South Morang Rail Extension Project

Translocation Plan for Matted Flax-lily

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Revision 3
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South Morang
Rail Extension Project

This revision has been prepared by: Adam Rigg
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SMREP Document history and approval:

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3	Department of Environment and Primary Industries	23/05/2014	Alan Webster	
	Parks Victoria	28/05/2014	Garry French	
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	Department of the Environment			
	VicTrack	22/05/2014	Narelle Simmons	

The sole purpose of this report and the associated services performed by Kellogg Brown & Root Pty Ltd (KBR) is to prepare the translocation plan in accordance with the scope of services set out in the contract between KBR and Public Transport Victoria ('the Client').

The information in this report was obtained primarily from visual inspections, examination of public records and interviews with relevant individuals. The passage of time, changed conditions or the impacts of future events may require further assessment of the site and re-evaluation of the observations and conclusions.

In preparing this report, KBR has relied upon and presumed accurate certain information regarding the site provided by government officials and authorities, the Client and others identified herein. Except as otherwise stated in the report, KBR has not attempted to verify the accuracy or completeness of any such information. Data, observations and conclusions are based solely upon site conditions and information supplied to KBR in existence at the time of the investigation.

KBR has produced this translocation plan for the client and for its exclusive use. KBR accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.

Acknowledgements

This Translocation Plan has been developed by the SMREP Environment and Approvals Team in close consultation with Alan Webster (DEPI), Garry French (Parks Victoria) and Lyndal Gibbs (VicTrack).

1 Background

1.1 Project Background

The South Morang Rail Extension Project (SMREP) is located in the outer northern suburbs of Melbourne and included the construction of three and a half kilometres of dual track between Epping and a new South Morang railway station, in an existing but disused rail corridor. Epping Station was upgraded and a new premium station built at South Morang with an associated bus interchange and car park. Concurrent to this activity, the existing single track railway between Keon Park and Epping was duplicated.

The Department of Transport (DoT) commissioned Ecology Partners Pty Ltd to undertake a range of flora and fauna assessments for the project area, commencing in 2006. This included flora and fauna assessments, targeted survey for Matted Flax-lily (*Dianella amoena*) and a net gain analysis. On the basis of these assessments, 15 patches of Matted Flax-lily were identified in the construction area of the project (Ecology Partners 2010).

The project was delivered under an alliance delivery framework, which comprised the DoT, Metro Trains Melbourne (MTM), VicRoads, John Holland and AECOM.

Due diligence surveys of the project area completed by SMREP ecologists resulted in identification of additional patches of Matted Flax-lily in the construction area. Consequently, additional Matted Flax-lily plants were included in the salvage and translocation effort required by the project.

1.2 Purpose of Translocation Plan

The purpose of this translocation plan is to:

- Establish a clear process for the salvage, translocation and management of Matted Flax-lily that were impacted by the project activities
- Provide details of proposed receptor sites
- Establish an adaptive management framework including monitoring requirements and contingency measures
- Establish short to midterm management actions for recipient sites
- Confirm commitments and actions required by each responsible agent of the plan
- Satisfy legislative requirements under state and federal legislation.

Salvage and translocation activities were completed in October 2010. Construction activities associated with SMREP were completed in 2012. The plan retains historical requirements in regards to the initial salvage, direct and delayed translocation effort.

The plan also includes management, monitoring and reporting requirements at four receptor sites required to be implemented over the 10 year life of the plan.

1.3 Intent

The intent of this revision is to document changes to management, reporting and overall responsibility for implementation of this plan due to a restructure of the Victorian public service and given SMREP alliance completed its management responsibility of the plan on 31 May 2013. These revised responsibilities require approval by the Department of the Environment (DoE) in accordance with the conditions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval of the project.

The revision also incorporates outcomes of a Management Review that was completed at the end of Year 2 of the plan. In addition, an assessment of the state of the four receptor sites at the time of preparing this revision was completed in consultation with Parks Victoria and DEPI. Agreed additional management actions have been included in this revision. The revision (Revision 3) replaces Revision 2, approved in May 2011.

1.3.1 Changes to Management Responsibility

Public Transport Victoria (PTV) was created in 2012 and is charged with the responsibility for managing and maintaining Victoria's public transport system, including the delivery of projects. PTV has assumed all contractual and legislative obligations on behalf of DoT, including for the SMREP.

Consequently, PTV has reviewed the requirements of this plan and has assumed responsibility for actions that were previously the responsibility of DoT.

As PTV does not have dedicated environmental service providers within the organisation, VicTrack and Parks Victoria have agreed to undertake actions previously assigned to PTV within this translocation plan, utilising their in house resources and supported by nominated subcontractors, as appropriate. Revised responsibilities under the plan are detailed in Section 4.5 and Appendices B-E.

PTV retain overall responsible authority under the EPBC Act approval conditions (EPBC 2010/5313). Parties responsible for the management actions under the translocation plan must be adequately funded to support this activity by the person taking the action, which in this case is PTV.

The plan has been reviewed by relevant stakeholders including the Department of Environment and Primary Industries (DEPI). Parks Victoria and VicTrack have also endorsed this Translocation Plan and committed to undertake the management actions assigned to their agency within the funding allocation provided.

2 Species Information

2.1 Description and Conservation Status

2.1.1 Species description and habitat

The Matted Flax-lily is a tufted, mat-forming perennial lily. Plants are rhizomatous and can form loose clumps up to 5m wide. Rhizomes are yellow and slender with shoots arising every 10–30 cm. Leaves are grey-green, dull crimson at the base, narrow and tapering, to 45 cm long by 12 mm wide, and broadly V-shaped, with a prominent abaxial keel along the midrib and loose clasping leaf sheaths. Blades, sheaths and midribs usually have small, irregularly spaced teeth. Leaves are deciduous in summer if plants are water-stressed. Flowering occurs from October to April (Carter 2010).

The Matted Flax-lily generally occurs in grassland and grassy woodland habitats, on well drained to seasonally wet fertile sandy loams to heavy cracking clay soils derived from Silurian or Tertiary sediments, or from volcanic geology. The native grasses Kangaroo Grass (*Themeda triandra*), Weeping Grass (*Microlaena stipoides* var. *stipoides*), Common Wheat-grass (*Elymus scaber* var. *scaber,* Common Tussock-grass (*Poa labillardierei*) and Slender Wallaby-grass (*Austrodanthonia racemosa* var. *racemosa*) generally dominate the ground layer at most sites. Some sites lack a tree canopy. Most Matted Flax-lily sites also contain a high cover of introduced plant species (Carter 2010).

The Matted Flax-lily is known from Victoria, but is now presumed extinct in Tasmania. Victorian populations are known from the Victorian Volcanic Plains, South East Coastal Plain, South Eastern Highlands and Victorian Midlands regions. The majority of remnant sites are on roadsides, railway lines or in small flora and nature reserves within the urban landscape (DSE 2010a).

2.1.2 Conservation status

Matted Flax-lily has been listed as ‘endangered’ under the EPBC Act.

It has been listed as ‘threatened’ under the *Flora and Fauna Guarantee Act 1988* (DSE 2010b) and is considered ‘endangered’ in Victoria according to the Advisory List of Rare or Threatened Plants in Victoria (DSE 2005).

2.2 Distribution in the Project Area

Surveys of the SMREP project area completed as of 28 July 2010 identified 180 patches of Matted Flax-lily within the project area. In summary the distribution of Matted Flax-lily in the project area was:

- 74 patches in the rail reserve between Hendersons Creek and the proposed South Morang train station at the eastern end of the project area (note: 1 patch previously identified by Ecology Partners reports was no longer identifiable). All of the patches located in the rail reserve were salvaged and translocated in accordance with this plan.
- 3 patches in the E6 easement (note: 2 patches identified in Ecology Partners reports were not identified). These patches (current and unidentified records) were avoided during the construction period. A 10 m wide haul road was designated within the easement which avoided the known and previous occurrences of Matted Flax-lily.
- 1 patch on the verge of McDonald Road reserve, west of the project area. This patch was avoided and protected during the construction period.

- 111 patches recorded in the cutting of the disused rail reserve between the north and south block of the Old South Morang Train Station, as well as the south block of the Old South Morang Train Station. This combined area forms the South Morang Protection Zone. Protective fencing was erected around South Morang Protection Zone during construction to avoid impact on the patches within this area.

Maps illustrating the known distribution of Matted Flax-lily throughout the project area prior to construction commencing are included in Appendix A.

3 Salvage and Nursery Management

3.1 Approvals

Before undertaking salvage and translocation of the Matted Flax-lily, the project sought and obtained the following approvals from DoE and the DEPI:

- Formal assessment and approval by DoE under the EPBC Act.
- A permit under the *Flora and Fauna Guarantee Act 1988* from DEPI to take listed flora.

Implementation of this plan is required by the conditions of EPBC Act approval (EPBC 2010/5313).

3.2 Method for Salvage of Material

The removal of Matted Flax-lily from the site was undertaken by suitably qualified and experienced staff. Each plant was assessed for its condition and a determination made on the number of sections to best divide the plant. Each section was labelled prior to removal.

Plant materials removed from the site were divided into one of the following end use categories:

A. Direct translocation: Plants were removed from the site and translocated directly into a receptor site

B. Delayed Translocation: Plants removed from site were grown-on in a nursery. 100% of plant material within the nursery was planted in Year 2.

C. Insurance: Plants removed were kept in a nursery as a contingency for failure of translocated material. Remaining or surplus plants that were not required for the project can be used at the discretion of DEPI and Parks Victoria. Remaining plants after Year 5 become the property of Parks Victoria.

D. Off–cuts (individual tillers that fall or remain from removed sections) that resulted from salvaging plants and required special care in a nursery, were collected and potted individually and used for landscape plantings for the project. These plants added to the amount of Matted Flax-lily planted into the region, but are not included in the translocation targets or management actions.

Mats removed from the site were divided up into a maximum of 30 cm diameter, or ‘dinner plate’ sized sections for translocation. Each section was assigned a category sequentially as per the above categories, regardless of whether all categories are included. The following examples were used as a guide for allocating end use categories to material from patches of different sizes:

- If a plant was under ‘dinner plate’ size then the whole plant was directly translocated
- If a plant contained two ‘dinner plate’ sections, one section was allocated to direct translocation and one to delayed translocation
- If a plant contained three dinner plate sections, one section was allocated to each of direct translocation, delayed translocation and insurance
- If a plant contained four dinner plate sections, this resulted in two sections for direct translocation, one for delayed translocation and one for insurance
- If a plant contained five ‘dinner plate’ sections, it resulted in two sections for direct translocation, two for delayed translocation and one for insurance

- Small off-cuts and damaged material resulting from plant salvage and not included in the above ‘dinner plate’ sections were potted individually and ‘grown-on’ in a suitable commercial nursery until used in the project landscape plantings.

3.2.1 Determination of End Use Category

Notwithstanding the above examples, final determination of sections for an end use category occurred once plants had been removed. Those sections that were more disturbed and required some attention were ‘grown on’ in the nursery and assigned to delayed translocation. Intact plants that were more likely to survive an initial translocation were assigned for direct translocation.

Additional Matted Flax-lily patches, beyond that described in Section 2.2, were detected during the salvage effort. These plants were recorded and salvaged without delay in accordance with this plan.

3.3 Labelling

Each plant was uniquely labelled to ensure that plants and resulting plant materials can be tracked through the translocation management period. All plants planted into a receptor site are labelled using metal dog tags that can distinguish the plant over a 10 year period in the field. The dog tags were engraved on site following determination of the number of plants to be translocated and each sections end use category. Different colour dog tags are used for plants planted in different years. For example, grey tags for direct translocation, blue tags for Year 2 delayed translocation and yellow tags for Year 3 delayed translocation.

Corresponding material transferred to the nursery was suitably labelled using suitable means such as plastic markers; however, any plant that is to be planted into a receptor site is have an engraved metal dog tag when planted.

Plants were assigned numbers prior to removal from the impact site, beginning from one. Sections of each plant were labelled as they were removed corresponding with the categories:

- A: Direct translocation. These require engraved dog tags
- B: Delayed translocation. These are marked with plastic markers in the nursery, and then use dog tags on site.
- C: Insurance. Marked with plastic markers, with dog tags required if used in a receptor site.

Where more than one section of the same plant was assigned to a category, further identification using roman numerals was applied, for instance 1Ai and 1Aii.

3.4 Nursery Management

Salvaged Matted Flax-lily designated for delayed translocation and insurance were transported directly to Westerfolds Park nursery. Nursery management is undertaken by Parks Victoria. Off–cuts collected for landscape plantings were transported to a local commercial nursery with appropriate qualifications and experience in nursery requirements for Matted Flax-lily, where they were stored until used for landscaping.

Disease and pest controls are important to ensure no disease or pests are introduced to the receptor sites or nurseries. Plants suspected of being diseased should be treated according to nursery guidelines and/or destroyed appropriately. At no time should plants suspected of carrying a disease or having pests be introduced to a receptor site. Weeding of pots should also be undertaken periodically and correct hygiene procedures practiced at all times within the nursery.

Dianella species plants will often thrive in nursery conditions. Previous experience of Parks Victoria management of a range of *Dianella* species in a nursery has found that they prefer division and re–potting after an extended time in the nursery (G. French pers. comm.). The number of sections of these plants will grow exponentially in nursery conditions.

Each division is to be correctly labelled noting the patch number and end use category to assist if any replacement planting is required from that patch.

In the event that the Westerfolds nursery exceeds capacity to hold or manage salvaged Matted Flax-lily, either a second nursery is to be identified for any additional requirements or, if field conditions permit and agreed by DEPI and PV, surplus plants may be planted within a receptor site or an alternative site identified by Parks Victoria.

Preferences for a contingency nursery are:

- Parks Victoria nursery
- Council nursery
- Local indigenous nursery.

3.4.1 Salvaged Material for Translocation

Sections of 'dinner plate' sized material remained in polystyrene boxes for as long as possible and managed to ensure survival within the nursery environment. Management will depend on conditions and the length of stay in the nursery—watering and fertilisation will need to be undertaken correctly over the period. Generally, *Dianella* species within a nursery environment will do well.

Some delayed translocation and Insurance plants may become 'pot bound'. Should this occur and division is required, rootstock/tillers should be divided into segments that will fit into a six inch pot (or similar) and filled with a suitable medium (e.g. native potting mix). All divided sections are to be correctly labelled.

Before planting into a receptor site, plants need to be hardened off to ensure they are not stressed by a sudden change in conditions including frost, wind and reduced water (Ecology Partners 2010).

3.4.2 Landscape Material

Material taken to the commercial nursery had any plant material other than Matted Flax-lily removed, while excess soil was also removed to allow plants to fit into trays and/or pots. Rootstock/tillers were divided into segments that fit into a six inch pot (or similar) and filled with a suitable medium (e.g. native potting mix).

These plants remained in the nursery until used as landscape plantings for the project.

3.5 Projected Salvage Effort

Prior to salvage, 74 Matted Flax-lily plants were identified that required salvage and translocation from the project area. From a preliminary review of plants within the corridor it was estimated that on average of 5 sections would be divided from each plant, resulting in the following end uses for each plant:

- Two sections for direct translocation
- Two sections for delayed translocation
- One section for Insurance plants

Initial estimates predicted 148 sections to be directly translocated into the receptor sites, 148 to be taken to the nursery for delayed translocation in Year 2 and 3 and 74 sections to remain in the nursery for insurance plants unless required.

A total of 98 patches were eventually salvaged from the construction corridor. These 98 patches were removed in 422 sections.

4 Use of Salvaged Material

4.1 Translocation of Material

Salvaged material was planted into the specified receptor sites in predetermined locations. In designated suitable planting locations, plants were planted as clumps of up to six sections to enhance fertilisation and genetic diversity (Duncan 2003). These clumps were set up in a loose grid formation depending on site conditions and variables such as trees, rocks, wet depressions, existing Matted Flax-lily and suitable planting locations. To avoid unnatural looking grid formations, plantings occurred where a suitable location, as determined when preparing the site for translocation.

The formations aimed to facilitate germination of the species and recreate a natural distribution while assisting with the monitoring of the plants. No plants were planted unless the location had been prepared as per the management actions for each receptor site, included in Appendices B to D.

Each plant was labelled with an individual dog tag to denote which patch the plant had originated from. This is to assist in the monitoring and also if death of an individual occurs, then insurance plants from the same patch can replace the plant if required. If no insurance plants are present, such as single patches removed from the impact site, then insurance plants from another patch may be used.

Figures 4.1 and 4.2 summarise the translocation and management process in Years 1 and 2 for the salvaged Matted Flax-lily. Figures 4.3 and 4.4 describe the management actions and processes from Year 3 to Year 5 and Figure 4.5 describes management from Year 6 to 10. These requirements are then described in further detail in Sections 4.2 to 4.8.

