Melbourne Water Corporation

2012 Post-construction Monitoring

Striped Legless Lizard

March 2013

Executive summary

The Sheoak property, located on the west side of the Melba Highway, approximately 3 kilometres south of Yea, was purchased by Melbourne Water Corporation (MWC) in early 2008 for construction of the High-lift Pump Station (HLPS), as part of the Sugarloaf Pipeline Project. During ecological surveys associated with the Sugarloaf Project, it became evident that the property supported significant ecological values, including the presence of two fauna species listed under the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, Striped Legless Lizard (SLL) (*Delma impar*) and Golden Sun Moth (GSM) (*Synemon plana*).

Due to the nationally significant ecological values of the site, MWC determined that the large portion of the Sheoak property not required for the HLPS would be set aside for conservation purposes and managed as part of the Project's agreed biodiversity offsets. Approximately half of the site is managed in accordance with the approved offsets package (Offset Management Plan (OMP) area), while the other half is managed for conservation purposes (Conservation Management Plan (CMP) area).

A key compensatory action under the offsets package agreed to by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) and the Victorian Department of Sustainability and Environment (DSE) was that parts of the Sheoak property were to be managed in perpetuity for native grassland values, including threatened flora and fauna species such as the SLL (irrespective of land ownership in the future). In accordance with the project's permit conditions, a monitoring program was implemented for GSM and SLL within the Sheoak property, for both the OMP and CMP areas.

Two years of post-construction monitoring concluded at the end of 2011, and an additional three year monitoring program on the Sheoak property was initiated in 2012 which will conclude at the end of 2014. During the two-year post-construction monitoring period, locations in adjacent properties and across the Sheoak property were established as monitoring sites. At the conclusion of the two-year post-construction monitoring period monitoring sites outside of the Sheoak property were removed and five new grids on Sheoak were established during the summer of 2011/2012 making a total of 14 grids across the Sheoak property.

The survey method and effort employed for the post-construction monitoring of the SLL was compliant with the approved mitigation plan for the species. As in previous years, each grid was checked on four occasions over the calendar year, one in winter and three in spring/summer. This document presents the results of the third year of monitoring across the Sheoak property.

Seven fauna species, including SLL, were identified during shelter checks during the 2012 monitoring period. Up to 12 SLL individuals were found across the Sheoak property, ten of which were located within shelter grids. The two other observations were incidental detections of SLL individuals or sloughs also made on the Sheoak property but not within a shelter grid.

The SLL is a cryptic species and may not be detected by surveys even when present at a site (DSEWPC 2011). In addition, the grazing regime and floristic structure and composition is quite variable across Sheoak but little in the way of conclusions can be drawn relating these variables to the presence of SLL at any given shelter grid site due to the lack of this information in detail. It is recognised by Melbourne Water that a significant management challenge for the CMP area will be the effective use of ecological grazing regimes to control grassland biomass, maintain native species diversity and cover, and maintain/enhance the biodiversity values of the property. However, there are potential risks in using livestock grazing as an ecological management tool, namely, if the trigger levels for introducing or removing stock are not based upon sound science and rigorously applied, then adverse conservation outcomes may result, i.e. the grassland may be too heavily grazed, or not grazed enough, both of which may adversely impact SLL populations on site.

The GSM monitoring has recently been refined and restructured into an adaptive monitoring program to assist with management of the grazing, so the conservation values (namely GSM populations) of the property are not compromised. It is recommended that the SLL monitoring is realigned and integrated with the existing GSM monitoring and incorporated into this adaptive monitoring and management framework.

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1. Introduction

1.1 Introduction

State and federal regulatory authorities approved the Sugarloaf Pipeline Project in mid-2008. As part of the project, the Sheoak property, located on the west side of the Melba Highway approximately 3 kilometres south of Yea, was purchased by Melbourne Water Corporation (MWC) for the construction of the High-lift Pump Station (HLPS). During ecological surveys associated with the Sugarloaf Project, it became evident that the property supported significant ecological values, including the presence of two fauna species listed under the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, Striped Legless Lizard (SLL) (*Delma impar*) and Golden Sun Moth (GSM) (*Synemon plana*).

