

出國報告（出國類別：考察）

考察國際自然保護聯盟(IUCN)  
澳洲綠色名錄保護區

服務機關：內政部營建署

姓名職稱：鄭凱方技士

服務機關：陽明山國家公園管理處

姓名職稱：華予菁課長

派赴國家/地區：澳洲

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## 摘 要

本出國計畫係源自內政部營建署於 2018 年度辦理「IUCN Green List 申辦推動暨國際交流計畫」，邀請 IUCN 全球保護區計畫主席及東亞區副主席來臺說明綠色名錄計畫之內涵，2019 年 4 月續於「地景與永續發展國際研討會」與 IUCN 綠色名錄計畫創始教授 Marc Hockings 持續探討該計畫概念與臺灣推動之展望。為實地了解澳洲綠色名錄計畫的操作模式，特規劃考察國際自然保護聯盟(IUCN) 澳洲綠色名錄保護區，主要考察內容包括：2014 年 IUCN 首批公布之綠色名錄－新南威爾斯州阿拉瓜爾國家公園及拜倫角州立自然保護區，及近期澳洲官方戮力推動加入綠色名錄之列的昆士蘭州雷明頓國家公園，並與新南威爾斯州與昆士蘭州的國家公園與野生動物管理署相關從業人員進行工作坊交流，了解其長期推動保護區經營管理效能評估；最後前往北領地考察烏魯魯-卡達族塔國家公園（艾爾斯岩），學習其原住民共同管理模式。藉由本次考察澳洲綠色名錄相關之國家公園及保護區，有助於借鏡其申辦綠色名錄之運作程序與後續執行情形，並交流國家公園經營管理實務經驗。

此外，本次考察計畫承蒙中華民國國家公園學會林俊全理事長組團前往，包含本署、管理處同仁以及自然保育相關專業背景學者共 15 人，與會人員得以深度交流分享，針對兩國之保護區經營管理實務經驗有更專業、務實與深度的交流討論，為日後雙方合作奠定深厚基礎。透過本出國報告之保存與分享，提供未來相關業務參考。

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## 壹、計畫緣起

國際自然保育聯盟「保護與保育區的綠色名錄」(IUCN Green List of Protected and Conserved Areas) 是一個為彰顯保護區保育能力所設置的計畫。IUCN 於 2014 年發布包含來自 8 個國家 24 個保護區的「綠色名錄」(Green List)，並自 2017 年以來持續推動「綠色名錄規範」，為全球有效公平治理的保護區作出認證、表揚與倡議。

內政部營建署於 2018 年度辦理「IUCN Green List 申辦推動暨國際交流計畫」，邀請 IUCN 全球保護區計畫主席及東亞區副主席來臺說明綠色名錄計畫之內涵，2019 年 4 月續於「地景與永續發展國際研討會」與 IUCN WCPA 國際自然保育聯盟世界保護區委員會（科學及管理）副主席、也是領導 IUCN 建立保護區經營管理效能評量架構、Green List 綠色名錄計畫的創始者 Marc Hockings 教授持續探討該計畫概念與臺灣推動之展望，認為綠色名錄計畫是一個臺灣可以藉以檢討現行自然保育執行成效與國際接軌的切入點，爰規劃此行考察國際自然保護聯盟 (IUCN) 澳洲綠色名錄保護區。主要考察內容包括：2014 年 IUCN 首批公布之綠色名錄－新南威爾斯州阿拉瓜爾國家公園及拜倫角州立自然保護區、近期澳洲官方戮力推動加入綠色名錄之列的昆士蘭州雷明頓國家公園以及北領地考察烏魯魯-卡達族塔國家公園（艾爾斯岩），並與新南威爾斯州與昆士蘭州的國家公園與野生動物管理署相關從業人員進行 3 場工作坊交流，了解其長期推動保護區經營管理效能評量的過程。

## 貳、計畫目標

臺灣國家公園系統在經過 30 多年的經營管理後，亟需與國際的保護區系統接軌。故為本考察計畫設立計畫目標如下：

- 一、考察澳洲綠色名錄相關之國家公園及保護區，了解其申辦綠色名錄之運作程序（包括經營管理效能評量架構的建立與權益關係人的參與）與後續執行情形。
- 二、借鏡澳洲推動保護區經營管理效能評量之理論與實務，期能運用於我國各國家公園與國家自然公園系統，透過經營管理能實務經驗之交流，逐步與國際接軌。

## 參、出國行程與出訪人員

### 一、出國行程

11/2-3 去程

11/4 新南威爾斯州國家公園經營管理效能評量架構/綠色名錄計畫辦理情形工作坊 (NSW State of the Parks and IUCN Green List in