Figure 4.1: Year 1 Translocation and management process of Matted Flax-lily

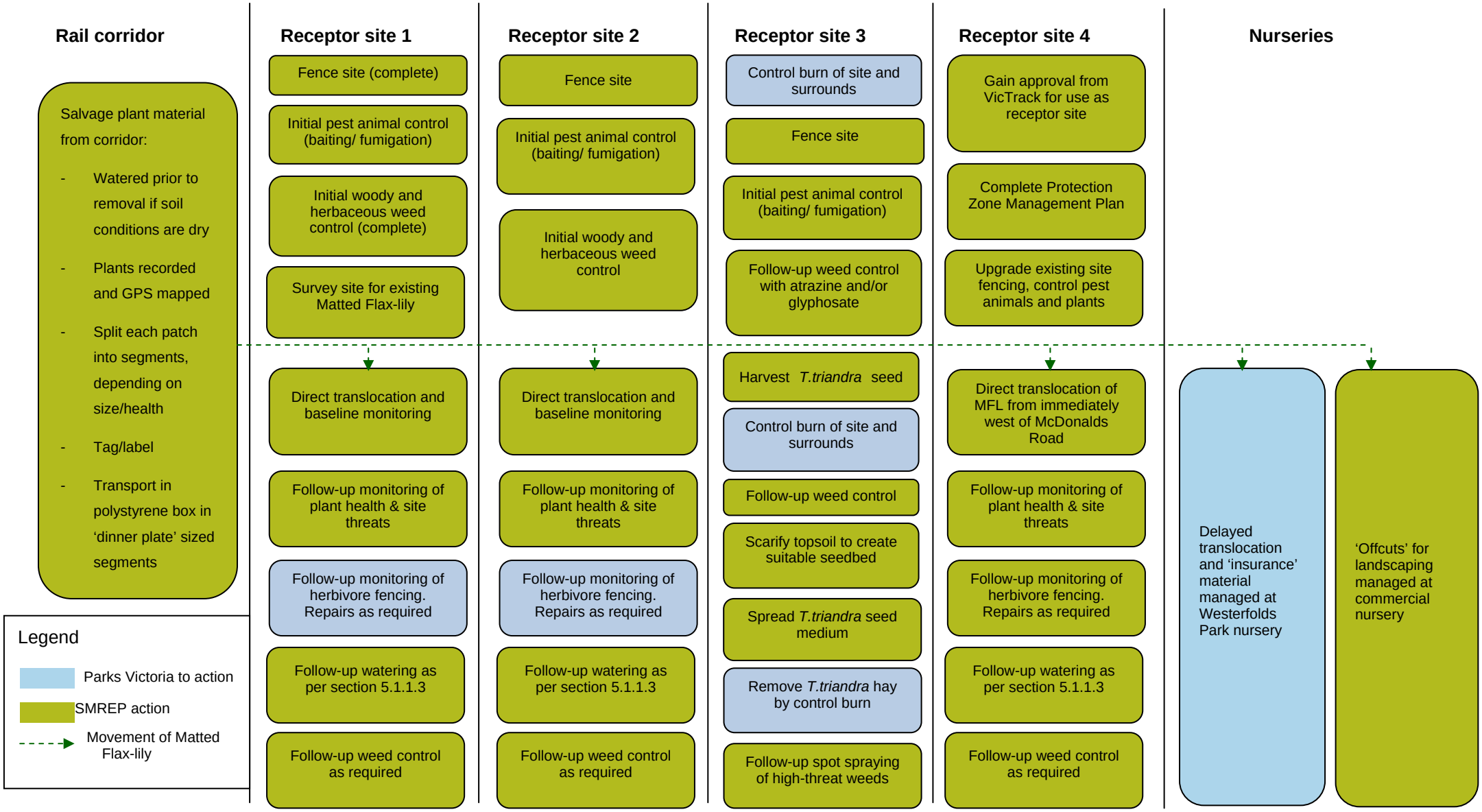


Figure 4.2: Year 2 Translocation and management process of Matted Flax-lily

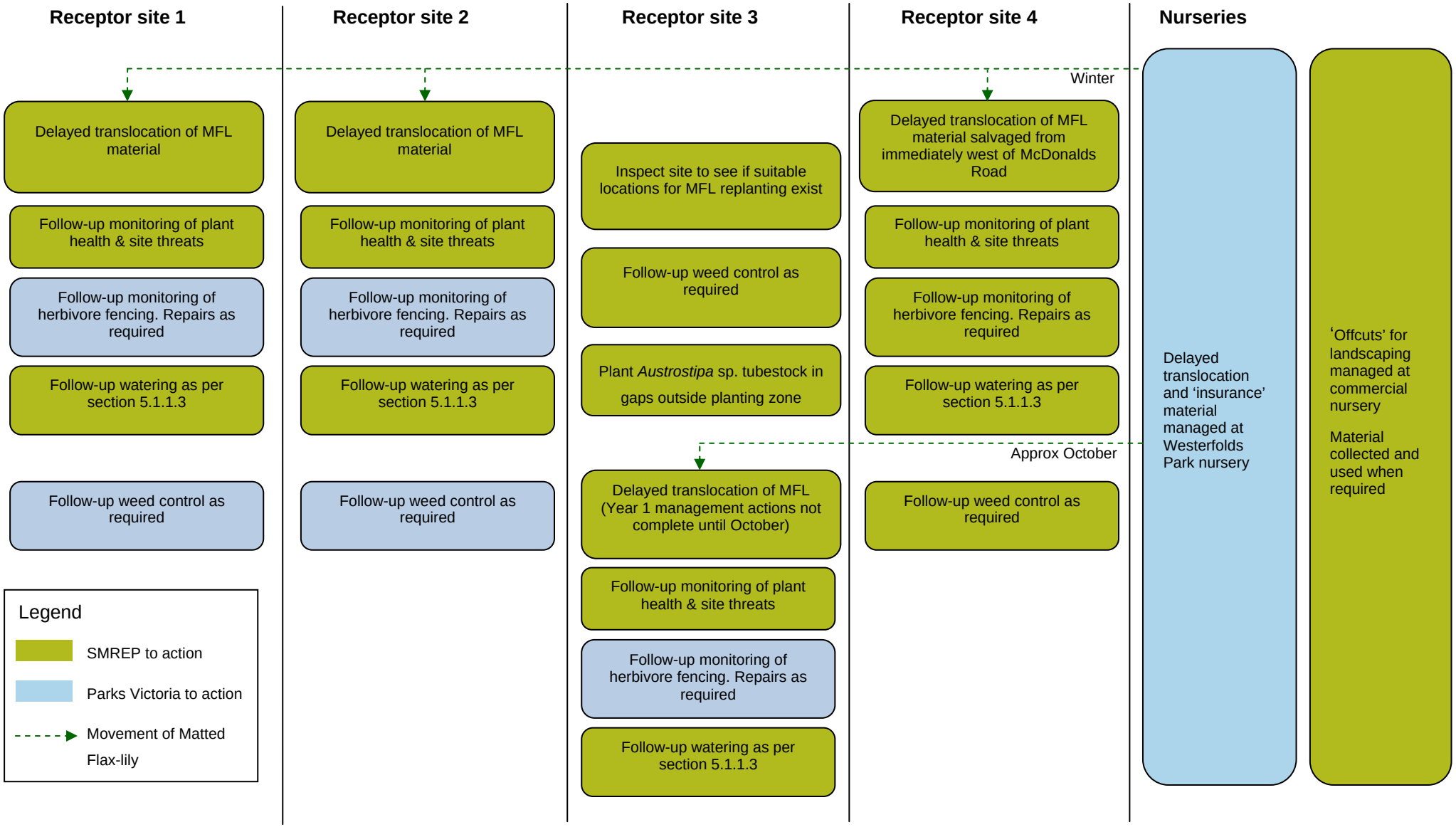


Figure 4.3: Year 3 Translocation, management and monitoring process of Matted Flax-lily

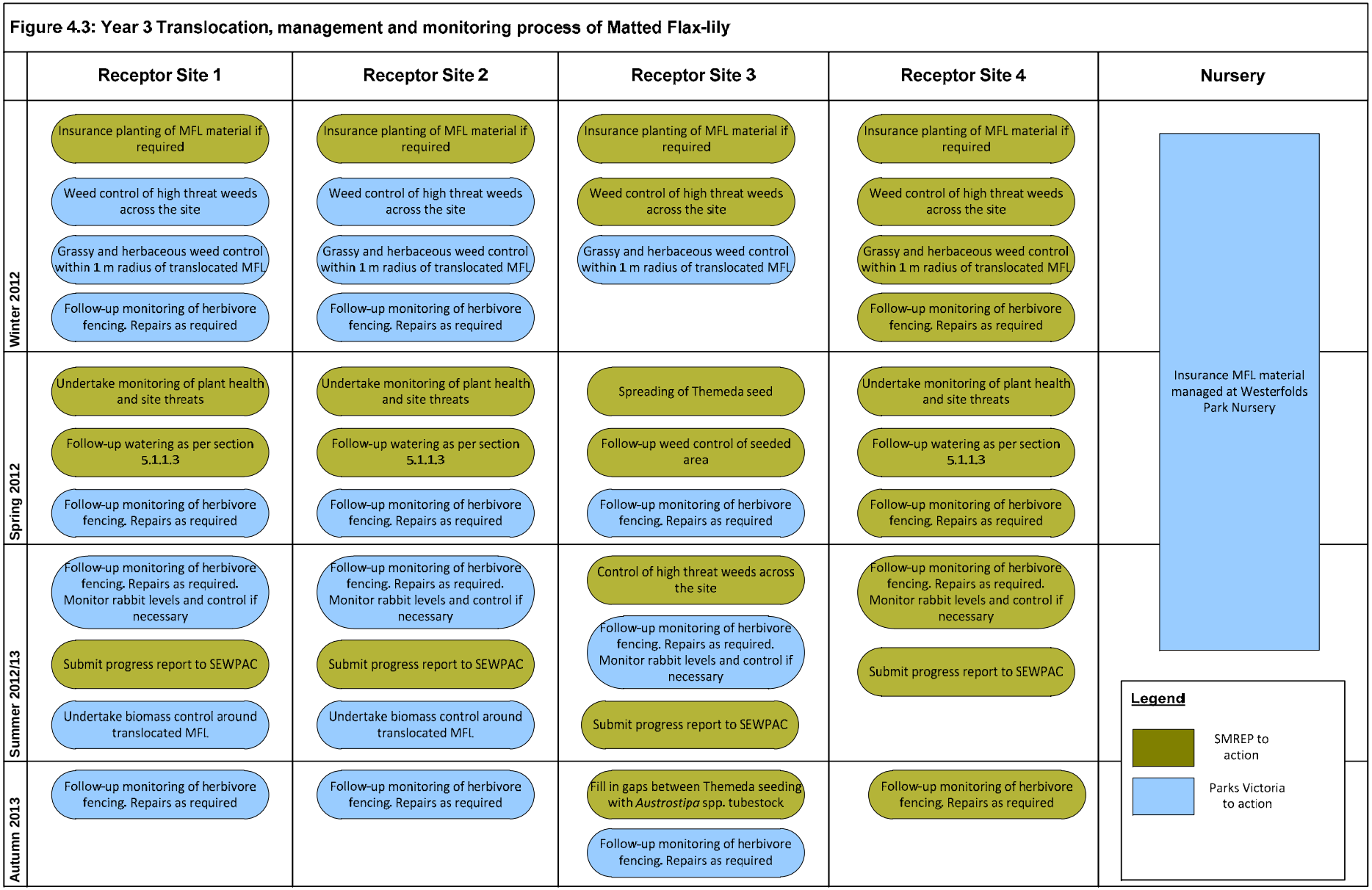


Figure 4.4: Years 4-5 Translocation, management and monitoring process of Matted Flax-lily

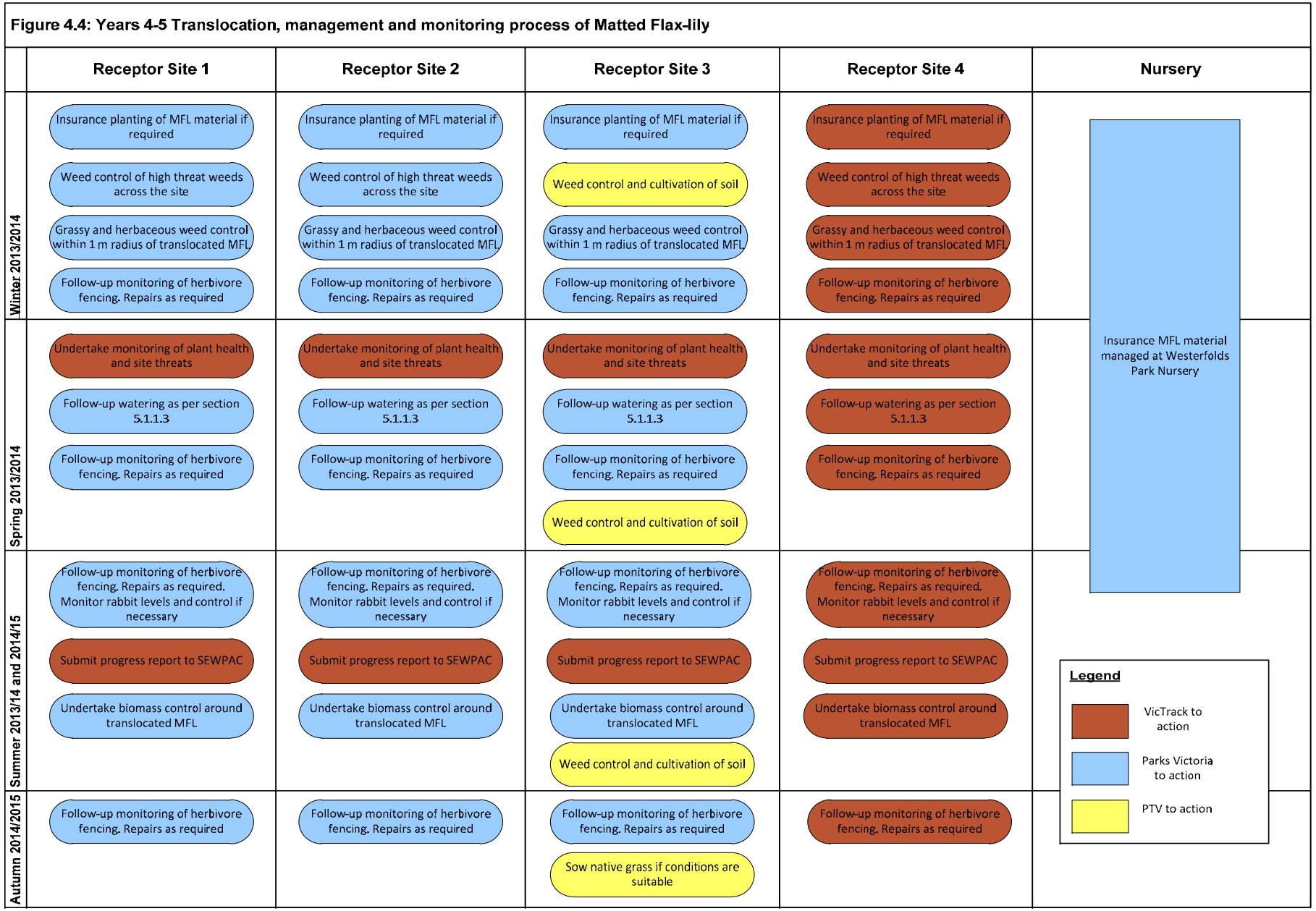
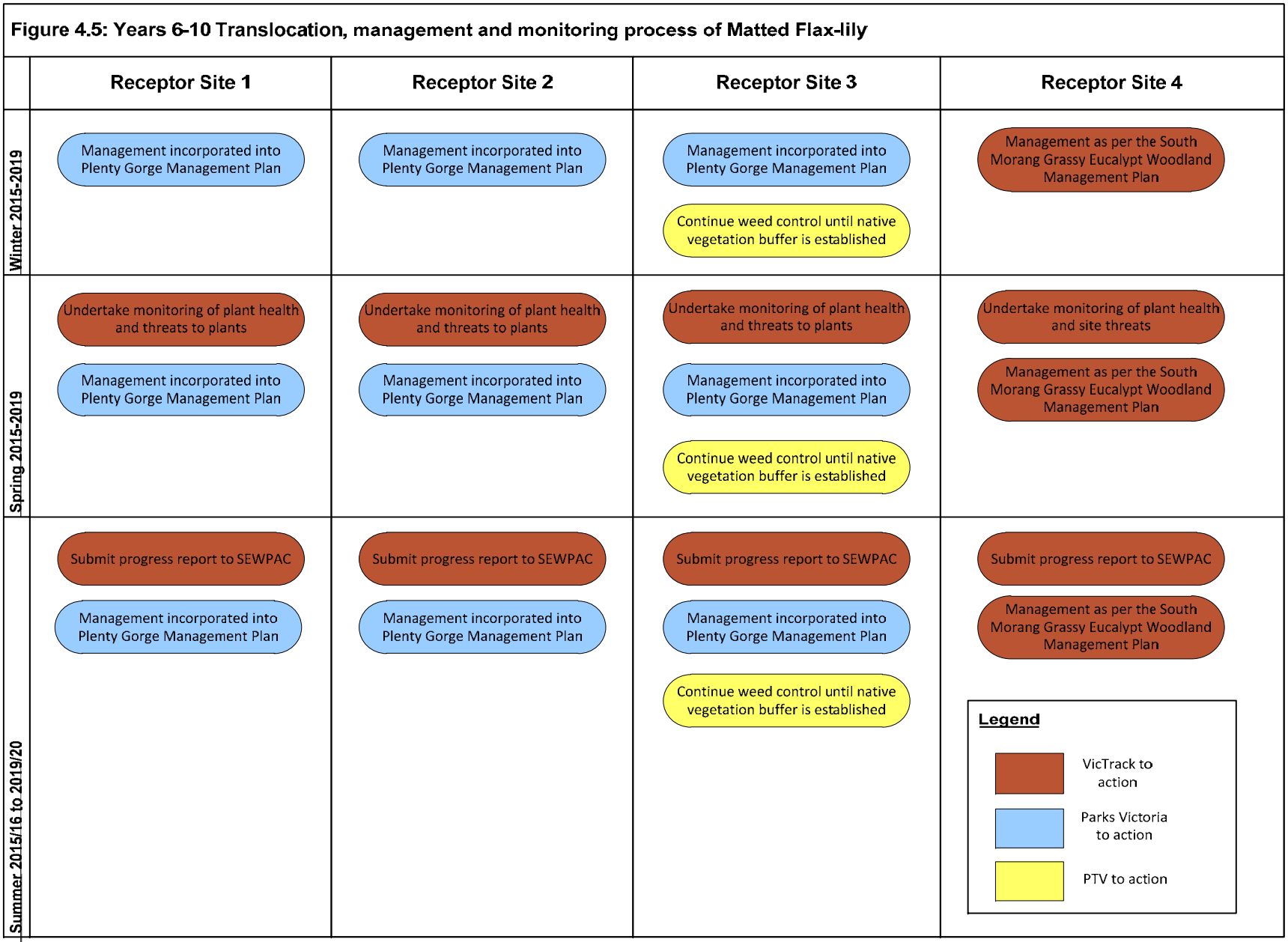


Figure 4.5: Years 6-10 Translocation, management and monitoring process of Matted Flax-lily



4.2 Direct Translocation

Direct translocation of plant material occurred on the same day as removal from the impact site. Direct translocation was conducted in October 2010; the following lists the actions taken through the translocation process.