Due to the nationally significant ecological values of the site, MWC determined that the large portion of the Sheoak property not required for the HLPS would be set aside for conservation purposes and managed as part of the Project's agreed biodiversity offsets, in accordance with *Victoria's Native Vegetation Management: A Framework for Action* (DNRE 2002). Approximately half of the site is managed in accordance with the approved offsets package (Offset Management Plan (OMP) area), while the other half is managed for conservation purposes (Conservation Management Plan (CMP) area).

A key compensatory action under the offsets package agreed to by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) and the Victorian Department of Sustainability and Environment (DSE) was that parts of the Sheoak property were to be managed in perpetuity for native grassland values, including threatened flora and fauna species such as the SLL (irrespective of land ownership in the future). In accordance with the project's permit conditions, a monitoring program was implemented for GSM and SLL within the Sheoak property, for both the OMP and CMP areas.

The SLL is a cryptic species and may not be detected by surveys even when present at a site (DSEWPC 2011). In addition, the grazing regime and floristic structure and composition is quite variable across Sheoak but little in the way of conclusions can be drawn relating these variables to the presence of SLL at any given shelter grid site due to the lack of this information in detail. It is recognised by Melbourne Water that a significant management challenge for the CMP area will be the effective use of ecological grazing regimes to control grassland biomass, maintain native species diversity and cover, and maintain/enhance the biodiversity values of the property. However, there are potential risks in using livestock grazing as an ecological management tool, namely, if the trigger levels for introducing or removing stock are not based upon sound science and rigorously applied, then perverse conservation outcomes may result, i.e. the grassland may be too heavily grazed, or not grazed enough, both of which may adversely impact SLL populations on site.

One of the approved mitigation measures, stated within the project's Environment Management Strategy[1,2] upon which approvals were based, was that a two-year, post-construction monitoring program for the SLL will be developed and implemented. The monitoring was to occur across the Sheoak property and at any location along the alignment where five or more SLL were captured during the course of the project (which included the entire construction phase and the targeted surveys for SLL that were done as part of the pre-approvals assessments). Through extensive consultation, discussion and revision, a monitoring plan for SLL[3] was developed for the project and endorsed by DSE. The survey method and effort employed for the post-construction monitoring of the SLL was compliant with the approved mitigation plan for the species. This two-year post construction monitoring plan has concluded (end of 2011) but three additional years of post-construction monitoring for SLL was initiated on the Sheoak property as part of the ongoing CMP. This report present the first's years results of this three year monitoring program. The program is expected to be completed at the end of 2014.

1.2 Limitations

This report has been prepared by GHD for Melbourne Water Corporation and may only be used and relied on by Melbourne Water Corporation for the purpose agreed between GHD and the Melbourne Water Corporation as set out in Section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Melbourne Water Corporation arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

[1] Attachment 7 of the EMS (Mitigation Plan for EPBC Act and FFG Act Listed Fauna Species): Chapter 3.6.2.

2 Also stated within Fauna Management Programs (which formed part of the Environment Management Plans) relevant to project areas north of Devlin Bridge.

3 SLL detection includes live individuals, deceased individuals, sections of tails and sloughs.

2. Methods

2.1 Shelter Grid Array

During the previous monitoring period (2011) monitoring sites existed at nine locations (monitoring sites A – I) within the Sheoak property (i.e. outside of the construction corridor) and seven locations within the construction corridor where five or more SLL were captured. Monitoring of sites within the construction corridor but outside of the Sheoak property was not continued into the 2012 monitoring period (i.e. six of the seven monitoring sites were discontinued). These monitoring sites were packed up and redistributed to create five new sites within the broader Sheoak property (monitoring sites J – N).

Figure 1 shows the location of the grids across Sheoak property. More detail of the set up methods was provided in SLPA (2010). The following table (Table 1) details which tile grids are still in use.

