study in year 1.

    b. DSi saved/ 10 years/ $100m spent based on the number of crashes outside schools and an assumed reduction following the implementation of treatment options as part of Stage 2.

    c. Stage 2 involves the implementation of treatment options identified in Stage 1 and may be based on the risk metrics contained with 'safer Journeys for Rural Schools'

3. Recommended SWIPP example: TARA-85-SH3

Appendix 4 – SWIPP Exercises

Page left intentionally blank

Exercise #1   Seal widening project over 2km with reported F & S crashes

1. Create NEW Project for your selected NOC

2. Create a unique name

3. SAVE

4. Project Information is as follows:

GENERAL	• Project name – you decide • Expected start year – 2016/17 • Project type – NOC • NOC area – Bay of Plenty West • State highway – 36 • Project origin – CRS, Network screening etc • Safety Issues etc al....Loss of control type crashes on High Risk Rural Road as highlighted in the Safety Strategy • **SAVE**
LOCATION	• Midblock • Start RS/ Start RP/ End RS/ End RP – 13/ 4.0 – 6.0 • Location length – 2km • Detailed location description – A. Valley • Environment – Rural • SH classification – Regional • Posted speed limit – 100 km/h • AADT – 4500 vpd • Year measured - 2014 • Count station – 00000 • **SAVE**
CRASH HISTORY	• Crash History Period – 10 years • 5 serious crashes, 4 of which were Run off road • 8 minor crashes, 7 of which were Run off road • 12 non-injury crashes, 7 of which were Run off road • CALCULATE DSi per kilometre per year

	• CALCULATE Pretreatment Crash Social Cost ($ year) • **SAVE**
TREATMENT EFFECTS	• Proposed Treatment – Construct seal widening on the outside of bends and install guardrail at drop off (RP 28/4-4.3) • Type of Intervention – Seal Widening • Targeted crashes using Crash history, 4 serious, 6 minor • Crash reduction factors – 40% fatal and serious, 40% Minor and Non-Injury • Source used for Crash Reduction Factors - HRRRG • CALCULATE Crash Social Cost Saving • **SAVE**
CRASH ANALYSIS	• USE KiwiRAP scores • Enter '0' for the fields with RPS (Road Protection Score) • **SAVE**
COST ESTIMATES	• Physical works – $280,000 • Professional fees - $15,000 • Increased maintenance - $3,000 • Project Life = 40 years and Discount Factor = 6% • **SAVE**

5. Where information has not been provided select from the fields within each TAB

6. ANSWERS – Refer to Cost Estimates

Calculations	Exercise #1, Crashes, 2km project length
Actual DSI/ 10 years per $100m spent =	2254
Predicted DSI/ 10 years per $100m spent =	0
DSi saved/ 10 years/ $100m spent =	525
BCR =	11.03

7. **SAVE**

8. LESSON

   • Your answers should be the same as above...

   • Predicted DSI/ 10 years per $100m spent = Not calculated as 'Crash Analysis' NOT populated

Exercise #2   Seal widening project over 2km with reported F & S crashes AND using KiwiRAP RPS scores

1. Select Projects, Unsubmitted Projects

2. Filter the displayed Projects

3. Sort the fields that are displayed by using TOOLS

4. Use the SEARCH radio button to find the project created in Exercise #1.

5. EDIT the project created in Exercise #1.

6. Treatment Effects

    - Under Targeted Crashes SELECT 'Targeted Crashes when using KiwiRAP analysis'.

    - % of F & S crashes that CRF applied to = 54% (of all high severity crashes on NZ rural roads, HRRRG)

    - % of M & NI crashes that CRF applied to = 54%

    - CALCULATE Crash Social Cost Saving, **SAVE**

    - Crash Analysis - ADD KiwiRAP scores to crash analysis and **SAVE**, i.e

RPS	Existing Situation	Risk	'What if?' Analysis	Risk
Average =	7	Medium	6	Medium
Run off Road =	10.1	Medium-High	6	Medium
Head on =	3	Low-Medium	3	Low-Medium
Intersection =	1	Low	1	Low

7. ANSWERS – Refer to Cost Estimates

Calculations	Exercise #1 – Crashes, 2km project length	Exercise #2 - Crashes plus KiwiRAP scores, 2km project length
Actual DSI/ 10 years per $100m spent =	2254	2254
Predicted DSI/ 10 years per $100m spent =	0	997
DSi saved/ 10 years/ $100m spent =	525	285
BCR =	11.03	7.96

8. LESSON

    - Actual DSI/ 10 years per $100m spent is Unchanged as Crash History/ Treatment effects unchanged.

    - Predicted DSI / 10 years per $100m spent: based on the Existing Situation using RPS scores

    - The DSi saved is the (Expect crashes + Predicted Dsi)/2 * Targetted F & S

Exercise #3 Localised Seal widening project over 1km with reported F & S crashes AND using KiwiRAP RPS scores

1. Modify the project created in Exercise #2 by changing the Project Length to 1km

2. **SAVE**

3. ANSWERS – Refer to Cost Estimates

Calculations	Exercise #1	Exercise #2	Exercise #3
	Crashes, 2km project length	Crashes plus KiwiRAP scores, 2km project length	Crashes plus KiwiRAP scores, 1km project length
Actual DSI/ 10 years per $100m spent =	2254	2254	2254
Predicted DSI/ 10 years per $100m spent =	0	997	498
DSi saved/ 10 years/ $100m spent =	525	285	231
BCR =	11.03	7.96	7.96

4. LESSON

- Actual DSI/ 10 years per $100m spent is Unchanged as Crash History/ Treatment effects unchanged.