4.2.1 Salvage Site Actions

The following actions occurred at the project site and were undertaken in preparation of the translocation and during salvage of the plants.

- Watered plants several days prior to salvage if soil conditions were dry
- Determined how many sections the plant can be divided into
- Removed any high threat weeds that were present immediately surrounding the plant several days prior to salvage
- Soil from around the salvaged material was kept in place as a sod, to help the plants establish within the receptor site, this also helped with moisture retention around the root zone
- Removed each section into a polystyrene nursery box. If possible, more than one section was removed into a box, particularly for nursery assigned material
- Excess top soil was gathered from the site and used to help back-fill plantings in the receptor site

4.2.2 Receptor Site Actions

The following actions occurred for direct translocation at each receptor site that receives Matted Flax-lily.

- Locations for the plantings of translocated plants were identified and prepared as per the management actions (see Appendices B to E) prior to translocation
- Holes at the receptor site were prepared before the salvage of plants at the impact site, to minimise the time out of the ground for the salvaged material
- Holes were dug deeper than the clod of soil from the impact site, soil was broken up at the base of the hole to allow quick penetration of the soil by the roots of the salvaged material
- Holes were filled with water before the translocation to soften and loosen the surrounding soil, also helping to remove air pockets in the soil
- The sod containing the Matted Flax-lily section was placed into the hole, ensuring the soil was tightly packed around the sod, removing air pockets. Soil excavated for the plants and top soil from the salvage site was used to pack the earth around the sod. The soil around the planted material was generally kept level with the surrounding ground and was not mounded nor a deep well.
- The plant was then watered by hand until the sod containing the material is wet enough for water to no longer penetrate the soil
- The placement of the salvaged material was recorded with a GPS and labelled according to the patch from which it was removed
- Baseline monitoring for translocated plants was completed. Data collected is outlined in section 5.1.1.2.
- Follow-up weed control occurred around the planted material up to one month following translocation (see management actions in Appendices B to E)

4.3 Delayed Translocation

4.3.1 Delayed Translocation: Year 2

All Matted Flax-lily sections designated for delayed translocation were planted in the receptor sites during Year 2, in July and August 2011. These sections were not divided in the nursery (G. French pers comm.) and remained in their initial polystyrene box, since salvage. These were then planted into the receptor site as a whole section, as per the direct translocation, in section 4.2.2

4.3.2 Delayed Translocation: Insurance Plants

Insurance plants are to be retained in the nursery for a period of 5 years from the initial translocation under Parks Victoria management. Sufficient insurance plants are to be retained in order to act as replacement plants for each of the receptor sites should initial plants fail.

Where insurance plants were not divided and remained in their original box, then the planting method is to occur as per the direct translocation in Section 4.2.2.

Increased time in the nursery required division to ensure survival in the nursery environment. Division occurred as outlined in section 3.4.1. The following planting method should occur for Matted Flax-lily that has been divided into six-inch pots (or similar):

- The receptor site is to be prepared as per the management actions for each receptor site (see Appendices B to E)
- Holes need to be pre-dug systematically and filled with water the day before material from the pots is removed
- Holes need to be dug approximately 100 mm wider and 50 mm deeper than the pot in which the material is grown in, this allows the soil to be loosened and increases the soils permeability and allows moisture to penetrate the soil to a deeper level
- Pots containing material should be well watered before planting into the hole
- Plants from the nursery should be ‘hardened’ before they are planted
- Plants are to be planted ‘bare rooted’ with the majority of potting mix removed from around the roots
- Soil excavated for the plant should be used to back-fill the plant and ensure the material is tightly packed into the hole with no mounds created that will direct water flow away from the plant
- Watering by hand should then be undertaken;
- Undertake monitoring, as outlined in section 5.1.1.2
- The plant should be labelled according to the nursery number and a waypoint taken with a GPS
- Follow-up weed control should occur around the planted material at least one month following planting (see management actions in Appendices B to E)

During the initial salvage effort, 104 sections of Matted Flax-lily were taken to the nursery and designated as insurance plants. Given the current success of plants at each receptor site and the growth exhibited in the nursery, this is considered a sufficient amount of material to provide for any future insurance requirements. Therefore, any surplus insurance plants, due to division during the 5 year period, can be used at the discretion of DEPI and Parks Victoria. Remaining plants after Year 5 become the property of Parks Victoria.

4.4 Receptor Sites

4.4.1 Selection of Receptor Sites

Four receptor sites located on land managed by Parks Victoria and VicTrack were assessed and selected in consultation with DEPI and Parks Victoria. These receptor sites were chosen to cover various types of translocation actions that are either increasing population size and genetic diversity or establishing a population where the species has likely to have formerly occurred (Vallee *et al.* 2004). Plenty Gorge Park has been determined as a suitable location to achieve both types of translocation actions and to ensure the long term security and protection of the translocated material.

A section of the South Morang Protection Zone will act as a fourth receptor site given the project intention to fence and manage the site. For the South Morang Protection Zone, SMREP developed the South Morang Grassy Eucalypt Woodland Management Plan (SMREP-REP-PW-ENV-008) for the site. The plan was prepared in consultation with VicTrack and DEPI to ensure appropriate long term management of the site.

4.4.2 Receptor Site 1: Plenty Gorge Park, Mill Park

The Plenty Gorge Park, Mill Park, has been selected as a receptor site as it offers suitable habitat and ongoing security, given it is public land managed by Parks Victoria. The vegetation community present is Plains Grassy Woodland (EVC 55). This translocation would be considered an enhancement translocation or ameliorative enhancement (Vallee *et al.* 2004) as the site currently contains a population of Matted Flax-lily. The nationally endangered Clover Glycine (*Glycine latrobeana*) is also known to occur within the site (Ecology Partners 2010).

The receptor site is approximately 3.5 ha in area (refer to Appendix B). SMREP completed fencing of the site in July 2010, which has reduced the grazing pressure. Detailed management actions for Receptor Site 1 are included in Appendix B.

4.4.2.1 Planting Configuration

Following removal of grazing pressure a targeted survey was conducted to record the distribution of Matted Flax-lily at the site. A total of 66 Matted Flax-lily were recorded during an August 2010 targeted survey. Final planting configuration was agreed between SMREP, DEPI and Parks Victoria and is included in Appendix B, with the results of the targeted survey.

Originally, this site was agreed by DEPI to receive 15 Matted Flax-lily salvaged from the project area (A. Webster pers. comm.). This site received 15 whole plants divided and planted in multiple sections.

4.4.2.2 Current Condition

Receptor Site 1 is considered to be in a very good condition. This is due to the low abundance and diversity of weeds, compared to a high abundance and diversity of native understorey. No additional management is required outside of current management by Parks Victoria.

4.4.3 Receptor Site 2: Plenty Gorge Park, Doreen

Receptor Site 2 is located along the east side of the Plenty River on a flat section on top of an escarpment (refer to Appendix C). Prior to translocation the vegetation was present as a Kangaroo Grass (*Themeda triandra*) dominated grassland and was likely to have previously been suitable habitat for the species and possibly supported a population, as records of Matted Flax-lily exist for nearby within the park (G. French pers. comm.). The translocation into this site is

considered to be a re-introduction or compensatory introduction (Vallee *et al.* 2004) as the species is likely to have once been present at the site.

The site is a triangular piece of land bordered by the Plenty River and a proposed walking path. The western border of the site would follow along the top of an escarpment above the Plenty River and would be bordered to the east by the proposed path and an existing access track.

Parks Victoria has undertaken prior management at the site, including a spring burn in 2009 with follow-up grassy weed control and woody weed control. The grassland vegetation was burned the year prior to translocation and was represented as recovering native grass tussocks, with large areas of bare ground.

Detailed management actions for Receptor Site 2 are included in Appendix C of this plan.

4.4.3.1 Planting Configuration

The condition of the site prior to translocation was considered suitable for direct translocation of Matted Flax-lily, with the burn having created numerous suitable spaces for planting. This site received the greatest numbers of plant sections due to the suitable planting locations available at the time.

The planting formation was set up as an approximate 20 m by 20 m grid, with five plants at every point. At each axis point of the grid a single plant was planted, with four plants arranged around the point along the grid lines at varying distances from the plant. Actual placement of plants was site specific, based on variables such as rocks, depression likely to become inundated and suitable planting locations. Actual planting locations avoided 'unnatural' looking grids.

The formation aims to facilitate germination of the species and recreate a natural distribution while assisting with the monitoring of the plants.

4.4.3.2 Current Condition

The management of Receptor Site 2 is not considered suitable to manage threats to translocated Matted Flax-lily. Following consecutive mild and wet summers through Year 1 and 2 of this plan, an unexpected high amount of exotic grasses germinated within the site, with high weed abundance impacted translocated Matted Flax-lily health.

Additional weed control and biomass control measures are proposed for Receptor Site and are outlined in Section 5.

4.4.4 Receptor Site 3: Plenty Gorge Park, Mernda

Receptor Site 3 is located on the west side of the Plenty River, directly south of Site 2 (refer to Appendix D). The site is accessed through a residential development from Plenty Road. The northern extent of the site is parallel to a drainage line and a dam. The site extends south along the Plenty River, rising up an escarpment to a flat area above the river. The south end of the site runs from the escarpment heading west through a flat grassy area, around a stony rise, then heads north through a stand of River Red Gums (*Eucalyptus camaldulensis*).

Prior to translocation the vegetation at the site was present as degraded grassland and degraded grassy woodland, which contained a predominantly exotic dominated understorey, with patches of Kangaroo grass grassland throughout. Surrounding this area the vegetation was dominated by Chilean Needle-grass (*Nassella neesiana*). Based on remnant vegetation this area is likely to have been previously suitable habitat for the species and is likely to have been present, as nearby records are present within the park (G. French pers. comm).

Although the site condition was considered degraded, the site was chosen as a receptor site due to its values of containing some native grassland and grassy woodland, ease of access to the site and location within a secure land tenure managed by Parks Victoria. The use of this site was considered suitable provided that sufficient site preparation was undertaken prior to translocation (Vallee *et al.* 2004). The translocation into this site is considered to be a re-

introduction or compensatory introduction (Vallee *et al.* 2004) as the species is likely to have once been present at the site.

While a small area around a scoria cone in the centre of the site may be suitable to receive Matted Flax-lily plants during direct translocation, most of the site and surrounding area required significant and sustained management actions to control Chilean needle-grass and other weed species. This was conducted in conjunction with a Parks Victoria program to control Chilean needle-grass surrounding the site.

Matted Flax-lily sections were translocated into Receptor Site 3 following preparatory management actions during Year 1 and completed to the satisfaction of PV and DEPI to receive Matted Flax-lily. The site received delayed translocation plants during Year 2; during July and August 2011.

4.4.4.1 Management Actions

Native grasses were attempted to be re-established to compete with weeds and help prevent the incursion of Chilean needle-grass into the translocation area of Matted Flax-lily. To achieve this various management actions were proposed to relieve the threat to Matted Flax-lily.

Management actions were based on best practice management for control of Chilean needle-grass (Beames, Hocking and Wlodarczyk 2005; DPI 2007) and previous research undertaken to and success in reclaiming native grassland from Chilean needle-grass and Serrated tussock (*Nassella trichotoma*) (Mason 2005; Phillips 2000; Williams, nee Beames 2005).

The method implemented prior to planting Matted Flax-lily sections involved the following steps:

- Removing the biomass of Chilean needle-grass and other species, through a controlled burn
- Post-burn weed spraying
- Collection of Themeda seed medium, either hay, thatch or seed chaff (florets only) in summer
- Follow-up controlled burn to reduce weed biomass just prior to seed spread
- Post-burn weed spraying
- Scarifying of topsoil to create suitable seedbed, which is critical for Themeda seed germination
- Spreading of Themeda seed medium in May or June, immediately after soil scarification
- Removal of Themeda thatch using a controlled burn
- Planting out gaps with Spear-grasses (*Austrostipa* spp.) in high densities
- Follow-up targeted weed control in following season.

Fencing of the receptor site was delayed until the initial burn for the site and the surrounding area had been completed. Following completion of the burn a suitable rabbit and kangaroo proof fence was erected around the site.

4.4.4.2 Planting Configuration

Suitable planting locations for translocated material were restricted to the extents of remnant native grassland.

Configurations were clumps of generally five plants depending on site suitability and planting densities. Actual configurations were finalised following an assessment of the site conditions, resulting from the management actions for Year 1, and agreed between SMREP, DEPI and Parks Victoria. The locations for plants targeted inter–tussock spaces around native grasses, where the plants can receive protection from established vegetation. Final planting configuration was mapped and included in Appendix D.

Detailed management actions are included in Appendix D of this plan.

4.4.4.3 Management actions to date

At the completion of Year 3 of the management actions, to May 2013, the following sequence of events and management actions occurred:

- Delay of the planned control burn during Year 1 due to increase in rain days over summer (grass did not cure) and no suitable burning days
- Enacted a contingency plan (incorporated into Revision 2 of this document and agreed to by stakeholders), which included delaying the burn until the following season and a spray of exotic grasses to reduce seed and kill existing plants
- Delay of spreading Themeda seed, rabbit control and site fencing until planned burn is complete
- Plant delayed translocation plants into two areas within the site that are dominated by native grasses. The two planting areas were secured through temporary fencing
- Planned burn undertaken in March 2012
- Weeds within the site sprayed in April 2012
- Site perimeter fence erected in May 2012
- Rabbit control program began in May 2012
- Weed sprayed within the site in June and August 2012
- Spreading Themeda and Red-leg Grass (*Bothriochloa macra*) seed in September 2012
- Follow-up weed control in November 2012 and February 2013
- Preparatory weed control in April 2013 for revegetation
- Revegetation using Spear-grass and Common Tussock-grass tubestock in May 2013.

4.4.4.4 Current Condition

The proposed weed control measures and actions to re-establish native grasses around translocated Matted Flax-lily has been ineffective. The current state of the site is still dominated by exotic grasses, mainly Chilean needle-grass. Additional management actions are proposed for Receptor Site 3, outlined in Section 5.

4.4.5 Receptor Site 4: South Morang Protection Site, South Morang

Receptor Site 4 is located to the east of McDonalds Road in South Morang, opposite the newly constructed South Morang station site and south of the new station car park. The site is a VicTrack owned parcel that has been identified

as a protection zone for retention of high environmental values, including a large population of Matted Flax-lily and an area of the nationally endangered ecological community, Grassy Eucalypt Woodland of the Victorian Volcanic Plain. This translocation would be considered an enhancement translocation or ameliorative enhancement (Vallee *et al.* 2004).

Until recently, the site contained a population of Matted Flax-lily that was continuous with a number of plants located within the project area. This population was divided through the re-alignment of McDonalds Road in 2009.

Receptor Site 4 was identified as a suitable location for the Matted Flax-lily that were previously continuous with the population in the project area that is to be affected by the construction of the South Morang station. Eleven individuals were present within a small remnant surrounding pylons for the high voltage power lines. These plants were salvaged and planted into the receptor site during direct and delayed translocation.

4.4.5.1 Planting Configuration

A high density of Matted Flax-lily is present throughout the wider protection zone. The planting location for the 11 plants is along the southern boundary of the protection zone, which will be Receptor Site 4. Translocated Matted Flax-lily plants were used in assisting the control of weeds through the site to protect its high environmental values. Final planting locations are indicated in Appendix E.

Management actions have been developed for this site and included in Appendix E of this translocation plan. These actions have been further developed in consultation with DEPI and VicTrack to form the South Morang Grassy Eucalypt Woodland Management Plan (SMREP-REP-PW-ENV-008). Management actions include monitoring and management of translocated material, plus management of the existing population of Matted Flax-lily and the conservation of the Grassy Eucalypt Woodland of the Victorian Volcanic Plain.

A requirement for the approval for use of the site as a receptor site was the implementation of a research program using the existing population as a control population. Actions required for the research program are included in the South Morang Grassy Eucalypt Woodland Management Plan, with development of this program listed as a management action in Appendix E of this plan. The program was conducted through Year 1 and Year 2.

No Matted Flax-lily sections were planted into the site until appropriate management actions were completed.

4.4.5.2 Current Condition

The current management of Receptor Site 4 is considered sufficient to manage threats to the translocated Matted Flax-lily. The revegetation action for the receptor site, including spreading of mulch and planting of other native grasses and herbs, has assisted in suppressing weed germination. Weed species, mainly exotic grasses, do germinate within the receptor site, but are generally easy to control amongst the mulch. No additional management actions are required for Receptor Site 4.

4.5 Receptor Site Management Responsibilities

SMREP had primary responsibility for the implementation of this translocation plan for three years (up to 31 May 2013). At the completion of the SMREP responsibility period, PTV resumed responsibility for site management actions for the remainder of the translocation plan.

Since May 2013, PTV has engaged suitably experienced ecologists and bushland managers to continue implementation of the plan. However, as PTV has limited capacity to continue implementing the actions, VicTrack and Parks Victoria have agreed to undertake responsibilities within this plan, on behalf of PTV.

PTV will retain overall responsibility to ensure actions are completed under this plan and have ongoing responsibility for compliance with EPBC Act approval conditions for the project (EPBC 2010/5313).

The changes in responsibility for each management action under the plan are reflected in Appendix B - E, and are summarised below.

4.5.1 Sites 1 – 3

Parks Victoria is the landholder for each of these receptors sites and will carry out some works required by the Translocation Plan. The breakdown of works to be carried out by Parks Victoria will vary between receptor sites:

- Receptor sites 1 and 2: Parks Victoria will carry out pest plant control, pest animal control and repairs of herbivore exclusion fencing from Year 2 onwards.
- Receptor site 3: Parks Victoria will carry out pest animal control and repairs of herbivore exclusion fencing from Year 3 onwards. Parks Victoria will manage pest plants following the successful establishment of a native grasses throughout the receptor site to the satisfaction of Parks Victoria and DEPI.

PTV has negotiated a financial arrangement with Parks Victoria that is commensurate with the ongoing management required by Parks Victoria. PTV will fund and manage the re-establishment of native grasses at Receptor Site 3, which includes control of pest plants and biomass.