Table 1 Location, formation and description of the shelter grids established for SLL monitoring in 2012

Property	Grid formation	Description
302.1	3 x 10, 1 x 20	Grid removed
26/28	5 x 10	Grid removed
327 North	2 x 25	Grid removed
327 South	2 x 25	Grid removed
328 North	2 x 25	Grid removed
328 South	2 x 25	Grid removed
Sheoak ROW	5 x 10	Grid was to remain - was removed by contractors without MWC knowledge 5 lines of 10 shelters approximately 5 m apart
Broader Sheoak A	5 x 10	Grids remain 5 lines of 10 shelters approximately 5 m apart
Broader Sheoak B	5 x 10	Grids remain 5 lines of 10 shelters approximately 5 m apart
Broader Sheoak C	2 x 17 + 1 x 16	Grids remain 2 lines of 17 shelters and one line of 16 shelters
Broader Sheoak D	5 x 10	Grids remain 5 lines of 10 shelters approximately 5 m apart
Broader Sheoak E	5 x 10	Grids remain 5 lines of 10 shelters approximately 5 m apart
Broader Sheoak F	5 x 10	Grids remain 5 lines of 10 shelters approximately 5 m apart
Broader Sheoak G	5 x 10	Grids remain 5 lines of 10 shelters approximately 5 m apart
Broader Sheoak H	5 x 10	Grids remain 5 lines of 10 shelters approximately 5 m apart
Broader Sheoak I	5 x 10	Grids remain 5 lines of 10 shelters approximately 5 m apart

Property	Grid formation	Description
Broader Sheoak J	5 x 10	Grid added summer 2011/2012 5 lines of 10 shelters approximately 5 m apart
Broader Sheoak K	5 x 10	Grid added summer 2011/2012 5 lines of 10 shelters approximately 5 m apart
Broader Sheoak L	5 x 10	Grid added summer 2011/2012 5 lines of 10 shelters approximately 5 m apart
Broader Sheoak M	5 x 10	Grid added summer 2011/2012 5 lines of 10 shelters approximately 5 m apart
Broader Sheoak N	5 x 10	Grid added summer 2011/2012 5 lines of 10 shelters approximately 5 m apart

2.2 Undertaking a monitoring check

Shelter grids (A-I and Sheoak ROW) were established during late 2009 / early 2010 and were first checked in May 2010. This allowed sufficient time for SLL to discover and adopt the shelters before checks commenced. In accordance with the endorsed monitoring plan, all shelters were checked on four occasions in the first year (2010 - results presented in SLPA 2010) and four occasions during the second year (2011 resulted presented in GHD 2012). This second year completed the post-construction monitoring requirements.

During the summer of 2011/2012 shelter grid sites in adjacent properties were removed and an additional five shelter grid sites were established across Sheoak (Figure 1, Table 1). During 2012, the third year of monitoring, all the set up shelter grid sites were checked once during the winter, twice in the spring and once in the summer (with the exception of the Sheoak ROW grid which was removed by Melbourne Water contactors at some point between the winter and spring checks) (Table 2).

Grid checks were conducted by two ecologists, and generally in the early morning (before temperatures exceeded 25°C) in order to detect individuals before they became too active and began to move away from the artificial shelters to undertake foraging and other activities within the surrounding grassy habitats. Prior to each grid check, a range of location and environmental details were recorded (Table 3). Every shelter within the grid was then carefully lifted from one end and checked for the presence of SLL or other vertebrates. Attempts were made to capture all SLL found beneath shelters for identification.

Live unharmed SLL that were captured during monitoring checks were photographed, measured and replaced under the shelter from which they were captured. Photographs were taken in a way that showed individual head-scale characteristics, so that recaptured SLL could be identified, and a general estimate of minimum numbers of SLL could be made.