- NSW)
- 11/5 考察阿拉瓜爾國家公園與拜倫角州立自然保護區/拜會  
David Fleay Wild life Park 野生動物園
- 11/6 昆士蘭州國家公園經管理效能評量架構/綠色名錄計畫辦理情形工作坊及實地操作 (IUCN Green List in Queensland Workshop )
- 11/7 考察雷明頓國家公園 (Lamington National Park)
- 11/8 昆士蘭州以價值為導向之經營管理架構工作坊 (VBM framework in Queensland)
- 11/9-10 布里斯本-雪梨-艾爾斯岩  
烏魯魯世界遺產地/拜會-考察烏魯魯文化中心-烏魯魯日落生態之旅-日出生態之旅
- 11/11 返程

## 二、 出訪人員

(營建署出國費用支應)

內政部營建署國家公園組	鄭凱方
陽明山國家公園管理處	華予菁

(自費或非本署出國費用支應)

金門國家公園管理處	陳虹巧
國立臺灣大學地理環境資源學系	林俊全教授
中央研究院生物多樣性中心	劉小如教授
國立臺灣大學生態學及演化生物學研究所	周蓮香教授
國立東華大學自然資源與環境學系	劉瑩三教授
國立臺灣大學地理環境資源學系	周素卿教授
國立臺灣大學地理環境資源學系	李美慧教授
國立師範大學地理學系	王文誠教授
國立東華大學觀光暨休閒遊憩學系	吳宗瓊教授
國立臺灣大學森林環境暨資源學系	盧道杰副教授
中華大學旅遊與休閒學系	陳瑋苓助理教授
中華民國國家公園學會	洪敏榮
紐西蘭奧塔哥大學觀光學研究所	詹庭萱

## 肆、出國過程

### 一、 工作坊

本次參訪，在 Marc Hockings 教授協助安排之下參與 3 場澳洲國家公園

官方舉辦的工作坊。分別由新南威爾斯州及昆士蘭州的國家公園與野生動物管理署就兩州國家公園系統之經營管理效能評量架構及綠色名錄計畫辦理情形給予簡報介紹，而 Marc Hockings 教授也在 11/4 第 1 場工作坊簡述 IUCN 保護區經營管理效能評量與綠色名錄計畫的精神與內容。

表 1 工作坊場次

場次	時間	工作坊內容	參與機關	地點
1	11/4	新南威爾斯州國家公園經營管理效能評量架構/綠色名錄計畫辦理情形	新南威爾斯州國家公園與野生動物管理署	拜倫灣社區活動中心會議室
2	11/6	昆士蘭州國家公園經管理效能評量架構/綠色名錄計畫辦理情形	昆士蘭州國家公園與野生動物管理署	雷明頓國家公園-歐雷利雨林度假村會議室
3	11/8	昆士蘭州以價值為導向之經營管理架構 (VBM framework)	昆士蘭州國家公園與野生動物管理署	昆士蘭政府環境與科學部布里斯本辦公室

### (一) IUCN 保護區經營管理效能評量概覽

IUCN 國際自然保育聯盟在 1990 年代開始初探有關保護區經營管理效能如何的議題，因而成立了一個專責小組，在 2000 年首次出版相關準則，並且在 2006 年修訂準則，以提供保護區管理者檢視保護區的成效是否有對應到價值與目標的設立。而這其中，包含了三個主要評量的領域：

第一是有關保護區的「設計」(Design)，評量此保護區的設立是否有足夠的能力、優勢與侷限性。

第二是有關保護區的「管理」(Management)，是否有足夠的資源、經費與人力，實際管理作為是否能解決保護區的限制問題。以及管理的「結果」(Result)為何，是否維護了保護區重要的價值，藉此了解管理的有效性。

第三是有關保護區的「資源分配」(Resource Allocation)，在有限的

資源下，如何做最有效的分配。同時，將評量結果透明公開，將有助於此資源分配的合理性，協助與相關權益關係人溝通、獲取來自公民社會的支持。

## 1. WCPA 經營管理效能評量架構-適應性管理

IUCN WCPA 立基於保護區適應性管理(Adaptive Management)建立此評量架構，在外圈的部分包含了 6 個要素：背景、規劃、投入、過程、產出和成果。在背景部分，包括價值、威脅、權益關係人及相關政策背景為何，影響保護區管理的策略為何；在規劃方面，包含政策與相關法源，以及經營管理計畫的合理性與合適性；在投入方面，包括知識、人力與資源資金的投入；在過程方面，係指相關工作執行是否為最佳的實踐方式；在產出部分，係為這些經營管理手段後得到的結果；在成果部分，則進一步須檢視成果是否有對應保護區的價值並減少了威脅。

在這個循環架構裡，評量(Evaluation)被放置於中心，以協助檢視每個要素是否有助於產出良好的成果，如果成果未能達到，回頭檢視是哪個部分的要素有所落差，而適應性地調整經營管理中資源的投入或行動的方式。