After Year 5 of this Translocation Plan, Parks Victoria will assume all responsibility for the maintenance of receptor sites 1 and 2. Parks Victoria will assume all management responsibility at Site 3, following the successful establishment of native grasses. This will occur as part of their ongoing management of Plenty Gorge Park and will be included in the management plan for the park.

A contractor to be appointed by VicTrack will carry out monitoring of the health of translocated Matted Flax-lily at these receptor sites until 10 years after initial salvage from the rail corridor (refer to Section 5.1.1).

4.5.2 Site 4

VicTrack will assume responsibility to complete management and reporting actions for this site.

As per sites 1–3, a contractor to be appointed by VicTrack will continue to carry out monitoring of the health of translocated Matted Flax-lily at this receptor site until 10 years after initial salvage from the rail corridor (refer to Section 5.1.1).

VicTrack will assume the responsibilities under this plan upon the execution of an agreed Memorandum of Understanding (MoU) with PTV.

5 Adaptive Management Framework

5.1 Monitoring Regime

5.1.1 Monitoring of Receptor Sites and Translocated Material

Monitoring the translocation process is important for determining determine the success of the Matted Flax-lily translocation. Plants located within the receptor sites and plants present in the nursery are to be monitored to track the progress of individual plants and to assist in replacement plantings.

Monitoring of Matted Flax-lily and the management program is to be undertaken by a qualified botanist. A 'Plant Health and Site Threat Monitoring Datasheet' (see Appendix F), or an equivalent system for documenting monitoring findings (e.g. entry into a PDA), should be used during each monitoring visit (see Table 5.1 for frequency of monitoring visits). A short and concise report is to be compiled from the monitoring of Matted Flax-lily with the receptor sites, site threats, management actions program and the nursery material and submitted to relevant agencies, PTV, SEWPAC, DEPI, Parks Victoria and VicTrack. Reports are to be submitted at the following times:

- Bi-annually for the first year following initial translocation
- Annually from Year 2 to Year 5.

Reports on the translocation plan is to occur annually from the anniversary of Matted Flax-lily salvage (October 2010) and include the projects' reporting requirements on the EPBC Act conditions, if still required by the Commonwealth Environment Minister. Monitoring reports from Years 1 to 5 are to be provided within three months of the completion of monitoring to the relevant stakeholders.

From Year 6 to Year 10 monitoring for all planted material is to occur annually from the anniversary of Matted Flax-lily salvage (October 2010). Reporting to relevant agencies may be in the form of a brief letter summarising the overall progress of the translocated plants, including the percentage surviving at time of monitoring. Monitoring reports for Years 6 to 10 are to be provided within three months of the completion of monitoring to the relevant stakeholders.

5.1.1.1 Receptor Site Threats

Threats present at receptor sites will generally involve predation by pest animals and native herbivores, biomass and competition from pest plants. Management and monitoring requirements of threats for each site are detailed in the management actions for each receptor site. See Appendices B to E for monitoring of site specific threats.

5.1.1.2 Health of Translocated Plants

The health of direct and delayed translocation plants is to be monitored for the first five years to determine the response of each plant to translocation. A monitoring datasheet, included in Appendix F, or similar, for each plant translocated into a receptor site is to be completed and the results submitted within an annual report to relevant agencies including SEWPAC, DEPI, Parks Victoria and PTV.

Monitoring Criteria (Year 1 to Year 5)

During the planting of direct and delayed translocation plants, each patch was assessed to establish a baseline data set from which to monitor the health of the plants. Attributes assessed include:

- Number of tillers
- Height of tallest tiller from earth to apex of tillers
- Size of the patch, which will be measured as the greatest distance between two tillers within the patch

- Presence of flowering material.

Monitoring of plant health against baseline data should identify the failure of plants to establish and any requirement for insurance plants to be planted as a replacement. This monitoring should also determine if plants are water stressed or conditions around the plants are dry that would require additional watering.

Long Term Monitoring (Year 6 to Year 10)

Between Year 6 and Year 10 monitoring visits will record only the presence or absence of each plant, a visual assessment of plant health, and the existence of any threatening processes such as high-threat weeds or evidence of grazing by herbivores.

Table 5.1: Monitoring and reporting schedule

Year	Plant health & site threats	Herbivore exclusion fence	Watering	Formal Reporting
1	**Frequency:** at 1, 3, 6 and twelve months following direct translocation **Responsible person:** Bushland Manager, engaged by SMREP **Template/output:** Complete *Appendix F - Plant Health and Site Threat Monitoring Datasheet* after each visit	**Frequency:** at 2 monthly intervals **Responsible person:** Parks Victoria (sites 1-3) SMREP Site Environment Officer (site 4)	**Frequency:** Check rain gauge daily and attend receptor sites to check plants for water stress if rainfall target is not met. **Responsible person:** SMREP Site Environment Officer **Template/output:** Complete *Appendix G – Rain gauge Monitoring Log*. Arrange watering if receptor site visit reveals need for watering	Provide progress report covering plant health and threatening processes to SEWPAC, DEPI, PV and VicTrack, bi-annually For receptor site 3, the report should detail the progress of receptor site management actions (i.e. control burns, thatching) All sites should be covered in a single document
2-3	**Frequency:** Newly planted MFL monitored at 1, 3, 6 and twelve months after delayed translocation **Responsible person:** Contractor engaged by SMREP **Template/output:** Complete *Appendix F - Plant Health and Site Threat Monitoring Datasheet* after each visit	**Frequency:** at 2 monthly intervals **Responsible person:** Parks Victoria (sites 1-3) SMREP Site Environment Officer (site 4)	Not required if new material planted during winter. Otherwise as per Year 1	Provide progress report covering plant health and threatening processes to SEWPAC, DEPI and PV within 3 months of the 24 month anniversary of the salvage of *D. amoena* material. All sites should be covered in a single document
4-5	**Frequency:** Annual, on the anniversary for MFL salvage **Responsible person:** Contractor engaged by VicTrack **Template/output:** Complete *Appendix F - Plant Health and*	**Frequency:** at 2 monthly intervals (sites 1-3) Monthly (site 4) **Responsible person:** Parks Victoria (sites 1-3) Bushland Contractor engaged	Not required if new material planted during winter. Otherwise as per Year 1	Provide annual progress report, within 3 months of every 12 month anniversary of the salvage of *D. amoena* material, covering plant health and threatening processes to SEWPAC, PTV,

Year	Plant health & site threats	Herbivore exclusion fence	Watering	Formal Reporting
	Site Threat Monitoring Datasheet after each visit. Measurement of tillers not required	by VicTrack (site 4)		DEPI and PV All sites should be covered in a single document
6-10	**Frequency:** Annual, on the anniversary for MFL salvage **Responsible person:** Contractor engaged by VicTrack **Template/output:** Complete *Appendix F - Plant Health and Site Threat Monitoring Datasheet* after each visit. Measurement of tillers not required	**Frequency:** as per Plenty Gorge Management Plan (sites 1-3) and South Morang Grassy Eucalypt Woodland Management Plan (site 4)	Not required	Provide annual progress letter, within 3 months of every 12 month anniversary of the salvage of *D. amoena* material, covering plant health and threatening processes to SEWPAC, PTV, DEPI and PV All sites should be covered in a single document

5.1.1.3 Watering requirements

Translocation potentially does not provide suitable conditions for the Matted Flax-lily to establish independently and may require additional watering to supplement required rainfall for success of translocation. Additional watering requirements listed below were applied to establishing Matted Flax-lily for the initial 12 months following direct translocation, to October 2011. No additional watering was required after this 12 month establishment period.

Additional watering for the receptor sites was required where the surrounding region received below average rainfall. To determine whether additional watering was required a rain gauge was assembled at the construction site office (South Morang). Actual rainfall was measured against a monthly target, based on average rainfall data in Melbourne for that month. Where rainfall fell below the monthly target, watering was completed. Refer to Appendix G for a 'Rain Gauge Monitoring Log'.

If rainfall did not reach the following targets, then additional watering plan was triggered. Targets set for the following months were:

- Targets set during April to November are to be based on the region achieving average monthly rainfall
- Targets set during December to March are to be based on the region achieving 15% greater than average monthly rainfall.

The following steps are to be implemented where rainfall targets were not met:

- Undertake monitoring of plant material and soil conditions within the receptor sites to determine if watering of any of the plant material is required
- Watered plants that required watering. Determined during the additional water monitoring.

5.1.2 Management Action Review

At the completion of Year 2 management year, the translocation effort achieved a success rate of 99.7%, where only a single plant was not present at the time of the 18 month monitoring. As the target of a successful translocation effort listed here is 85% success, the translocation and management actions are considered successful.

As required by this plan, a management review meeting was convened with key stakeholders to review the plan and propose any recommendations to revise management actions and monitoring beyond Year 2. Based on the current success of the translocation plan, minimal alterations to the original management actions were proposed in the Year 2 management review meeting. Action items agreed were:

- Monitoring is to occur annually for all planted material on the anniversary of salvage (October 2010).
- Additional watering is not required between Year 3 and 5 if insurance plants (planted only in the result of failure) are planted in winter. No additional watering is required beyond Year 5.

These amendments have been incorporated into the current version of the translocation plan and will be supplied to all relevant stakeholders, including DoTE, DEPI, PTV, Parks Victoria and VicTrack.

5.2 Contingency Measures and Actions

5.2.1 Contingency in the Event of Planting Failure

Contingency measures must be implemented in the event of failure (i.e. < 10% of the translocated plants surviving after a five year period).

The preferred contingency measure will be to replant remaining (insurance) plants retained at the nursery, or to provide these plants to Parks Victoria (or another approved organisation) for replanting at another location.

In the event of failure, DoTE must be notified within five days and any measures to be implemented and submitted to the Minister for approval.

5.2.2 Contingency in the Event of Discovery of Additional Patches in the Project Area

5.2.2.1 Discovery of Additional Patches During Initial Salvage Effort

A total of 98 distinct Matted Flax-lily patches were salvaged from the project area. The 98 distinct patches were divided into 422 sections, 183 direct translocation sections, 135 delayed translocation sections and 104 insurance sections. An additional 24 mats were identified between preparing this plan and conducting salvage and these plants were salvaged in accordance with the plan. The four identified sites were considered to be of sufficient size to accommodate all sections. Site 3, proposed as a contingency site if sections exceeded space limits during direct translocation, was not required and all plants were accommodated within Sites 1, 2 and 4.

5.2.2.2 Discovery of Additional Patches During Construction

No additional patches of Matted Flax-lily were found during construction of the South Morang Rail Extension. Therefore the proposed contingency plan was not enacted.

5.2.3 Contingency in the Event that a Controlled Burn Cannot be Implemented

The planned controlled burn to remove existing exotic grasses during Year 1 of the Translocation Plan management activities was not able to be conducted due to few suitable burning days and increased rainfall over the summer period

which did not allow the grass to cure sufficiently to carry a burn. The following contingency measures were implemented at receptor site 3 in response to not conducting a burn:

Autumn/Winter 2011 (Year 1 under Translocation Plan)

- Project ecologist inspected site and extent of native grassland and identified suitable Matted Flax-lilyplanting locations within these extents
- Erect temporary protective fencing around proposed planting areas that exclude both rabbits and kangaroos
- Complete targeted weed control within the fenced areas (performance target: Eliminate grassy/herbaceous weeds within one metre radius of planting locations)
- Carry out delayed translocation of Matted Flax-lily into receptor site 3.
- Conduct monitoring as per the Translocation Plan.

Spring/Summer 2011/12 (Year 2 under Translocation Plan)

- Undertake controlled burn within the receptor site and surrounds
- Implement Actions 1.3 to 1.11 of Appendix D following the controlled burn

Year 3 - 10 of Translocation Plan

- Implement Actions as specified in Year 3 to 10 of Appendix D.

5.2.4 Additional Management Actions: Receptor Site 2

Parks Victoria currently has management responsibility for Receptor Site 2. Additional weed and biomass management is planned, to be funded by PTV, to reduce the impacts of high abundance of exotic grassy weeds. Parks Victoria has committed to undertake a controlled burn within the site as soon as practical. Additional preparatory and follow-up weed control will be the responsibility of Parks Victoria, and will be funded by PTV.

5.2.5 Additional Management Actions: Receptor Site 3

Following completion of the SMREP management responsibility period and management actions to establish a native buffer zone around the translocation areas, the desired result was not achieved. Following discussions between Parks Victoria and PTV, PTV have agreed to fund a remediation project at Site 3 to establish a buffer zone. Specialist native seeding company Flora Victoria was engaged by PTV to successfully establish the buffer zone of native grasses. The following remediation method was developed in consultation with Parks Victoria.

The method proposed aims to complete full and proper site preparation prior to seeding, consisting of soil cultivation of the site and multiple spraying events to reduce weed cover to less than 5 per cent prior to the proposed seeding in April 2015. A minimum of 12 herbicide treatments, with four cultivation events (to stimulate weed emergence) are proposed to achieve target weed cover prior to sowing. Additional management may be required to meet weed cover targets. The suitability of the site to sow native seed will be agreed by Parks Victoria and PTV prior to the proposed seeding event. No seed will be sown until the site is considered suitable by Parks Victoria, PTV and Flora Victoria.

Following the sowing of native seed, a year of maintenance weed control will begin, which will include a minimum of six separate herbicide treatments. At the completion of the maintenance period (proposed April 2016), Parks Victoria will resume management responsibility of the site. The completion of the project and transfer of management responsibility to Parks Victoria will require the successful establishment of native grasses. This will be determined by the target of a native grass density of at least 5 plants per m^2 and agreed to by Parks Victoria and PTV.

6 Performance Targets of Plan

Translocation of any plant species can be difficult and may result in death of the target plants. The Matted Flax-lily has had previous success in translocation around the Melbourne region due to a strong tuberous root system that generally tolerates disturbance (Ecology Partners 2010).

The conservation of genetic diversity is the main goal for a successful translocation program. Successful translocation for the current plan requires suitable preparation, management and monitoring of the operation to prevent the loss of genetic material within the population.

Criteria to determine the success of a translocation program include both short-term and long-term successes (Vallee *et al.* 2004). Criteria for short-term success include:

- Greater than 70% of transplants are surviving, with a representative range of genetic individuals planted
- New or enhanced populations have similar life cycle characteristics to the parent population
- Transplanted plants survive to reproductive stage
- Translocated plants reproduce and set seed at levels consistent with the natural population

Criteria for long-term success include:

- New seedlings are established
- Increasing cover of Matted Flax-lily throughout the receptor sites
- The number of the individuals within the population is stable or increasing through natural recruitment
- Adequate levels of biodiversity, particularly genetic variation, are maintained through generations
- The habitat remains suitable for local species
- Threatening processes at the site are controlled.

Measurement of recruitment is difficult for Matted Flax-lily as it is currently poorly understood. Therefore the conservation of all the translocated individuals' genetic material is considered the ultimate goal for the program (Ecology Partners 2010).

As the species is often successfully translocated (A. Webster pers. comm), performance targets of this plan are set above the 70% target survival for all translocation efforts (Vallee *et al.* 2004). The target for the current plan is the successful establishment of 85% of all Matted Flax-lily material planted within the receptor sites. The long term success of the program is then the establishment of 85% of the genetic material, where mats are growing in width and the number of ramets is increasing. The receptor site should also maintain suitability for species indigenous to the site and threatening processes are controlled.

Long term success of the translocation program will be assessed at 10 years (120 months) after initial translocation.

Following completion of the SMREP and PTV management responsibilities, Parks Victoria will resume the responsibility for the ongoing management of the receptor sites 1-3 and translocated material. The management of the receptor sites will form part of the Plenty Gorge Park Management Plan.