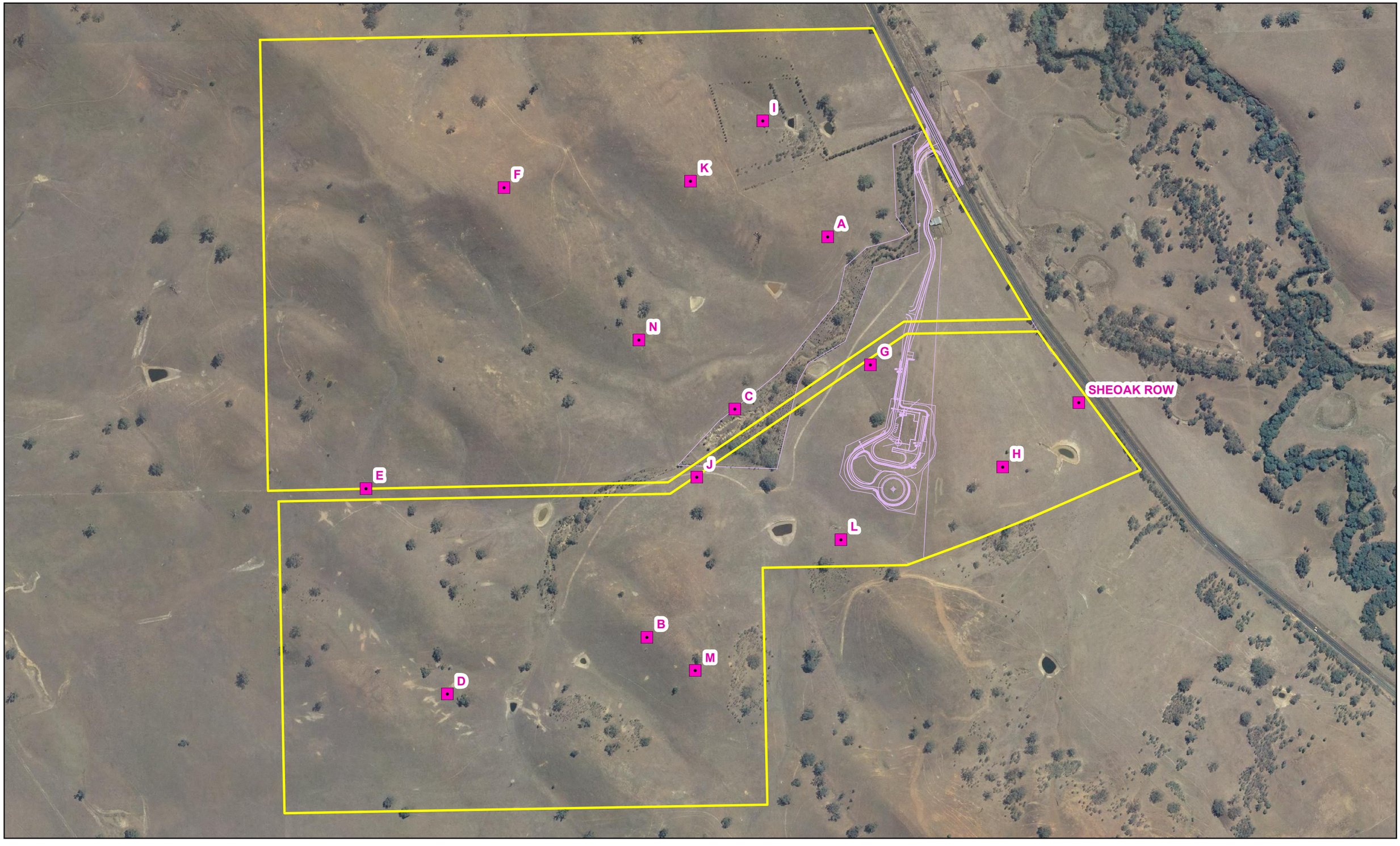
Table 2 Dates of Shelter Grid checks on each property during the third year of SLL monitoring 2012