- Predicted DSI/ 10 years per $100m spent HALVED due to the reduction in treatment length, e.g. a project is 2km long between the start and end point may have 1000m of seal widening on the outside of the curves, i.e. the Project Length

Exercise #4 Localised Seal widening project over 1km ~~with reported F & S crashes AND~~ using KiwiRAP RPS scores

1. Open the project created in Exercise #3

2. Crash History
   - Removing all the crashes
   - CALCULATE DSi per km per year
   - CALCULATE Pre-treatment Social Cost
   - **SAVE**

3. Treatment Effects
   - CALCULATE Crash Social Cost Saving
   - **SAVE**

4. ANSWERS – Refer to Cost Estimates

Calculations	Exercise #1	Exercise #2	Exercise #3	Exercise #4
	Crashes, 2km project length	Crashes plus KiwiRAP scores, 2km project length	Crashes plus KiwiRAP scores, 1km project length	~~Crashes plus~~ KiwiRAP scores, ~~2~~ 1km project length
Actual DSI/ 10 years per $100m spent =	2254	2254	2254	0
Predicted DSI/ 10 years per $100m spent =	0	997	498	498
DSi saved/ 10 years/ $100m spent =	525	285	231	108
BCR =	11.03	7.96	7.96	0

5. LESSON
   - Note the difference between the Dsi saved/10 years/ $100m spent between Exercise 3 and 4
   - BCR also changed due to the changed Social Cost which is based on Fatal and Serious Crashes

Page left intentionally blank

Exercise #5   Dashboard

1. PROJECTS

2. UNSUBMITTED PROJECT

3. Open the project created in Exercise #4

4. SUBMIT project

   - Do you want to apply for split funding, Yes/ No - Select No

   - Year – 2016/17

5. SUBMIT…the Administrator will not be aware that the project has been submitted for approval unless he looks at his Dashboard, i.e. in early December for the annual funding bid

6. DASHBOARD

7. SUBMITTED PROJECTS

8. Select the project you have just submitted

9. REQUEST IMMEDIATE APPROVAL

10. DASHBOARD – Check the status of the project you have just submitted, IAR?

11. An e-mail will be sent to the Administrators e-mail address who wile respond with a comment. This could take a couple of minutes!

12. DASHBOARD - Check the status of the project you have just submitted. It should have a red   💬 indicating Action is required

13. SELECT the project and read the comment

14. PROJECTS – Consider using the Search Button to find the project

15. SUBMITTED PROJECTS

16. UNSUBMIT

17. UNSUBMITTED PROJECTS – General TAB, Select the project, Change Expected Start Year to 2015/16.

18. **SAVE**

19. COMMENTS

    - REPLY

    - Updated Comment – Status..Action Required

    - Comments - Funding year has been changed from 2016/17 to 2015/16

20. SUBMIT the comment…Another e-mail will go the Administrator with the change

21. BACK Arrow at the top left of the Screen

22. SUBMIT the project at the bottom RHS of the screen

23. SUBMIT project

- Do you want to apply for split funding, Yes/ No - Select No

- Year – 2015/16

24. SUBMIT...the Administrator will not be aware that the project has been submitted for approval unless he looks at his Dashboard, i.e. in early December for the annual funding bid

25. REQUEST IMMEDIATE APPROVAL

26. Open the APPROVED project and REQUEST IMMEDIATE APPROVAL.

27. The Administrator will reply along the lines 'Thank you - This project QUALIFIES for funding bid' and APPROVE the project

28. DASHBOARD

29. PROJECTS

30. SUBMITTED PROJECTS or....

- Select PROJECT

- Read Comment

31. APPROVED PROJECTS

- View PROJECT SHEET

- Note that once the Administrator has approved the project the COMMENTS tab disappears.

Exercise #6 – APPROVED PROJECTS (Optional)

1. PROJECTS/ APPROVED PROJECTS

2. FILTER

3. TOOLS

4. SEARCH using project name

5. Click PROGRESS

6. Click on PROJECT STATUS: Note the changes

7. DESIGN PROGESS: Move bar with mouse – Note the changes to Total Progress

8. MONTHLY COST ESTIMATES

    • Change status of each month from F (Forecast) to A (Actual) – Top right of each month

    • Enter the monthly cost estimate and click the √

9. VIEW PROJECT SHEET

10. REPORTING TOOL

11. INCLUDE

    • Approved Cost/ Actual Cost/ Forecasted Cost

    • Projects starting between 2015/16 and 2015/16

    • Selected NMA's – Bay of Plenty West

12. GENERATE REPORT

13. Look at Graph

14. EXPORT as PDF or PNG Image or SVG

15. TABLE

16. Click + button under the 'Total' TAB

17. Note the: Nr projects; Nr commenced; Nr completed; Average Progress etc

18. Click + button under the 'Approved' TAB

19. Note for each project the: Progress; Approved Cost; Actual Cost to Date; Forecasted Cost etc.

20. Click onto Project – VIEW Project Sheet of the APPROVED project

21. BACK Arrow at the top left of the Screen

22. EXPORT AS XLSX

Page left intentionally blank