7 References

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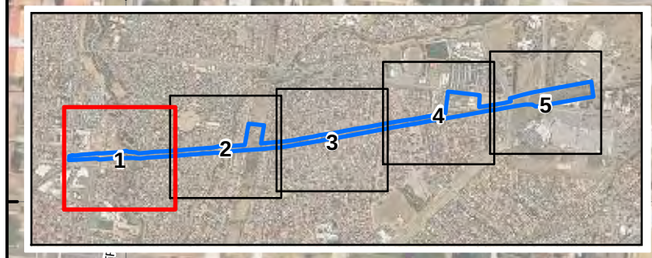
Appendices

Appendix A:
Distribution of Matted Flax-lily in the Project Area

326200 326500 326800

5831200 5831000 5830800



SUNBIRD GARDENS
LETCHWORTH PLACE
WINTERTON CLOSE
PEPPERCORN PARADE
DAVISSON ST
COULSTOCK STREET
CAMPBELL STREET
ZIMMER COURT
SAVANNAH CRESCENT
DAREBIN CREEK
WEDGE STREET
HENRY COURT
SUNRISE COURT
MAYWOOD DRIVE
PECAN COURT
COOPER STREET
HENDERSONS ROAD
NARINA WAY
DALTON ROAD
GUILA COURT
MIRRAM COURT
KARRI GROVE
KANTIKI DRIVE

Map Document: (P:\2000-DES\4_Tech_work_area\4.9_GIS\06_Maps\20100811_ARigg_DistributionMattedFlaxLily\20100811_ARigg_DistributionMattedFlaxLily.mxd)

326200 326500 326800

South Morang Rail Extension Project

PROJECT ID	South Morang Rail Extension
CREATED BY	LPH
LAST MODIFIED	LPH 20100811
DRG NO:	SMREP-DRW-PW-ENV-036_C

N

DATUM GDA 1994, PROJECTION MGA ZONE 55

0 25 50 75 100

metres

1:2,500 when printed at A3

LEGEND

- EPBC boundary
- South Morang Protection Zone
- D.amoena to be protected
- D.amoena to be translocated
- Watercourses

Data sources:
Base Data: (c) 2010 VicMap and/or StreetMap

Distribution of Matted Flax-lily

Sheet 1 of 5

Client: South Morang Rail Extension Project

Report Title

Site Address

Figure

FX

Map Document: (P:\2000-DES\4_Tech_work_area\4.9_GIS\06_Maps\20100811_ARigg_DistributionMattedFlaxLily\20100811_ARigg_DistributionMattedFlaxLily.mxd)

South Morang Rail Extension Project

PROJECT ID	South Morang Rail Extension
CREATED BY	LPH
LAST MODIFIED	LPH 20100811
DRG NO:	SMREP-DRW-PW-ENV-036_C

N

DATUM GDA 1994, PROJECTION MGA ZONE 55

0 25 50 75 100

metres

1:2,500 when printed at A3

LEGEND

- EPBC boundary
- South Morang Protection Zone
- D.amoena to be protected
- D.amoena to be translocated
- Watercourses

Data sources:
Base Data: (c) 2010 VicMap and/or StreetMap

Distribution of Matted Flax-lily

Sheet 2 of 5

Client: South Morang Rail Extension Project

Report Title

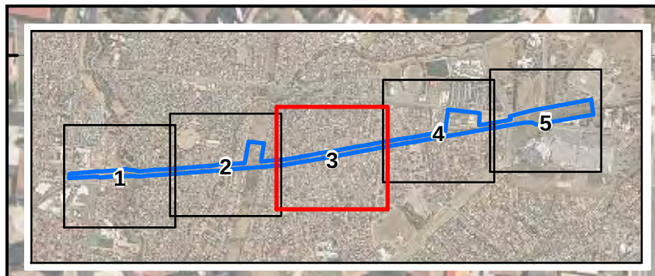
Site Address

Figure

FX

328000 328300

5831400 5831200 5831000 5830800



WOTAN DRIVE
STOW CLOSE
ZURZOLO TERRACE
NARIN COURT
PRIMROSE PLACE
WYNNETTE COURT
GERRY ANNA COURT
KAYLA COURT
BECCIA AVENUE
CALENDULA CIRCUIT
BAYSTONE ROAD
BANKER COURT
KALMAN ROAD
FOXZAMI CRESCENT
VARGA CLOSE
ROMANO AVENUE
RINDARI AVENUE
BERALA PLACE
CALLAN COURT
HERITAGE DRIVE
MARSDEN COURT
BRONSDON COURT
CORBIN PLACE
BENDALE COURT
MANNING CLARK ROAD
PRINCE OF WALES AVENUE
ESSUE COURT
ALLAWAH COURT
KENTHURST COURT
GILROY CRESCENT
DENHAM PLACE
LANGVALE COURT
RANDELL COURT

Map Document: (P:\2000-DES\4_Tech_work_area\4.9_GIS\06_Maps\20100811_ARigg_DistributionMattedFlaxLily\20100811_ARigg_DistributionMattedFlaxLily.mxd)

South Morang Rail Extension Project

PROJECT ID	South Morang Rail Extension
CREATED BY	LPH
LAST MODIFIED	LPH 20100811
DRG NO:	SMREP-DRW-PW-ENV-036_C

N

DATUM GDA 1994, PROJECTION MGA ZONE 55

0 25 50 75 100

metres

1:2,500 when printed at A3

LEGEND

- EPBC boundary
- South Morang Protection Zone
- D.amoena to be protected
- D.amoena to be translocated
- Watercourses

Data sources:
Base Data: (c) 2010 VicMap and/or StreetMap

Distribution of Matted Flax-lily

Sheet 3 of 5

Client: South Morang Rail Extension Project

Report Title

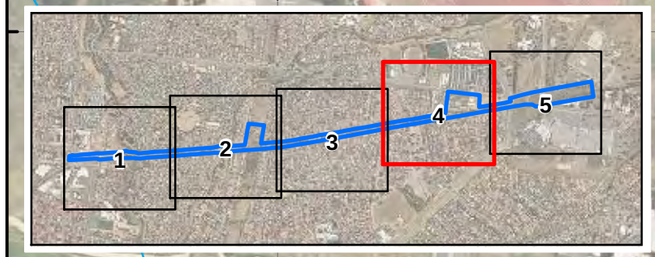
Site Address

Figure

FX

328600 328900 329200

5831600 5831400 5831200 5831000



MCDONALDS ROAD
BLUEBELL DRIVE
GIEBONS DRIVE
LARKSPUR CLOSE
McDonalds Drain
COLUMBINE COURT
YVETTE COURT
ARRAN CLOSE
CALENDULA CIRCUIT
BORDER DRIVE
YUNUPINGU COURT
POLLOCK DRIVE
BOYD PLACE
DE CASTELLA CLOSE
BUTLER PLACE
KIERNAN CLOSE
STURROCK COURT
CAWLEY COURT
MANNING CLARK ROAD
CORNFORTH WAY
THE SEEKERS CRESCENT
DUNLOP CRESCENT
FARNHAM CRESCENT
THE FRED HOLLOWS WAY
MORANG DRIVE
ODONOGHUE STREET
ROE WAY

Map Document: (P:\2000-DES\4_Tech_work_area\4.9_GIS\06_Maps\20100811_ARigg_DistributionMattedFlaxLily\20100811_ARigg_DistributionMattedFlaxLily.mxd)

South Morang Rail Extension Project

PROJECT ID	South Morang Rail Extension
CREATED BY	LPH
LAST MODIFIED	LPH 20100811
DRG NO:	SMREP-DRW-PW-ENV-036_C

N

DATUM GDA 1994, PROJECTION MGA ZONE 55

0 25 50 75 100

metres

1:2,500 when printed at A3

LEGEND

- EPBC boundary
- South Morang Protection Zone
- D.amoena to be protected
- D.amoena to be translocated
- Watercourses

Data sources:
Base Data: (c) 2010 VicMap and/or StreetMap

Distribution of Matted Flax-lily

Sheet 4 of 5

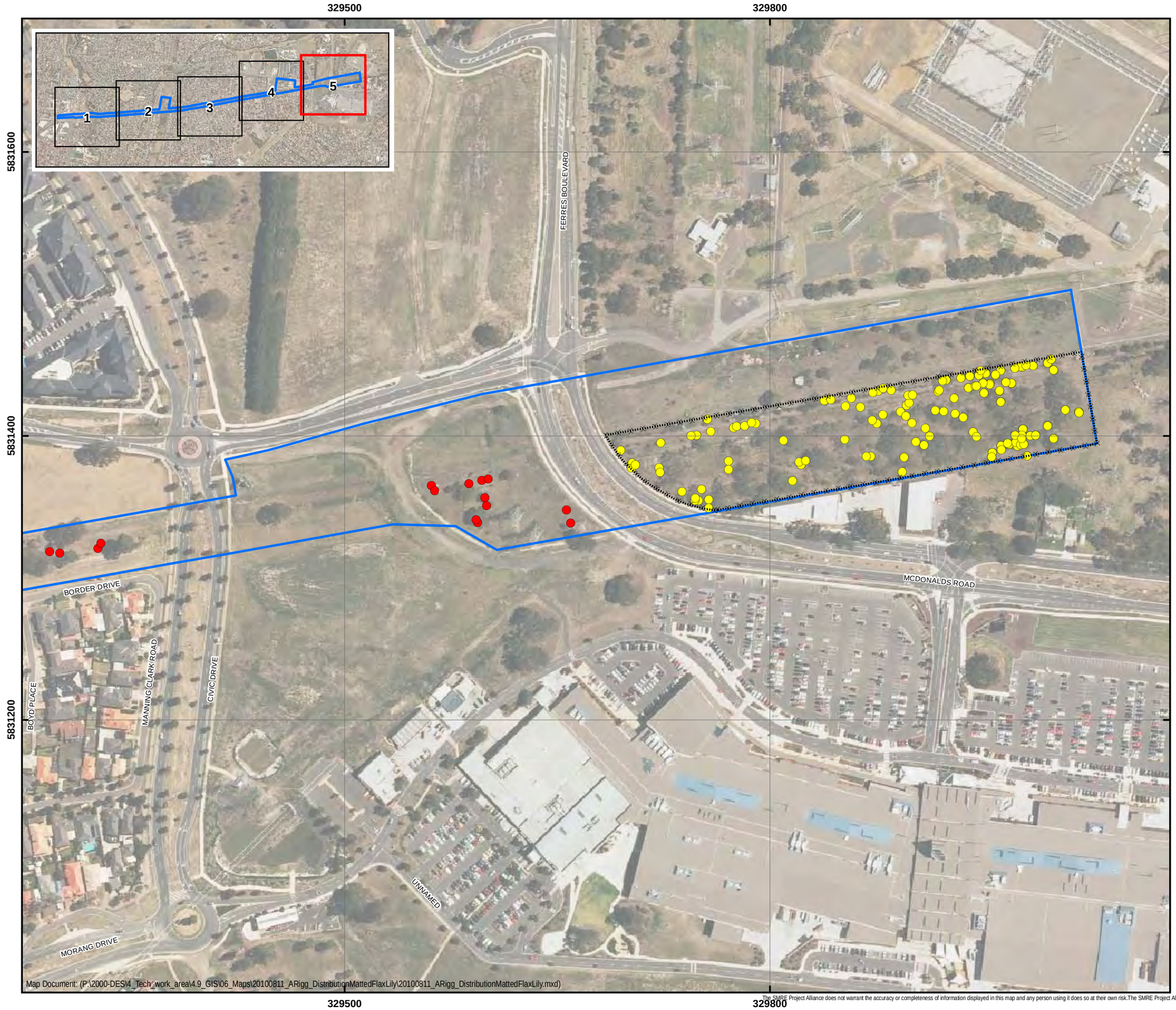
Client: South Morang Rail Extension Project

Report Title

Site Address

Figure

FX



South Morang Rail Extension Project

PROJECT ID	South Morang Rail Extension
CREATED BY	LPH
LAST MODIFIED	LPH 20100811
DRG NO:	SMREP-DRW-PW-ENV-036_C

N

DATUM GDA 1994, PROJECTION MGA ZONE 55

0 25 50 75 100

metres

1:2,500 when printed at A3

LEGEND

- EPBC boundary
- South Morang Protection Zone
- D.amoena to be protected
- D.amoena to be translocated
- Watercourses

Data sources:
Base Data: (c) 2010 VicMap and/or StreetMap

Distribution of Matted Flax-lily

Sheet 5 of 5

Client: South Morang Rail Extension Project

Report Title

Site Address

Figure

FX

Appendix B:
Receptor Site 1—Plenty Gorge Park, Mill Park Location and Management Actions

South Morang Rail Extension Project

N

0 25 50 m

1:1,500 when printed at A3

DATUM GDA 1994, PROJECTION MGA ZONE 55

LEGEND

- Translocated Matted Flax-lily
- Known Matted Flax-lily (August 2010)
- Receptor Site
- Watercourse
- Property Boundary

Receptor Site 1

CLIENT	South Morang Rail Extension Project
PROJECT ID	South Morang Rail Extension
CREATED BY	EM
LAST MODIFIED	EM 1/06/2012
DRG NO	MET005-G-MAP-004-A

REVISION

A

Table B1: Management Actions for Receptor Site 1

- .
- Management actions in *italics* have already been completed at the time of preparing the current revision.
- Translocation into receptor sites is listed in **bold**.

Year 1- June 2010 to May 2011

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
1.1	*Ensure security arrangement with Parks Victoria for use of receptor site is in place*	*Exchange of letter between PV and SMREP.*	*Pre commencement of removal of MFL from rail corridor*	*Security option approved by relevant stakeholders*	*Security arrangements negotiated between SMREP and PV.*
1.2	*Fence agreed-upon receptor sites to protect ecological values and restrict fauna and vehicle access*	*Fencing Contractor, SMREP and PV*	*Once sites have been approved by stakeholders and security arrangements confirmed*	*Fencing of entire receptor site with herbivore exclusion fence*	*SMREP*
1.3	*Conduct rabbit control*	*Bushland Management Contractor, Pest Animal Contractor and SMREP*	*Before direct translocation of the MFL*	*No evidence of rabbits within receptor site*	*SMREP*
1.4	*Undertake control of woody weeds*	*Bushland Management Contractor and SMREP*	*Before direct translocation of MFL*	*Eliminate high threat woody weeds within receptor site*	*SMREP*
1.5	*Undertake control of grassy and herbaceous weeds within entire receptor site*	*Bushland Management Contractor and SMREP*	*Before direct translocation of MFL*	*Demonstrate control over entire receptor site*	*SMREP*
1.6	*Carry out survey for existing Matted Flax-lily at receptor site*	*SMREP*	*Before direct translocation of MFL*	*Complete survey*	*SMREP*
1.7	*Eliminate high threat grassy and herbaceous weeds from within a one metre radius of proposed MFL planting locations*	*Bushland Management Contractor and SMREP*	*Before direct translocation of MFL*	*Eliminate grassy/herbaceous weeds within one metre radius*	*SMREP*
1.8	***Directly translocate Matted Flax-lily into receptor site. Complete baseline monitoring and then at 1, 3, 6 and 12 months after***	***Bushland Management Contractor and SMREP***	***After site preparatory works are completed***	***No loss of plants during transport and replanting***	***SMREP***

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
1.9	*Undertake biomass control (if required) around replanted salvaged material*	*Bushland Management Contractor and SMREP*	*Before direct translocation of MFL*	*Ensure adequate space around replanted salvaged material ad inter tussock space is relatively open*	*SMREP*
1.10	*Carry out follow-up watering of replanted material if required as per Section 5.1.3*	*Bushland Management Contractor and SMREP*	*As required, based on rainfall levels measured by rain gauge at South Morang project office*	*No loss of plants due to water stress*	*SMREP*
1.11	*Undertake follow up weed control for woody weeds and grassy weeds*	*Bushland Management Contractor and SMREP*	*As required following plant health monitoring visits*	*Ensure weed cover does not exceed current levels*	*SMREP*
1.12	*Undertake monitoring and follow-up repairs of herbivore exclusion fencing as required*	*PV*	*Inspection every two months, repairs as required*	*Fences remain functional and sites free of rabbits*	*PV*
1.13	*Submit progress report to DoT, SEWPAC, DEPI and PV*	*Bushland Management Contractor and SMREP*	*Refer to Table 5.1 for reporting schedule*	*Reports submitted. All receptor sites to be covered in one report*	*SMREP*

Year 2- June 2011 to May 2012

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
2.1	*Undertake follow-up control of high threat grassy, herbaceous and woody weeds through entire receptor site*	*PV*	*Before seed heads mature in winter/spring*	*Ensure weed cover does not exceed levels at commencement of translocation program*	*PV*
2.2	*Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material*	*PV*	*Before seed heads mature in winter/spring*	*Eliminate grassy/herbaceous weeds within a one metre radius*	*PV*
2.3	*Undertake biomass control (if required) around replanted salvaged material*	*PV*	*Summer – in order to allow native plants to set seed*	*Ensure adequate space around replanted salvaged material and inner tussock space is relatively open*	*PV*

2.4	***Carry out delayed translocation of Matted Flax-lily into receptor site. Complete baseline monitoring and then at 1, 3, 6 and 12 months after***	***Bushland Management Contractor and SMREP***	***Autumn/Winter***	***No loss of plants during transport and replanting***	***SMREP***
2.5	*Undertake monitoring of the replanted salvaged material*	*Bushland Management Contractor and SMREP*	*Undertake monitoring of plant health and site threats at 18 months from direct translocation*	*Ensure risks within the receptor site do not adversely impact replanted MFL plants*	*SMREP*
2.6	*Carry out follow-up watering of material replanted in Year 2 if required as per Section 5.1.3*	*Bushland Management Contractor and SMREP*	*As required, based on rainfall levels measured by rain gauge at South Morang project office*	*No loss of plants due to water stress*	*SMREP*
2.7	*Undertake monitoring and follow-up repairs of herbivore exclusion fences as required*	*PV*	*Inspection every two months, repairs as required*	*Fence remains functional and site free of rabbits*	*PV*
2.8	*Monitor rabbit levels and control if necessary*	*PV*	*After peak breeding season – late summer/early autumn*	*Rabbit levels low within receptor site*	*PV*
2.9	*Submit progress report to DoT, SEWPAC, DEPI and PV*	*Bushland Management Contractor and SMREP*	*Refer to Table 5.1 for reporting schedule*	*Report submitted. All receptor sites to be covered in one report*	*SMREP*
2.10	*Review translocation and management actions*	*SMREP and PV*	*End of year 2*	*Ensure forward management regime based on results to date*	*SMREP and PV*

Year 3- June 2012 to May 2013

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
3.1	*Undertake follow-up control of high threat grassy, herbaceous and woody weeds through entire receptor site*	*PV*	*Before seed heads mature in winter/spring*	*Ensure weed cover does not exceed levels at commencement of translocation program*	*PV*
3.2	*Undertake control of grassy and herbaceous*	*PV*	*Before seed heads mature in winter/spring*	*Eliminate grassy/herbaceous weeds*	*PV*

	weeds within a one metre radius of replanted salvage material			*within a one metre radius*	
3.3	***Carry out planting of insurance Matted Flax-lily to replace deceased plants, if required.***	***Bushland Management Contractor and SMREP***	***Autumn/Winter***	***No loss of plants during transport and replanting***	***SMREP***
3.4	*Undertake biomass control (if required) around replanted salvaged material*	*PV*	*Summer – in order to allow native plants to set seed*	*Ensure adequate space around replanted salvaged material and inner tussock space is relatively open*	*PV*
3.5	*Undertake monitoring of the replanted salvaged material*	*Bushland Management Contractor and SMREP*	*Undertake monitoring of plant health and site threats at 24 months from direct translocation*	*Ensure risks within the receptor site do not adversely impact replanted MFL plants*	*SMREP*
3.6	*Carry out follow-up watering of planted insurance material if required as per Section 5.1.3*	*Bushland Management Contractor and SMREP*	*As required, based on rainfall levels*	*No loss of plants due to water stress*	*SMREP*
3.7	*Undertake monitoring and follow-up repairs of herbivore exclusion fences as required*	*PV*	*Inspection every two months, repairs as required*	*Fence remains functional and site free of rabbits*	*PV*
3.8	*Monitor rabbit levels and control if necessary*	*PV*	*After peak breeding season – late summer/early autumn*	*Rabbit levels low within receptor site*	*PV*
3.9	*Submit progress report to DoT, SEWPAC, DEPI and PV*	*Bushland Management Contractor and SMREP*	*Refer to Table 5.1 for reporting schedule*	*Report submitted. All receptor sites to be covered in one report*	*SMREP*