Visit No.	Date	Sheoak ROW	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	21-Jun-12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	18-Oct-12	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	28-Nov-12	x								✓		✓		✓		
	29-Nov-12	x	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓	✓
4	11-Dec-12	x		✓	✓	✓	✓			✓		✓		✓	✓	
	12-Dec-12	x	✓					✓	✓		✓		✓			✓

Table 3 Survey Conditions for Shelter Grid Surveys during the third year of SLL monitoring 2012

Visit No.	Date	Time start	Temperature at start of survey (C°)	Cloud Cover (%)	Wind speed	Precipitation
1	21-Jun-12	0820	9	100	Mild	Light showers
2	18-Oct-12	0930	13	75	Still-Mild	None
3	28-Nov-12	0820	16	100	Still	None
	29-Nov-12	0600	16.9	0	Mild	None
4	11-Dec-12	0825	16	0	Mild	None
	12-Dec-12	0730	20	0	Moderate	None

NB: Temperatures are approximate and are collected from the Australian Government Bureau of Meteorology – Mangalore weather station.



1:6,500 Paper Size A3

0 30 60 120 180 240 300

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

LEGEND
- Sheoak Boundary
- Sheoak Pump Station Layout
- Tile Grid

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Melbourne Water Corporation
Sheoak Conservation Management Plan

Job Number	31-28217
Revision	A
Date	31 Jan 2012

Location of SLL Tile Grids

Figure 1

G:\31\28217\GIS\Maps\Working\008_TileGrid.mxd

Data source: DSE, Vicmap. Created by:cillingworth

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3. Results

A total of 80 individuals of at least six species of vertebrate (two reptiles and four amphibians) were detected beneath shelters over the course of the 2012 monitoring. Full survey results are presented in Appendix A and summarised below:

- **Striped Legless Lizard (*Delma impar*)** – evidence of up to 12 SLL were detected (i.e. four of the 12 observations were of sloughs, whilst 12 different individual lizards are possible it can not be discounted that sloughs were from actual lizards observed) from across six shelter grid sites and two incidental locations. Two of the 12 observations were incidental observations not found within shelter grids (location details of these two records are provided within Appendix A);
- Spotted Marsh Frog (*Limnodynastes tasmaniensis*) – 36 detections across five grids;
- Common Froglet (*Crinia signifera)* - five detections from one grid;
- Southern Bullfrog (*Limnodynastes dumerilli*) - three detections across two grids;
- Southern Brown Tree Frog, (*Litoria ewingi*) - seven detections across five grids;
- Eastern Brown Snake (*Pseudonaja textilis*) - two detections across two grids;
- Skink species (*Lampropholis sp.*) - 14 detections across five grids; and
- Unknown venomous snake (elapid) species – slough only, found from one site.

A number of small skinks were detected but rarely caught. These are likely to have been the Garden Skink (*Lampropholis guichenoti*), which is a relatively common species, or the closely related Litter Skink, *Lampropholis delicata*.

Only one grid (grid C) contained no evidence of any animals during the 2012 monitoring period.

Eight locations contained evidence of SLL (six grids – E,H,J,K,L,M and two incidental locations) compared to two confirmed locations during the 2011 monitoring period (grid I and one incidental location). The other two grids where SLL were found (E, H) were grids that were established 2009/2010 but which have not previously yielded any SLL.

Each of the SLL documented to occur (individuals and sloughs) were recorded during either the November (Spring) or December (Summer) check with seven and five SLL documented in each month respectively. In contrast, during the 2011 monitoring period only one SLL was found during the peak active season (October to December) and one during the non-active season (during August check).

Six of the SLL documented to occur were located within new grids (J, K, L and M) added to the Sheoak property during the 2011/2012 summer.

Four species of frogs were recorded under shelters, mainly in areas near water (i.e. farm dams or inundated low-lying areas). One snake species and one skink species were also confirmed from across the site.

4. Discussion

There is a marked difference between the numbers of SLL detected during construction (65) and during the three years of post-construction monitoring to date (17). The main reason for this disparity is likely to be the survey techniques employed, (i.e. disturbing and digging large tracts of ground with heavy machinery during construction, compared to localised shelter checks for post-construction monitoring) rather than a change in the SLL population present.