Year 4- June 2013 to May 2014

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
4.1	*Undertake follow-up control of high threat grassy, herbaceous and woody weeds through entire receptor site*	*PV*	*Before seed heads mature in winter/spring*	*Ensure weed cover does not exceed levels at commencement of translocation program*	*PV*

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
4.2	*Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material*	*PV*	*Before seed heads mature in winter/spring*	*Eliminate grassy/herbaceous weeds within a one metre radius*	*PV*
4.3	***Carry out planting of insurance Matted Flax-lily to replace deceased plants, if required.***	***PV***	***Autumn/Winter***	***No loss of plants during transport and replanting***	***PV***
4.4	*Undertake biomass control (if required) around replanted salvaged material*	*PV*	*Summer – in order to allow native plants to set seed*	*Ensure adequate space around replanted salvaged material and inner tussock space is relatively open*	*PV*
4.5	*Undertake monitoring of the replanted salvaged material*	*Ecologist engaged by VicTrack*	*Undertake monitoring of plant health and site threats on anniversary of MFL salvage, October*	*Ensure risks within the receptor site do not adversely impact replanted MFL plants*	*PTV*
4.6	*Carry out follow-up watering of planted insurance material if required as per Section 5.1.3*	*PV*	*As required, based on rainfall levels*	*No loss of plants due to water stress*	*PV*
4.7	*Undertake monitoring and follow-up repairs of herbivore exclusion fences as required*	*PV*	*Repairs as required*	*Fence remains functional and site free of rabbits*	*PV*
4.8	*Monitor rabbit levels and control if necessary*	*PV*	*After peak breeding season – late summer/early autumn*	*Rabbit levels low within receptor sites*	*PV*
4.9	*Prepare and submit progress report to SEWPAC, PTV, DEPI and PV*	*Ecologist engaged by VicTrack*	*Refer to Table 5.1 for reporting schedule*	*Report submitted. All receptor sites to be covered in one report*	*PTV*

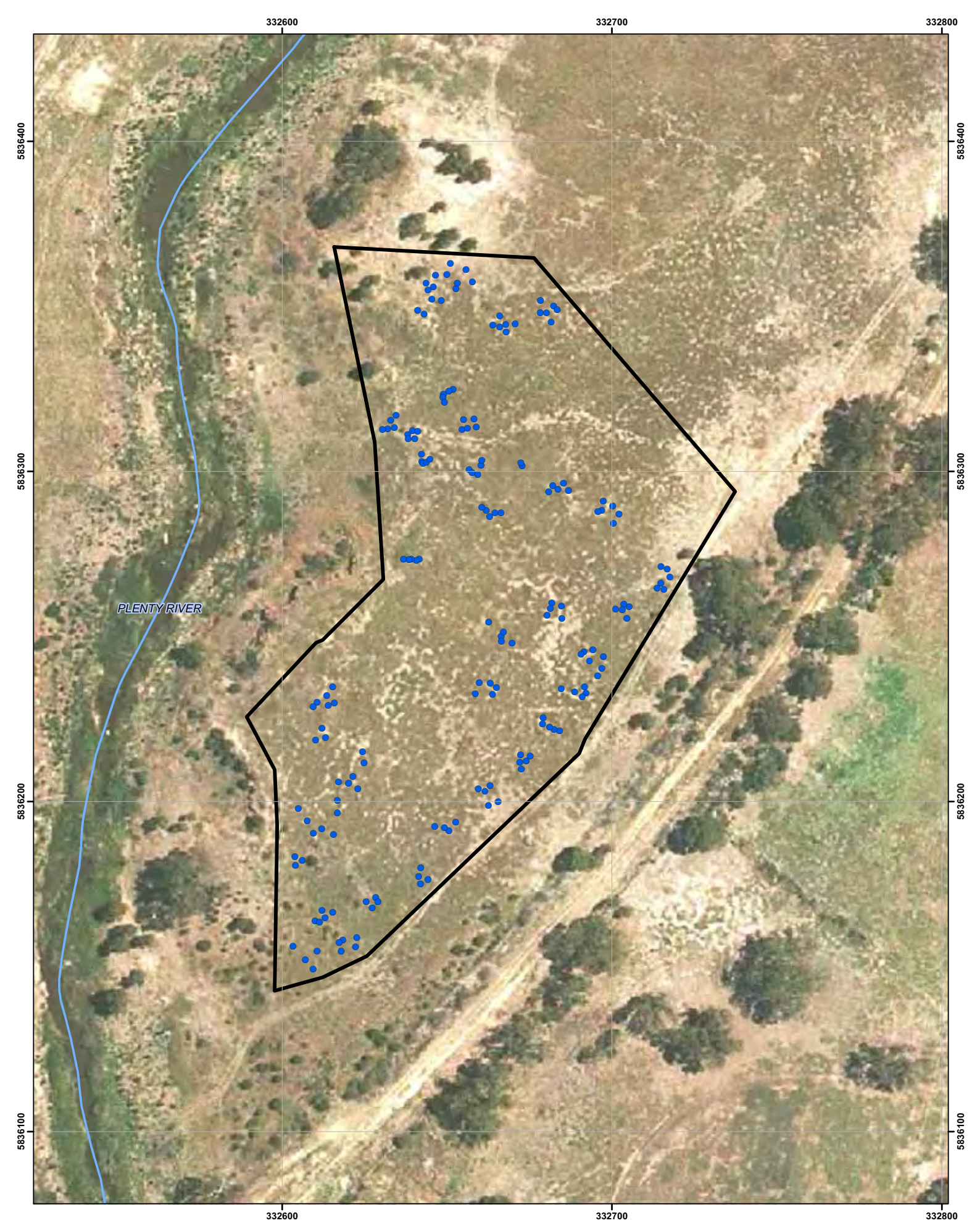
Year 5- June 2014 to May 2015

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
5.1	Undertake follow-up control of high threat grassy, herbaceous and woody weeds through entire receptor site	PV	Before seed heads mature in winter/spring	Ensure weed cover does not exceed levels at commencement of translocation program	PV
5.2	Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material	PV	Before seed heads mature in winter/spring	Eliminate grassy/herbaceous weeds within a one metre radius	PV
5.3	**Carry out planting of insurance Matted Flax-lily to replace deceased plants, if required.**	**PV**	**Autumn/Winter**	**No loss of plants during transport and replanting**	**PV**
5.4	Undertake biomass control (if required) around replanted salvaged material	PV	Summer – in order to allow native plants to set seed	Ensure adequate space around replanted salvaged material and inner tussock space is relatively open	PV
5.5	Undertake monitoring of the replanted salvaged material	Ecologist engaged by VicTrack	Undertake monitoring of plant health and site threats on anniversary of MFL salvage, October	Ensure risks within the receptor site do not adversely impact replanted MFL plants	VicTrack
5.6	Carry out follow-up watering of planted insurance material if required as per Section 5.1.3	PV	As required, based on rainfall levels	No loss of plants due to water stress	PV
5.7	Undertake monitoring and follow-up repairs of herbivore exclusion fences as required	PV	Repairs as required	Fence remains functional and site free of rabbits	PV
5.8	Monitor rabbit levels and control if necessary	PV	After peak breeding season – late summer/early autumn	Rabbit levels low within receptor site	PV
5.9	Prepare and submit progress report to SEWPAC, PTV, DEPI and PV	Ecologist engaged by VicTrack	Refer to Table 5.1 for reporting schedule	Report submitted. All receptor sites to be covered in one report	VicTrack

Year 6 to 10- June 2015 to May 2020 (PV continue maintenance and management of the site, whilst VicTrack are responsible for annual monitoring of translocated plant health)

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
6.1	Undertake monitoring of replanted salvage material	Ecologist engaged by VicTrack	Undertake monitoring of plant health and site threats on anniversary of MFL salvage, October	Document presence/absence of all plants and any threats at site.	VicTrack
6.2	Submit a letter to SEWPAC, PTV, DEPI and PV summarising results of monitoring visit	Ecologist engaged by VicTrack	Within three months of monitoring visit	Timely submission of letter	VicTrack

Appendix C:
Receptor Site 2—Plenty Gorge Park, Doreen
Location and Management Actions



South Morang Rail Extension Project

N

0 25 50 m

1:1,000 when printed at A3

DATUM GDA 1994, PROJECTION MGA ZONE 55

LEGEND

- Translocated Matted Flax-lily
- Known Matted Flax-lily (August 2010)
- Receptor Site
- Watercourse
- Property Boundary

Receptor Site 2

CLIENT	South Morang Rail Extension Project
PROJECT ID	South Morang Rail Extension
CREATED BY	EM
LAST MODIFIED	EM 1/06/2012
DRG NO	MET005-G-MAP-004-A

REVISION

A

Table C1: Management Actions for Receptor Site 2

Note that Year 1 commenced in approximately October 2010. This year has been shortened in order to synchronise future years with the most appropriate Matted Flax-lily planting time (autumn/winter). Actions in *Italics* have been completed at the time of preparing the current revision.

Year 1- October 2010 to April 2011

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
1.1	*Ensure security arrangement with Parks Victoria for use of receptor site is in place*	*Exchange of letter between PV and SMREP.*	*Pre commencement of removal of MFL from rail corridor*	*Security option approved by relevant stakeholders*	*Security arrangements negotiated between SMREP and PV.*
1.2	*Fence agreed-upon receptor sites to protect ecological values and restrict fauna and vehicle access*	*Fencing Contractor, SMREP and PV*	*Once sites have been approved by stakeholders and security arrangements confirmed*	*Fencing of entire receptor site with herbivore exclusion fence*	*SMREP*
1.3	*Conduct rabbit control*	*Bushland Management Contractor, Pest Animal Contractor and SMREP*	*Before direct translocation of the MFL*	*No evidence of rabbits within receptor site*	*SMREP*
1.4	*Undertake control of woody weeds (if required, as previous PV management has reduced levels significantly)*	*Bushland Management Contractor and SMREP*	*Before direct translocation of MFL*	*Eliminate high threat woody weeds within receptor site*	*SMREP*
1.5	*Undertake control of grassy and herbaceous weeds within entire receptor site*	*Bushland Management Contractor and SMREP*	*Before direct translocation of MFL*	*Demonstrate control over entire receptor site*	*SMREP*
1.6	*Eliminate high threat grassy and herbaceous weeds from within a one metre radius of proposed MFL planting locations*	*Bushland Management Contractor and SMREP*	*Before direct translocation of MFL*	*Eliminate grassy/herbaceous weeds within one metre radius*	*SMREP*
1.7	***Directly translocate Matted Flax-lily into receptor site. Complete baseline monitoring and then at 1, 3, 6 and 12 months after***	***Bushland Management Contractor and SMREP***	***After site preparatory works are completed***	***No loss of plants during transport and replanting***	***SMREP***

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
1.8	*Undertake biomass control (if required) around replanted salvaged material*	*Bushland Management Contractor and SMREP*	*Before direct translocation of MFL*	*Ensure adequate space around replanted salvaged material ad inter tussock space is relatively open*	*SMREP*
1.9	*Carry out follow-up watering of replanted material if required as per Section 5.1.3*	*Bushland Management Contractor and SMREP*	*As required, based on rainfall levels measured by rain gauge at South Morang project office*	*No loss of plants due to water stress*	*SMREP*
1.10	*Undertake follow up weed control for woody weeds and grassy weeds*	*Bushland Management Contractor and SMREP*	*As required following plant health monitoring visits*	*Ensure weed cover does not exceed current levels*	*SMREP*
1.11	*Undertake monitoring and follow-up repairs of herbivore exclusion fencing as required*	*PV*	*Inspection every two months, repairs as required*	*Fences remain functional and sites free of rabbits*	*PV*
1.12	*Submit progress report to DoT, SEWPAC, DEPI and PV*	*Bushland Management Contractor and SMREP*	*Refer to Table 5.1 for reporting schedule*	*Reports submitted. All receptor sites to be covered in one report*	*SMREP*

Year 2- April 2011 to May 2012

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
2.1	*Undertake follow-up control of high threat grassy, herbaceous and woody weeds through entire receptor site*	*PV*	*Before seed heads mature in winter/spring*	*Ensure weed cover does not exceed levels at commencement of translocation program*	*PV*
2.2	*Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material*	*PV*	*Before seed heads mature in winter/spring*	*Eliminate grassy/herbaceous weeds within a one metre radius*	*PV*
2.3	*Undertake biomass control (if required) around replanted salvaged material*	*PV*	*Summer – in order to allow native plants to set seed*	*Ensure adequate space around replanted salvaged material and inner tussock space is relatively open*	*PV*

2.4	***Carry out delayed translocation of Matted Flax-lily into receptor site. Complete baseline monitoring and then at 1, 3, 6 and 12 months after***	***Bushland Management Contractor and SMREP***	***Autumn/Winter***	***No loss of plants during transport and replanting***	***SMREP***
2.5	*Undertake monitoring of the replanted salvaged material*	*Bushland Management Contractor and SMREP*	*Undertake monitoring of plant health and site threats at 18 months from direct translocation*	*Ensure risks within the receptor site do not adversely impact replanted MFL plants*	*SMREP*
2.6	*Carry out follow-up watering of material replanted in Year 2 if required as per Section 5.1.3*	*Bushland Management Contractor and SMREP*	*As required, based on rainfall levels measured by rain gauge at South Morang project office*	*No loss of plants due to water stress*	*SMREP*
2.7	*Undertake monitoring and follow-up repairs of herbivore exclusion fences as required*	*PV*	*Inspection every two months, repairs as required*	*Fence remains functional and site free of rabbits*	*PV*
2.8	*Monitor rabbit levels and control if necessary*	*PV*	*After peak breeding season – late summer/early autumn*	*Rabbit levels low within receptor site*	*PV*
2.9	*Submit progress report to DoT, SEWPAC, DEPI and PV*	*Bushland Management Contractor and SMREP*	*Refer to Table 5.1 for reporting schedule*	*Report submitted. All receptor sites to be covered in one report*	*SMREP*
2.10	*Review translocation and management actions*	*SMREP and PV*	*End of year 2*	*Ensure forward management regime based on results to date*	*SMREP and PV*

Year 3- June 2012 to May 2013

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
3.1	*Undertake follow-up control of high threat grassy, herbaceous and*	*PV*	*Before seed heads mature in winter/spring*	*Ensure weed cover does not exceed levels at commencement of*	*PV*

	woody weeds through entire receptor site			*translocation program*	
3.2	*Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material*	*PV*	*Before seed heads mature in winter/spring*	*Eliminate grassy/herbaceous weeds within a one metre radius*	*PV*
3.3	***Carry out planting of insurance Matted Flax-lily to replace deceased plants, if required.***	***Bushland Management Contractor and SMREP***	***Autumn/Winter***	***No loss of plants during transport and replanting***	***SMREP***
3.4	*Undertake biomass control (if required) around replanted salvaged material*	*PV*	*Summer – in order to allow native plants to set seed*	*Ensure adequate space around replanted salvaged material and inner tussock space is relatively open*	*PV*
3.5	*Undertake monitoring of the replanted salvaged material*	*Bushland Management Contractor and SMREP*	*Undertake monitoring of plant health and site threats at 24 months from direct translocation*	*Ensure risks within the receptor site do not adversely impact replanted MFL plants*	*SMREP*
3.6	*Carry out follow-up watering of planted insurance material if required as per Section 5.1.3*	*Bushland Management Contractor and SMREP*	*As required, based on rainfall levels*	*No loss of plants due to water stress*	*SMREP*
3.7	*Undertake monitoring and follow-up repairs of herbivore exclusion fences as required*	*PV*	*Monthly inspections, repairs as required*	*Fence remains functional and site free of rabbits*	*PV*
3.8	*Monitor rabbit levels and control if necessary*	*PV*	*After peak breeding season – late summer/early autumn*	*Rabbit levels low within receptor site*	*PV*
3.9	*Submit progress report to DoT, SEWPAC, DEPI and PV*	*Bushland Management Contractor and SMREP*	*Refer to Table 5.1 for reporting schedule*	*Report submitted. All receptor sites to be covered in one report*	*SMREP*

Year 4- June 2013 to May 2014

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
4.1	*Undertake follow-up control of high threat grassy, herbaceous and woody weeds through entire receptor site*	*PV*	*Before seed heads mature in winter/spring*	*Ensure weed cover does not exceed levels at commencement of translocation program*	*PV*
4.2	*Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material*	*PV*	*Before seed heads mature in winter/spring*	*Eliminate grassy/herbaceous weeds within a one metre radius*	*PV*
4.3	***Carry out planting of insurance Matted Flax-lily to replace deceased plants, if required.***	***PV***	***Winter***	***No loss of plants during transport and replanting***	***PV***
4.4	*Undertake biomass control (if required) around replanted salvaged material*	*PV*	*Summer – in order to allow native plants to set seed*	*Ensure adequate space around replanted salvaged material and inner tussock space is relatively open*	*PV*
4.5	*Undertake monitoring of the replanted salvaged material*	*Ecologist engaged by VicTrack*	*Undertake monitoring of plant health and site threats on anniversary of MFL salvage, October*	*Ensure risks within the receptor site do not adversely impact replanted MFL plants*	*PTV*
4.6	*Carry out follow-up watering of planted insurance material if required as per Section 5.1.3*	*PV*	*As required, based on rainfall levels*	*No loss of plants due to water stress*	*PV*
4.7	*Undertake monitoring and follow-up repairs of herbivore exclusion fences as required*	*PV*	*Repairs as required*	*Fence remains functional and site free of rabbits*	*PV*
4.8	*Monitor rabbit levels and control if necessary*	*PV*	*After peak breeding season – late summer/early autumn*	*Rabbit levels low within receptor sites*	*PV*
4.9	*Submit progress report to SEWPAC, PTV, DEPI and PV*	*Ecologist engaged by VicTrack*	*Refer to Table 5.1 for reporting schedule*	*Report submitted. All receptor sites to be covered in one report*	*PTV*

Year 5- June 2014 to May 2015

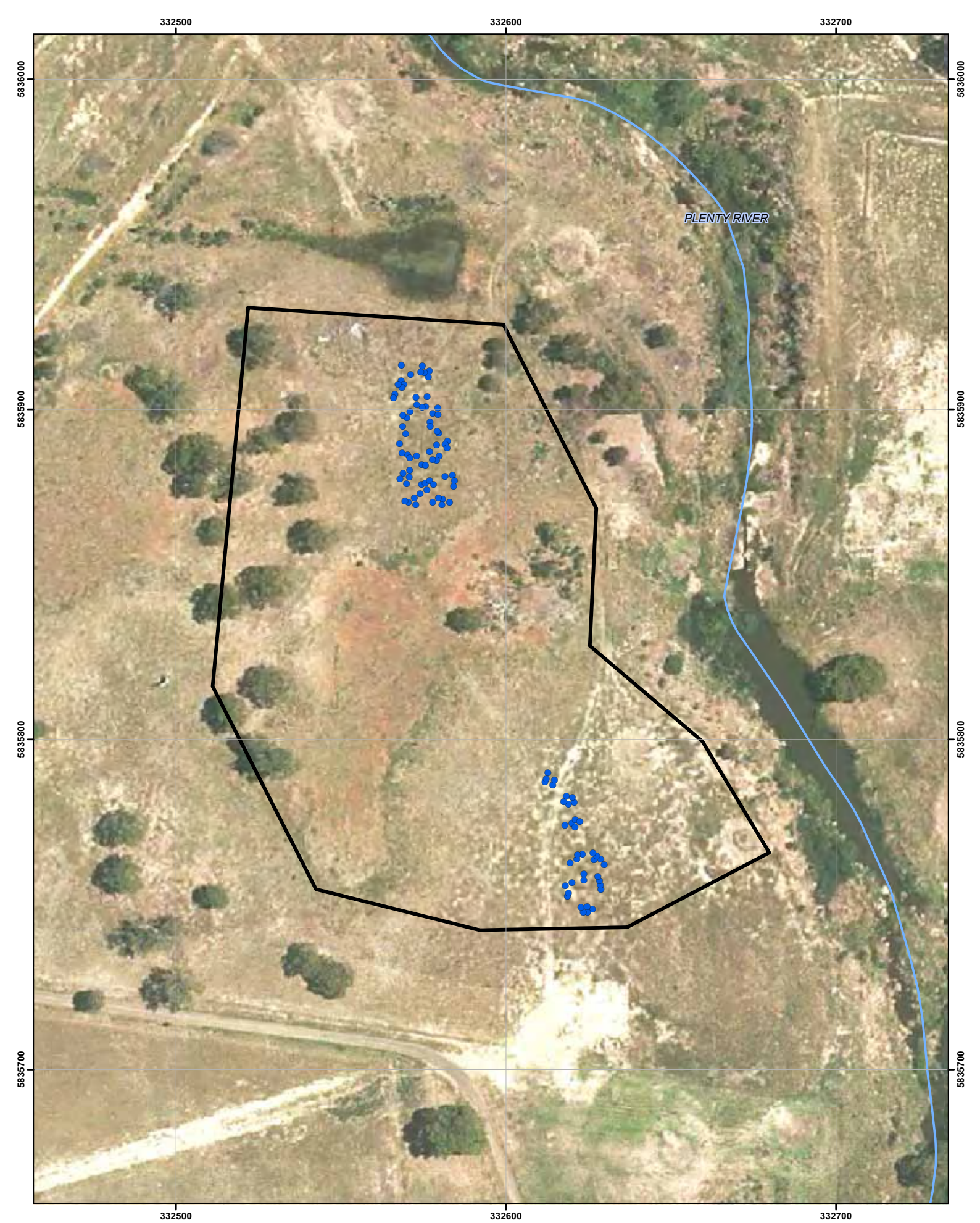
Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
5.1	Undertake follow-up control of high threat grassy, herbaceous and woody weeds through entire receptor site	PV	Before seed heads mature in winter/spring	Ensure weed cover does not exceed levels at commencement of translocation program	PV
5.2	Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material	PV	Before seed heads mature in winter/spring	Eliminate grassy/herbaceous weeds within a one metre radius	PV
5.3	**Carry out planting insurance of Matted Flax-lily to replace deceased plants, if required.**	**PV**	**Winter**	**No loss of plants during transport and replanting**	**PV**
5.4	Undertake biomass control (if required) around replanted salvaged material	PV	Summer – in order to allow native plants to set seed	Ensure adequate space around replanted salvaged material and inner tussock space is relatively open	PV
5.5	Undertake monitoring of the replanted salvaged material	Ecologist engaged by VicTrack	Undertake monitoring of plant health and site threats on anniversary of MFL salvage, October	Ensure risks within the receptor site do not adversely impact replanted MFL plants	VicTrack
5.6	Carry out follow-up watering of planted insurance material if required as per Section 5.1.3	PV	As required, based on rainfall levels	No loss of plants due to water stress	PV
5.7	Undertake monitoring and follow-up repairs of herbivore exclusion fences as required	PV	Repairs as required	Fence remains functional and site free of rabbits	PV
5.8	Monitor rabbit levels and control if necessary	PV	After peak breeding season – late summer/early autumn	Rabbit levels low within receptor site	PV
5.9	Conduct controlled burn to reduce bioimass, if suitable. Note this action	PV, in consultation with state agencies	During suitable site and weather conditions	Removal of biomass	PV

	may be completed in Year 5 if conditions are not suitable.				
5.10	Undertake follow-up spraying of weeds after burn	PV	Following controlled burn	Treatment of high threat grassy and herbaceous weeds	PV
5.11	Submit progress report to SEWPAC, PTV, DEPI and PV	Ecologist engaged by VicTrack	Refer to Table 5.1 for reporting schedule	Report submitted. All receptor sites to be covered in one report	VicTrack

Year 6 to 10- June 2015 to May 2020 (PV continue maintenance and management of the site, whilst VicTrack are responsible for annual monitoring of translocated plant health)

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
6.1	Undertake monitoring of replanted salvage material	Ecologist engaged by VicTrack	Undertake monitoring of plant health and site threats on anniversary of MFL salvage, October	Document presence/absence of all plants. Document threats at site	VicTrack
6.2	Submit a letter to SEWPAC, PTV, DEPI and PV summarising results of monitoring visit	Ecologist engaged by VicTrack	Within three months of monitoring visit	Timely submission of letter	VicTrack

Appendix D:
Receptor Site 3—Plenty Gorge Park, Mernda Location and Management Actions



South Morang Rail Extension Project

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DATUM GDA 1994, PROJECTION MGA ZONE 55

LEGEND

- Translocated Matted Flax-lily
- Known Matted Flax-lily (August 2010)
- Receptor Site
- Watercourse
- Property Boundary

Receptor Site 3

CLIENT	South Morang Rail Extension Project
PROJECT ID	South Morang Rail Extension
CREATED BY	EM
LAST MODIFIED	EM 1/06/2012
DRG NO	MET005-G-MAP-004-A

REVISION

A

Table D1: Management Actions for Receptor Site 3

Note that actions in *Italics* have been completed at the time of preparing the current revision.

Year 1- Spring 2010 to Spring 2011

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
1.1	*Ensure security arrangement with Parks Victoria for use of receptor site is in place*	*Exchange of letter between PV and SMREP.*	*Pre commencement of removal of MFL from South Morang Rail Extension*	*Security option approved by relevant stakeholders*	*Security arrangements negotiated between SMREP and PV.*
1.2	*Control high-threat weeds through atrazine or glyphosate spot spraying*	*Bushland Management Contractor, SMREP and PV*	*October/November*	*All Chilean-needle grass sprayed*	*SMREP*
1.3	*Harvest seed-bearing T.trianda hay/thatch/seed chaff from nearby grassland. Carry out seed quantity and viability check*	*Bushland Management Contractor, SMREP and PV*	*Harvest in summer*	*Hay collected and stored contains germinable seed*	*SMREP*
1.4	*Erect temporary rabbit-proof fencing around proposed planting locations*	*Bushland Manager and SMREP*	*Before translocation of MFL*	*Fence remains functional and site free of rabbits*	*SMREP*
1.5	*Eliminate high threat grassy and herbaceous weeds from within a one metre radius of proposed MFL planting locations*	*Bushland Management Contractor and SMREP*	*Before translocation of MFL*	*Eliminate grassy/herbaceous weeds within a one metre radius*	*SMREP*
1.6	***Carry out delayed translocation of Matted Flax-lily into receptor site. Complete baseline monitoring and then at 1, 3, 6 and 12 months after***	***Bushland Management Contractor and SMREP***	***Winter 2011***	***No loss of plants during transport and replanting***	***SMREP***
1.7	*Submit progress report to DoT, SEWPAC, DEPI and PV*	*Bushland Management Contractor and SMREP*	*Refer to Table 5.1 for reporting schedule*	*Reports submitted. All receptor sites to be covered in one report*	*SMREP*

Year 2- Spring 2011 to May 2012

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
2.1	*Undertake follow-up control of high threat grassy, herbaceous and woody weeds through entire receptor site*	*Bushland Management Contractor and SMREP*	*As required*	*Ensure weed cover does not exceed levels at commencement of translocation program*	*SMREP*
2.2	*Undertake biomass control (if required) around replanted salvaged material*	*PV*	*Summer 2011/2012 – in order to allow native plants to set seed*	*Ensure adequate space around replanted salvaged material and inner tussock space is relatively open*	*PV*
2.3	*Undertake monitoring of the replanted salvaged material*	*Bushland Management Contractor and SMREP*	*Undertake monitoring of plant health and site threats at 6 and 12 months from delayed translocation*	*Ensure risks within the receptor site do not adversely impact replanted MFL plants*	*SMREP*
2.4	*Undertake controlled burn within the receptor site and surrounds. An approved burn plan will be required*	*Bushland Management Contractor, SMREP and PV*	*Late summer/autumn 2012*	*Reduce Chilean-needle grass biomass*	*PV in conjunction with SMREP*
2.5	*Fence agreed-upon receptor site to protect ecological values*	*Fencing Contractor, SMREP and PV*	*After first control burn*	*Fencing of entire receptor site with herbivore exclusion fence*	*SMREP*
2.6	*Control high-threat weeds through atrazine or glyphosate spot spraying*	*Bushland Management Contractor, SMREP and PV*	*Within 1 month after burn*	*All Chilean-needle grass sprayed*	*SMREP*
2.7	*Conduct rabbit control*	*Bushland Management Contractor, Pest Animal Contractor and SMREP*	*After first control burn and fencing installed*	*No evidence of rabbits within receptor site*	*SMREP*
2.8	*Carry out follow-up watering of replanted material if required as per Section 5.1.3*	*Bushland Management Contractor and SMREP*	*As required, based on rainfall levels measured by rain gauge at South Morang project office*	*No loss of plants due to water stress*	*SMREP*
2.9	*Submit progress report to DoT, SEWPAC, DEPI and*	*Bushland Management Contractor and SMREP*	*Refer to Table 5.1 for reporting schedule*	*Report submitted. All receptor sites to be*	*SMREP*

	PV			*covered in one report*	
2.10	*Review translocation and management actions*	*SMREP and PV*	*End of year 2*	*Ensure forward management regime based on results to date*	*SMREP and PV*

Year 3- June 2012 to May 2013

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
3.1	*Undertake follow-up control of high threat grassy, herbaceous and woody weeds through entire receptor site*	*PV*	*Before seed heads mature in winter/spring*	*Ensure weed cover does not exceed levels at commencement of translocation program*	*SMREP*
3.2	*Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material*	*PV*	*Before seed heads mature in winter/spring*	*Eliminate grassy/herbaceous weeds within a one metre radius*	*PV*
3.3	***Carry out planting of insurance Matted Flax-lily to replace deceased plants, if required.***	***Bushland Management Contractor and SMREP***	***Winter***	***No loss of plants during transport and replanting***	***SMREP***
3.4	*Scarify topsoil to create suitable seedbed*	*Bushland Management Contractor, SMREP and PV*	*June/July*	*Reduce weed biomass*	*SMREP*
3.5	*Thatch zone with seed bearing T.triandra hay. Apply additional straw mulch to protect seed/suppress weed competition*	*Bushland Management Contractor, SMREP and PV*	*July/August*	*Whole zone thatched with mixture of native grass hays*	*SMREP*
3.6	*Undertake follow-up spot spraying of high-threat weeds, targeting Chilean needle-grass*	*Bushland Management Contractor and SMREP*	*September (Prior to germination of Themeda seed)*	*Maintain control over high-threat weeds*	*SMREP*
3.7	*Remove thatch through controlled burn. An*	*Bushland Management Contractor, SMREP and*	*October (outside temperature at least*	*Significant reduction in Chilean Needle Grass and*	*PV in conjunction with SMREP*

	approved burn plan will be required	*PV*	*20°C to promote seed germination).*	*re-establishment of native species*	
3.8	*Undertake biomass control (if required) around replanted salvaged material*	*PV*	*Summer – in order to allow native plants to set seed*	*Ensure adequate space around replanted salvaged material and inner tussock space is relatively open*	*PV*
3.9	*Fill any gaps between T.triandra outside planting area with Austrostipa spp. tubestock in high densities*	*Bushland Management Contractor and SMREP*	*Autumn 2013*	*Gaps in T.triandra filled with native C3 species that can compete with Chilean needle-grass*	*SMREP*
3.10	*Undertake monitoring of the replanted salvaged material*	*Bushland Management Contractor and SMREP*	*Undertake monitoring of plant health and site threats at six month intervals*	*Ensure risks within the receptor site do not adversely impact replanted MFL plants*	*SMREP*
3.11	*Carry out follow-up watering of planted insurance material if required as per Section 5.1.3*	*Bushland Management Contractor and SMREP*	*As required, based on rainfall levels*	*No loss of plants due to water stress*	*SMREP*
3.12	*Undertake monitoring and follow-up repairs of herbivore exclusion fences as required*	*PV*	*Inspection every two months, repairs as required*	*Fence remains functional and site free of rabbits*	*PV*
3.13	*Monitor rabbit levels and control if necessary*	*PV*	*After peak breeding season – late summer/early autumn*	*Rabbit levels low within receptor site*	*PV*
3.14	*Submit progress report to DoT, SEWPAC, DEPI and PV*	*Bushland Management Contractor and SMREP*	*Refer to Table 5.1 for reporting schedule*	*Report submitted. All receptor sites to be covered in one report*	*SMREP*

Year 4- June 2013 to May 2014

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
4.1	*Undertake control of high threat grassy, herbaceous and woody weeds through entire receptor site. Cultivate soil following weed control.*	*Flora Victoria*	*On-going*	*Reduce overall weed cover to less than 5 per cent*	*PTV*
4.2	*Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material*	*Flora Victoria*	*Before seed heads mature in winter/spring*	*Eliminate grassy/herbaceous weeds within a one metre radius*	*PTV*

4.3	***Carry out planting of insurance Matted Flax-lily to replace deceased plants, if required.***	***PV***	***Winter***	***No loss of plants during transport and replanting***	***PV***
4.4	*Undertake biomass control (if required) around replanted salvaged material*	*PV*	*Summer – in order to allow native plants to set seed*	*Ensure adequate space around replanted salvaged material and inner tussock space is relatively open*	*PV*
4.5	*Undertake monitoring of the replanted salvaged material*	*Ecologist engaged by VicTrack*	*Undertake monitoring of plant health and site threats on anniversary of MFL salvage, October*	*Ensure risks within the receptor site do not adversely impact replanted MFL plants*	PTV
4.6	*Carry out follow-up watering of planted insurance material if required as per Section 5.1.3*	*PV*	*As required, based on rainfall levels*	*No loss of plants due to water stress*	*PV*
4.7	*Undertake monitoring and follow-up repairs of herbivore exclusion fences as required*	*PV*	*Repairs as required*	*Fence remains functional and site free of rabbits*	*PV*
4.8	*Monitor rabbit levels and control if necessary*	*PV*	*After peak breeding season – late summer/early autumn*	*Rabbit levels low within receptor sites*	*PV*
4.9	*Submit progress report to SEWPAC, PTV, DEPI and PV*	*Ecologist engaged by VicTrack*	*Refer to Table 5.1 for reporting schedule*	*Report submitted. All receptor sites to be covered in one report*	*PTV*