Wooden shelters were used for the duration of the post-construction monitoring period. This was due to the presence of sheep and cattle in the study area and the likelihood of ceramic/concrete shelters being broken by trampling. Ceramic/concrete shelters are commonly used for SLL monitoring, though in this case wooden shelters were chosen as they more closely replicate the naturally available shelter in grassy woodlands (i.e., fallen timber and coarse woody debris rather than surficial rocks). However, some characteristics of the wooden shelters used (e.g., thermal properties, texture and shape) may not have provided suitable SLL refuge habitat and this may have influenced the use of shelters by SLL and the numbers recorded during the monitoring.

In regards to observations during the post-monitoring, fewer SLL observations were made in the second year of monitoring when compared to the first (i.e., three observations in the first year, two in second year); however substantially more were recorded in the third year (2012 – 12 SLL). The small sample sizes do not allow meaningful conclusions to be made from this with regard to variation in population size and environmental factors that might influence the fluctuating lizard numbers. The paucity of SLL detections may have been a function of effectiveness of wooden grid shelters for SLL, availability of alternative natural shelter, timing of survey (i.e. time of day at each grid site), and seasonal variation in resource availability or use of shelters by SLL.

The relocation of six shelter grids from adjacent properties to within broader Sheoak has increased the number of SLL recorded, with four of the six new grids yielding SLL during their first season of establishment.

Total vertebrate fauna detections during the 2012 monitoring period were over two and a half times lower than the 2011 monitoring period but slightly higher than those recorded during 2010 (80 individuals in 2012, 213 individuals in 2011 and 49 individuals in 2010). Total numbers of species were slightly lower the 2011 monitoring period (2012 – 7 species, 2011 – 10 species). In addition to the influences identified for SLL above, there could be a number of reasons for this including changes in grazing regimes, change in vegetation biomass, or changes in seasonal conditions in the 2011 following significant rainfalls.

5. Conclusion

Though the current survey array is useful for gaining a broad picture of the presence and absence of SLL on Sheoak, the current data collected has no local (grid scale) contextual information (habitat or vegetation pattern) to help interpret what factors might predict SLL (or other vertebrates using the shelters) occurrence and distribution at Sheoak. It is recognised by Melbourne Water that a significant management challenge for the CMP area will be the effective use of ecological grazing regimes to control grassland biomass, maintain native species diversity and cover, and maintain/enhance the biodiversity values of the property. However, there are potential risks in using livestock grazing as an ecological management tool, namely, if the trigger levels for introducing or removing stock are not based upon sound science and rigorously applied, then adverse conservation outcomes may result, i.e. the grassland may be too heavily grazed, or not grazed enough, both of which may adversely impact SLL populations on site.

The Golden Sun Moth monitoring has recently been refined and restructured into an adaptive monitoring program to assist with management of the grazing, so the conservation values (namely GSM populations) of the property are not compromised. It is recommended that the SLL monitoring is realigned and integrated with the existing GSM monitoring and incorporated into this adaptive monitoring and management framework.

Two years (2013 and 2014) of the five-year monitoring requirement remain, and there is an opportunity to now integrate the existing monitoring with the more refined GSM monitoring and therefore to add value to the data being collected, that is (i) information on environmental determinants of SLL presence and distribution at Sheoak, (ii) trigger points for management and stocking (ecological grazing) with respect to SLL, and (iii) the similarities and differences between the responses and triggers of two important but very different threatened grassland fauna species (GSM and SLL).

As described for the GSM, long-term research and monitoring is crucial for the improved management of ecosystems and natural resources, and recent reviews have proposed a new paradigm of adaptive monitoring (Lindenmayer and Likens 2009). Adaptive monitoring aims to resolve many of the problems that have undermined previous attempts to establish long-term research and monitoring, namely by posing tractable questions, employing rigorous statistical design at the outset, using a conceptual model of the ecosystem or other entity being examined and a human need to know about ecosystem change (Lindenmayer and Likens 2009). As with the GSM monitoring, the SLL monitoring would be strengthened by employing this monitoring approach as well.