Year 5- June 2014 to May 2015

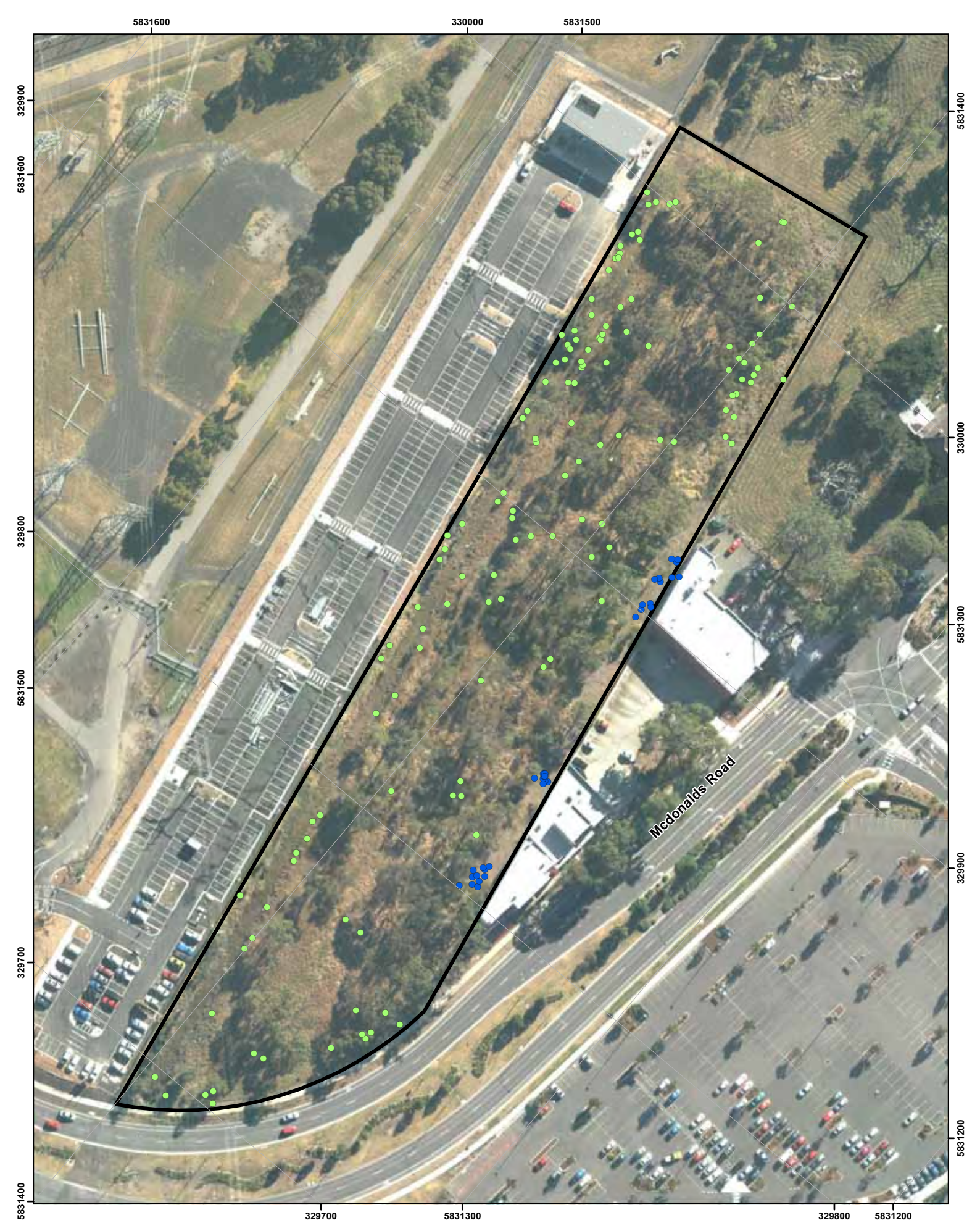
Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
5.1	Undertake control of high threat grassy, herbaceous and woody weeds through entire receptor site. Cultivate soil following weed control.	Flora Victoria	Ongoing	Reduce overall weed cover to less than 5 per cent	PTV
5.2	Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material	Flora Victoria	Before seed heads mature in winter/spring	Eliminate grassy/herbaceous weeds within a one metre radius	PTV

5.3	**Carry out planting of insurance Matted Flax-lily to replace deceased plants, if required.**	**PV**	**Winter**	**No loss of plants during transport and replanting**	**PV**
5.4	Undertake biomass control (if required) around replanted salvaged material	PV	Summer – in order to allow native plants to set seed	Ensure adequate space around replanted salvaged material and inner tussock space is relatively open	PV
5.5	Undertake monitoring of the replanted salvaged material	Ecologist engaged by VicTrack	Undertake monitoring of plant health and site threats on anniversary of MFL salvage, October	Ensure risks within the receptor site do not adversely impact replanted MFL plants	VicTrack
5.6	Carry out follow-up watering of planted insurance material if required as per Section 5.1.3	PV	As required, based on rainfall levels	No loss of plants due to water stress	PV
5.7	Undertake monitoring and follow-up repairs of herbivore exclusion fences as required	PV	Repairs as required	Fence remains functional and site free of rabbits	PV
5.8	Monitor rabbit levels and control if necessary	PV	After peak breeding season – late summer/early autumn	Rabbit levels low within receptor site	PV
5.9	Submit progress report to SEWPAC, PTV, DEPI and PV	Ecologist engaged by VicTrack	Refer to Table 5.1 for reporting schedule	Report submitted. All receptor sites to be covered in one report	VicTrack
5.10	Sow native seed grass seed. Site must be assessed as suitable and agreed to sow seed	PV, Flora Victoria and PTV	April 2015	Cover of weeds to be less than 5 per cent PV and PTV to agree	PTV

Year 6 to 10- June 2015 to May 2020 (PV continue maintenance and management of the site, whilst VicTrack are responsible for annual monitoring of translocated plant health)

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
6.1	Undertake monitoring of replanted salvage material	Ecologist engaged by VicTrack	Undertake monitoring of plant health and site threats on anniversary of MFL salvage, October	Document presence/absence of all plants. Document threats at site	VicTrack
6.2	Submit a letter to SEWPAC, PTV, DEPI and PV summarising results of monitoring visit	Ecologist engaged by VicTrack	Within three months of monitoring visit	Timely submission of letter	VicTrack
6.3	Complete follow-up spraying of re-seeded area following sowing of native grass seed	Flora Victoria	Ongoing	Treat all high threat grassy and herbaceous weeds within native buffer zone.	PTV
6.4	Completion of remediation works and handover site management to Parks Victoria	PV, Flora Victoria and PTV	April 2016	At least 5 native grass plants per m^2 in re-seeded area. All parties to agree on successful establishment of native buffer.	PTV

Appendix E:
Receptor Site 4—South Morang Protection Zone Location and Management Actions



South Morang Rail Extension Project

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DATUM GDA 1994, PROJECTION MGA ZONE 55

LEGEND

- Translocated Matted Flax-lily
- Known Matted Flax-lily (August 2010)
- Receptor Site
- Watercourse
- Property Boundary

Receptor Site 4

CLIENT	South Morang Rail Extension Project
PROJECT ID	South Morang Rail Extension
CREATED BY	EM
LAST MODIFIED	EM 1/06/2012
DRG NO	MET005-G-MAP-004-A

REVISION

A

Table E1: Management Actions for Receptor Site 4

Year 1 commenced in October 2010. Year 1 was shortened in order to synchronise future years with the most appropriate Matted Flax-lily planting time (autumn/winter). Note that actions in *Italics* have been completed at the time of preparing the current revision.

Year 1- October 2010 to May 2011

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
1.1	*Gain consent from VicTrack for use of area as a receptor site*	*Exchange of letter between VicTrack and SMREP.*	*Pre commencement of removal of MFL from rail corridor*	*Use as receptor site approved by relevant stakeholders*	*Negotiated between SMREP and VicTrack.*
1.2	*Prepare South Morang Protection Zone Management Plan (PZMP)*	*SMREP*	*Before direct translocation of MFL*	*Endorsement of strategy by DEPI*	*SMREP, in consultation with VicTrack*
1.3	*Upgrade existing site fencing in accordance with PZMP*	*Fencing Contractor, SMREP and VicTrack*	*Following completion of PZMP*	*Fencing of entire receptor site with herbivore exclusion fence*	*SMREP*
1.4	*Conduct rabbit control in accordance with PZMP*	*Bushland Management Contractor, Pest Animal Contractor and SMREP*	*Before direct translocation of the MFL*	*No evidence of rabbits within receptor site*	*SMREP*
1.5	*Eliminate high threat grassy, herbaceous and woody weeds from near proposed MFL planting locations in accordance with PZMP*	*Bushland Management Contractor and SMREP*	*Before direct translocation of MFL*	*Eliminate grassy, herbaceous and woody weeds in accordance with PZMP*	*SMREP*
1.6	***Directly translocate Matted Flax-lily material from west side of McDonalds Road into receptor site. Complete baseline monitoring and then at 1, 3, 6 and 12 months after***	***Bushland Management Contractor and SMREP***	***After site preparatory works are completed***	***No loss of plants during transport and replanting***	***SMREP***
1.7	*Undertake biomass control (if required) around replanted salvaged material*	*Bushland Management Contractor and SMREP*	*Before direct translocation of MFL*	*Ensure adequate space around replanted salvaged material ad inter tussock space is relatively open*	*SMREP*
1.8	*Carry out follow-up watering of replanted*	*Bushland Management Contractor and SMREP*	*As required, based on rainfall levels measured*	*No loss of plants due to water stress*	*SMREP*

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
	material if required as per Section 5.1.3		*by rain gauge at South Morang project office*		
1.9	*Undertake follow up weed control for woody weeds and grassy weeds in accordance with PZMP*	*Bushland Management Contractor and SMREP*	*As required following plant health monitoring visits*	*Ensure weed cover does not exceed current levels*	*SMREP*
1.10	*Undertake monitoring and follow-up repairs of herbivore exclusion fencing as required*	*SMREP*	*Inspection every two months, repairs as required*	*Fences remain functional and sites free of rabbits*	*SMREP*
1.11	*Submit progress report to DoT, SEWPAC, DEPI and PV*	*Bushland Management Contractor and SMREP*	*Refer to Table 5.1 for reporting schedule*	*Reports submitted. All receptor sites to be covered in one report*	*SMREP*
1.12	*Undertake research program monitoring action as detailed in the site PZMP.*	*SMREP*	*Refer to PZMP*	*See DEPI and VicTrack endorsed Management Plan*	*SMREP*

Year 2- June 2011 to May 2012

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
2.1	*Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material*	*Bushland Management Contractor and SMREP*	*Before seed heads mature in winter/spring*	*Eliminate grassy/herbaceous weeds within a one metre radius*	*SMREP*
2.2	*Undertake biomass control (if required) around replanted salvaged material*	*Bushland Management Contractor and SMREP*	*Summer – in order to allow native plants to set seed*	*Ensure adequate space around replanted salvaged material and inner tussock space is relatively open*	*SMREP*
2.3	***Carry out delayed translocation of Matted Flax-lily material originally from west side of McDonalds road. Complete baseline***	***Bushland Management Contractor and SMREP***	***Winter***	***No loss of plants during transport and replanting***	***SMREP***

	monitoring and then at 1, 3, 6 and 12 months after				
2.4	*Undertake monitoring of the replanted salvaged material*	*Bushland Management Contractor and SMREP*	*Undertake monitoring of plant health and site threats at 18 months from direct translocation*	*Ensure risks within the receptor site do not adversely impact replanted MFL plants*	*SMREP*
2.5	*Carry out follow-up watering of material replanted in Year 2 if required as per Section 5.1.3*	*Bushland Management Contractor and SMREP*	*As required, based on rainfall levels measured by rain gauge at South Morang project office*	*No loss of plants due to water stress*	*SMREP*
2.6	*Undertake monitoring and follow-up repairs of herbivore exclusion fencing as required*	*SMREP*	*Inspection every two months, repairs as required*	*Fences remain functional and sites free of rabbits*	*SMREP*
2.7	*Monitor rabbit levels and control if necessary*	*PV*	*After peak breeding season – late summer/early autumn*	*Rabbit levels low within receptor site*	*SMREP*
2.8	*Submit progress report to DoT, SEWPAC, DEPI and VicTrack*	*Bushland Management Contractor and SMREP*	*Refer to Table 5.1 for reporting schedule*	*Report submitted. All receptor sites to be covered in one report*	*SMREP*
2.9	*Review translocation and management actions*	*SMREP*	*End of year 2*	*Ensure forward management regime based on results to date*	*SMREP*
2.10	*Undertake research program monitoring actions. As detailed in the site management plan.*	*SMREP*	*Refer to Management Plan*	*See DEPI and VicTrack endorsed Management Plan*	*SMREP*

Year 3- June 2012 to May 2013

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
3.1	*Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material*	*Bushland Management Contractor and SMREP*	*Before seed heads mature in winter/spring*	*Eliminate grassy/herbaceous weeds within a one metre radius*	*SMREP*
3.2	*Undertake biomass control (if required) around*	*Bushland Management*	*Summer – in order to allow native plants to set*	*Ensure adequate space around replanted salvaged*	*SMREP*

	replanted salvaged material	*Contractor and SMREP*	*seed*	*material and inner tussock space is relatively open*	
3.3	***Carry out planting of insurance Matted Flax-lily to replace deceased plants, if required.***	***Bushland Management Contractor and SMREP***	***Winter***	***No loss of plants during transport and replanting***	***SMREP***
3.4	*Undertake monitoring of the replanted salvaged material*	*Bushland Management Contractor and SMREP*	*Undertake monitoring of plant health and site threats at 24 months from direct translocation, October 2012*	*Ensure risks within the receptor site do not adversely impact replanted MFL plants*	*SMREP*
3.5	*Carry out follow-up watering of material replanted in Year 3 if required as per Section 5.1.3*	*Bushland Management Contractor and SMREP*	*As required, based on rainfall levels*	*No loss of plants due to water stress*	*SMREP*
3.6	*Undertake monitoring and follow-up repairs of herbivore exclusion fencing as required*	*SMREP*	*Inspection every month, repairs as required*	*Fences remain functional and sites free of rabbits*	*SMREP*
3.7	*Monitor rabbit levels and control if necessary*	*PV*	*After peak breeding season – late summer/early autumn*	*Rabbit levels low within receptor site*	*SMREP*
3.8	*Submit progress report to DoT, SEWPAC, DEPI and VicTrack*	*Bushland Management Contractor and SMREP*	*Refer to Table 5.1 for reporting schedule*	*Report submitted. All receptor sites to be covered in one report*	*SMREP*

Year 4- June 2013 to May 2014

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
4.1	*Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material*	*Bushland Management Contractor engaged by VicTrack*	*Before seed heads mature in winter/spring*	*Eliminate grassy/herbaceous weeds within a one metre radius*	PTV
4.2	*Undertake biomass control (if required) around replanted salvaged material*	*Bushland Management Contractor engaged by VicTrack*	*Summer – in order to allow native plants to set seed*	*Ensure adequate space around replanted salvaged material and inner tussock space is relatively open*	PTV

4.3	***Carry out planting of insurance Matted Flax-lily material originally from west side of McDonalds road. Complete baseline monitoring and then at 1, 3, 6 and 12 months after***	***Bushland Management Contractor engaged by VicTrack***	***Winter***	***No loss of plants during transport and replanting***	PTV
4.4	*Undertake monitoring of the replanted salvaged material*	*Ecologist engaged by VicTrack*	*Undertake monitoring of plant health and site threats on anniversary of MFL salvage, October 2013*	*Ensure risks within the receptor site do not adversely impact replanted MFL plants*	PTV
4.5	*Carry out follow-up watering of planted insurance material if required as per Section 5.1.3*	*Bushland Management Contractor engaged by VicTrack*	*As required, based on rainfall levels*	*No loss of plants due to water stress*	PTV
4.6	*Undertake monitoring and follow-up repairs of herbivore exclusion fencing as required*	*Bushland Management Contractor engaged by VicTrack*	*Inspection every month, repairs as required*	*Fences remain functional and sites free of rabbits*	PTV
4.7	*Monitor rabbit levels and control if necessary*	*Bushland Management Contractor engaged by VicTrack*	*After peak breeding season – late summer/early autumn*	*Rabbit levels low within receptor site*	*PTV*
4.8	*Submit progress report to SEWPAC, PTV, DEPI and PV*	*Ecologist engaged by VicTrack*	*Refer to Table 5.1 for reporting schedule*	*Report submitted. All receptor sites to be covered in one report*	*PTV*

Year 5- June 2014 to May 2015

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
5.1	Undertake control of grassy and herbaceous weeds within a one metre radius of replanted salvage material	Bushland Management Contractor engaged by VicTrack	Before seed heads mature in winter/spring	Eliminate grassy/herbaceous weeds within a one metre radius	VicTrack
5.2	Undertake biomass control (if required) around replanted salvaged material	Bushland Management Contractor engaged by VicTrack	Summer – in order to allow native plants to set seed	Ensure adequate space around replanted salvaged material and inner tussock space is relatively open	VicTrack

5.3	**Carry out planting of insurance Matted Flax-lily material originally from west side of McDonalds road, if required. Complete baseline monitoring and then at 1, 3, 6 and 12 months after**	**Bushland Management Contractor engaged by VicTrack**	**Winter**	**No loss of plants during transport and replanting**	VicTrack
5.4	Undertake monitoring of the replanted salvaged material	Ecologist engaged by VicTrack	Undertake monitoring of plant health and site threats on anniversary of MFL salvage, October 2014	Ensure risks within the receptor site do not adversely impact replanted MFL plants	VicTrack
5.5	Carry out follow-up watering of planted insurance material if required as per Section 5.1.3	Bushland Management Contractor engaged by VicTrack	As required, based on rainfall levels	No loss of plants due to water stress	VicTrack
5.6	Undertake monitoring and follow-up repairs of herbivore exclusion fencing as required	Bushland Management Contractor engaged by VicTrack	Inspection every month, repairs as required	Fences remain functional and sites free of rabbits	VicTrack
5.7	Monitor rabbit levels and control if necessary	Bushland Management Contractor engaged by VicTrack	After peak breeding season – late summer/early autumn	Rabbit levels low within receptor site	VicTrack
5.8	Submit progress report to SEWPAC, PTV, DEPI and PV	Ecologist engaged by VicTrack	Refer to Table 5.1 for reporting schedule	Report submitted. All receptor sites to be covered in one report	VicTrack

Year 6 to 10- June 2015 to May 2020

Action No.	Land use and management actions to be completed	Resource/personnel required	Timing of action	Key performance target	To be actioned by
6.1	Undertake monitoring of replanted salvage material	Ecologist engaged by VicTrack	October of each year.	Document presence/absence of plants. Document threats at site	VicTrack
6.2	Submit a letter to SEWPAC, DEPI and VicTrack summarising results of monitoring visit	Ecologist engaged by VicTrack	Within three months of monitoring visit	Timely submission of letter	VicTrack

Appendix F:
Plant Health and Site Threat Monitoring Datasheet

Table F1: Example Plant Health and Site Threat Monitoring Datasheet

Plant Health and Site Threat Monitoring Datasheet									
Receptor site:				Percentage of Weed Cover					
Assessor Name/s:				High Threat/High Impact Weeds present:					
Patch Number	Date	Co-ordinates or Way Point Number	Plant Present/Absent	Plants Flowering or seeding?	Tillers		Patch Size between widest placed tillers (cm)	Evidence of herbivory or pathogens. If yes, are fence breaches	Comments (i.e. signs of threats: weeds/biomass levels, associated native/exotic plants, regeneration etc)
					No. of tillers	Approx. height			

Appendix G:
Rain Gauge Monitoring Log

Table G1: Rain Gauge Monitoring Log

					Complete after monitoring visit, if required			
Date	**Reading**	**Monitoring visit required? (Y/N)**	**Name**	**Sign**	**Watering required? (Y/N)**	**Watering completed? (Y/N/NA)**	**Name**	**Sign**