5.1 Recommendation to integrate the SLL monitoring with GSM

It is recommended that the SLL tile array is restructured to coincide with the GSM transects that have already been successfully established and sampled in December 2012 at Sheoak. The advantage of this refinement would be that:

- The GSM transects have been carefully stratified to reflect a range of grazing, slope, aspect and vegetation (native, non-native) combinations;
- Each transect has/will have floristic and structural vegetation data collected in Spring and Summer;
- The broad environmental and vegetation data can be used to examine determinants of SLL distribution and abundance at Sheoak; and

- There is some efficiency in placing and checking tiles in the pre-existing transect array that also value-adds to the data being collected.

Though it will not be feasible to arrange tiles along all the GSM transects due to time and cost limitations, the following variation to the SLL monitoring is recommended:

- Sample a subset of transects, representing a balanced distribution of the treatments (aspect, position, vegetation, grazing). It is recommended 48 transects, representing three replicates of each of the 16 possible combinations of the above are established;
- The tiles will be replaced with roof tiles or similar sturdy tile material, which are the most suitable artificial shelter for sampling SLL and other vertebrates;
- Each transect consist of 10 tiles, spaced 10 m apart; and
- Sampling will strictly occur in the morning between dawn and three hours after dawn, as this is the time period where ectothermic species are most likely to be sheltering and in a semi-torpid state. If tiles are checked during the day when temperatures are warm, reptiles are less likely to be under the tiles.

The timing of the four surveys will remain as previous:

- Three well-spaced occasions between October and December (the peak active season for the SLL); and
- One occasion later in the potential active season (after February) or during the non-active season.

6. References

DSE 2007. Advisory List of Threatened Vertebrate Fauna in Victoria – 2007. Department of Sustainability and Environment, East Melbourne, Victoria.

DSEWPC 2011. Survey Guidelines for Australia's Threatened Reptiles, Commonwealth of Australia. Available online from: http://www.environment.gov.au/epbc/publications/threatened-reptiles.html. Accessed 15 Feb 2012

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IUCN, 2009, *IUCN Red List of Threatened Species. Version 2009.1.* < http://www.iucnredlist.org/apps/redlist/details/6315/0 >. Downloaded on 14 April 2011.

SLPA 2010. Post Construction Monitoring Report Striped Legless lizard. Document Number: SPA-REP-GL-ENV-0047.

Appendices

Appendix A - Survey results

Table A1 Results of survey grids within Sheoak

Grid ID	Check #	Date	Fauna detected?	Species	Count
SHEOAK ROW	1	Jun 2012	Yes	Spotted Marsh Frog, *Limnodynastes tasmaniensis*	5
	2	Oct 2012	No fauna detected – Grid removed		
	3	Nov 2012			
	4	Dec 2012			
A	1	Jun 2012	Yes	Spotted Marsh Frog, *Limnodynastes tasmaniensis*	4
				Southern Brown Tree Frog, *Litoria ewingi*	2
	2	Oct 2012	No		
	3	Nov 2012	No		
	4	Dec 2012	Yes	Eastern Brown Snake, *Pseudonaja textilis*	1
B	1	Jun 2012	Yes	Southern Bullfrog, *Limnodynastes dumerili*	1
	2	Oct 2012	No		
	3	Nov 2012	No		
	4	Dec 2012	No		
C	1	Jun 2012	No		
	2	Oct 2012	No		
	3	Nov 2012	No		
	4	Dec 2012	No		
D	1	Jun 2012	Yes	Spotted Marsh Frog, *Limnodynastes tasmaniensis*	1
	2	Oct 2012	Yes	Spotted Marsh Frog, *Limnodynastes tasmaniensis*	1
	3	Nov 2012	Yes	Skink sp., *Lampropholis* sp.	1
	4	Dec 2012	No		
E	1	Jun 2012	Yes	Southern Bullfrog, *Limnodynastes dumerili*	1
	2	Oct 2012	Yes	Southern Bullfrog, *Limnodynastes dumerili*	1
	3	Nov 2012	Yes	**Striped Legless Lizard, *Delmar impar***	**2**
				Striped Legless Lizard slough, *Delmar impar*	**1**
	4	Dec 2012	No		
F	1	Jun 2012	Yes	Southern Brown Tree Frog, *Litoria ewingi*	2
	2	Oct 2012	No		
	3	Nov 2012	No		
	4	Dec 2012	No		

Grid ID	Check #	Date	Fauna detected?	Species	Count
G	1	Jun 2012	Yes	Spotted Marsh Frog, *Limnodynastes tasmaniensis*	3
				Southern Brown Tree Frog, *Litoria ewingi*	1
	2	Oct 2012	No		
	3	Nov 2012	Yes	Skink sp., *Lampropholis* sp.	1
	4	Dec 2012	Yes	Eastern Brown Snake, *Pseudonaja textilis*	1
H	1	Jun 2012	Yes	Spotted Marsh Frog, *Limnodynastes tasmaniensis*	1
				Southern Brown Tree Frog, *Litoria ewingi*	1
				Skink sp., *Lampropholis* sp.	1
	2	Oct 2012	Yes	Spotted Marsh Frog, *Limnodynastes tasmaniensis*	1
	3	Nov 2012	Yes	**Striped Legless Lizard, *Delmar impar***	**1**
				Skink sp., *Lampropholis* sp.	2
	4	Dec 2012	No		
I	1	Jun 2012	Yes	Spotted Marsh Frog, *Limnodynastes tasmaniensis*	12
				Common Froglet, *Crinia signifera*	3
				Southern Brown Tree Frog, *Litoria ewingi*	1
	2	Oct 2012	Yes	Spotted Marsh Frog, *Limnodynastes tasmaniensis*	4
	3	Nov 2012	Yes	Common Froglet, *Crinia signifera*	2
	4	Dec 2012	Yes	Venomous snake species, Elapidae slough	1
J	1	Jun 2012	Yes	Spotted Marsh Frog, *Limnodynastes tasmaniensis*	3
	2	Oct 2012	Yes	Skink sp., *Lampropholis* sp.	3
	3	Nov 2012	Yes	**Striped Legless Lizard slough, *Delma impar***	**1**
				Skink sp., *Lampropholis* sp.	5
	4	Dec 2012	Yes	**Striped Legless Lizard, *Delma impar***	**1**
K	1	Jun 2012	No		
	2	Oct 2012	No		
	3	Nov 2012	No		
	4	Dec 2012	Yes	**Striped Legless Lizard slough, *Delma impar***	**1**
L	1	Jun 2012	No		
	2	Oct 2012	Yes	Skink sp., *Lampropholis* sp.	1
	3	Nov 2012	Yes	**Striped Legless Lizard, *Delma impar***	**1**
	4	Dec 2012	Yes	**Striped Legless Lizard, *Delma impar***	**1**

Grid ID	Check #	Date	Fauna detected?	Species	Count
M	1	Jun 2012	No		
	2	Oct 2012	No		
	3	Nov 2012	Yes	**Striped Legless Lizard, *Delma impar***	**1**
	4	Dec 2012	No		
N	1	Jun 2012	Yes	Spotted Marsh Frog, *Limnodynastes tasmaniensis*	1
	2	Oct 2012	No		
	3	Nov 2012	No		
	4	Dec 2012	No		
Incidental 1	0361230 5877034	11 Dec 2012	Yes	**Striped Legless Lizard slough, *Delma impar***	**1**
Incidental 2	0361163 5877978	11 Dec 2012	Yes	**Striped Legless Lizard (dead), *Delma impar***	**1**

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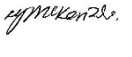
Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	K Dalton V McKenzie	A Kutt		V McKenzie		22/3/13

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