圖 1 WCPA 經營管理效能評量架構

## 2. 有關於規劃階段(Planning)的重要提問：

- (1) 規劃文件是否適時更新並且資訊公開
- (2) 在規劃過程中是否有諮詢相關權益關係人意見
- (3) 相關規劃是否作為實際工作計畫的上位指導

- (4) 相關規劃的執行是否有監測機制
- (5) 規劃過程的調整是否有立基於相關的監測結果

**3. 有關於投入階段(Input)的重要提問：**

- (1) 機關人員的數量和能力是否足以完成工作
- (2) 經費是否充足
- (3) 經費的永續性
- (4) 是否有充足的資訊了解規劃過程遭遇的干擾

**4. 有關於過程階段(Process)的重要提問：**

- (1) 是否有定期追蹤專案的執行
- (2) 決策過程是否有涵蓋適當且正確的人員參與其中
- (3) 是否有效且公平地執法
- (4) 對自然資源的使用有所管理與管制
- (5) 經營管理是否兼顧生態與社會等面向
- (6) 相關的監測是否經過協議

**5. 有關於產出階段(Output)的重要提問：**

- (1) 相關規劃活動是否如期舉行
- (2) 工作企劃是否有完成
- (3) 權益關係人是否有如預期參與計畫
- (4) 監測結果是否有經過分析或回饋到規劃中

**6. 有關於成果階段(Outcome)的重要提問：**

- (1) 有關自然價值的情況是否維持或改善
- (2) 相關價值是否維持在一可接受的閾值
- (3) 社會、生計和文化的價值是否維持或改善
- (4) 經營管理目的是否有如規劃階段所預期的達成
- (5) 對應價值的威脅是否減少了或穩定維持

(6) 相關權益關人對於保護區的經營管理是否滿意

	
<p>圖 2 Marc Hockings 教授於工作坊講授 WCPA 經營管理效能評量架構基本理念</p>	<p>圖 3 Marc Hockings 教授說明產出 Output 與成果 Outcome 之差異</p>

## (二) 綠色名錄 Green List

(107 年臺灣 IUCN Green List 成果彙編，2018，中華民國國家公園學會)

### 1. 關於綠色名錄的倡議

2014 年，IUCN 在澳洲雪梨舉辦的世界公園大會 (World Parks Congress) 上發布了一份新的名錄：國際自然保護聯盟保護區綠色名錄 (The IUCN Green List of Protected and Conserved Areas)，針對的是與生物生存息息相關的各界保護區。綠色名錄計畫的宗旨，是為了要透過保護自然與提供相關的社會、經濟、文化和精神價值，來提升保護區公平有效的管理，對可持續發展作出貢獻。

而在 2014 年雪梨大會 3 周年之後，2017 年 11 月 IUCN 進一步發布了國際自然保護聯盟綠色名錄規範 (The IUCN Green List Standard)，這份規範為綠色名錄計畫強化了核心支柱，提供世界各地保護區透過承諾及行動達到此一全球規範，來共同實現保育目標。綠色名錄規範包含四個主題，分別是 1.良好的治理 (Good Governance) 2.健全的設計和規劃 (Sound Design & Planning) 3.有效的管理 (Effective Management) 以及以上三者促成 4.成功的保育成果 (Successful Conservation Outcomes)。這 4 個主題囊括了 17 項評量標準，及 50 個指標，作為國際間通用的基準點，來描述保護區成功的保育和公平的治理為何。要達成綠色名錄規範，就必須在這 17 個評量標準有整合性的投入，一旦達到所有評量標準後，才能列為 IUCN 綠色名錄。而綠色名錄的執行過程包含了申請、候選及達成綠色名錄等 3 階段，如何進到下一個階段，將由獨立的技術團隊「綠色名錄專家評量團隊」(EAGL) 來進行評估，以及一位程序的審核人員。

IUCN 倡議綠色名錄規範，將其定位為衡量全球各地保護區經營管理成功與否的重要評量方法，藉由具有全球公信力的一整體規範，提供各保護區能力建構時的依據，同時也促成各地保護區專家學者和從業人員的交流互動，鼓勵各保護區域的締結合作。綠色名錄也提供了一個平台，為那些達成有效公平治理的保護區作出認證、表揚與倡議。對於地方保護區而言，加入綠色名錄的過程亦是一個機會來評量其治理機關、管理者、社區、夥伴及相關權益關係人，透過保育準則，更有效地運用資源，來強化保育成效並獲得國際認可與曝光。

## 2. 綠色名錄和保護區設立標準



### 3. 現有的綠色名錄

2014 年雪梨大會上公布的第一批綠色名錄，包含了來自 8 個國家的 24 個保護區，在亞洲地區包括有中國的 6 個保護區及韓國的 3 個保護區。而根據操作流程，成為綠色名錄的保護區每五年就要進行一次重新檢視審查，因此 2014 年的先驅名單，配合 2017 年 IUCN 新發布的綠色名錄規範( The IUCN Green List Standard)，在這幾年內刻正進行檢視審查過程，包括此行拜會的澳洲阿拉瓜爾國家公園與拜倫角州立自然保護區。

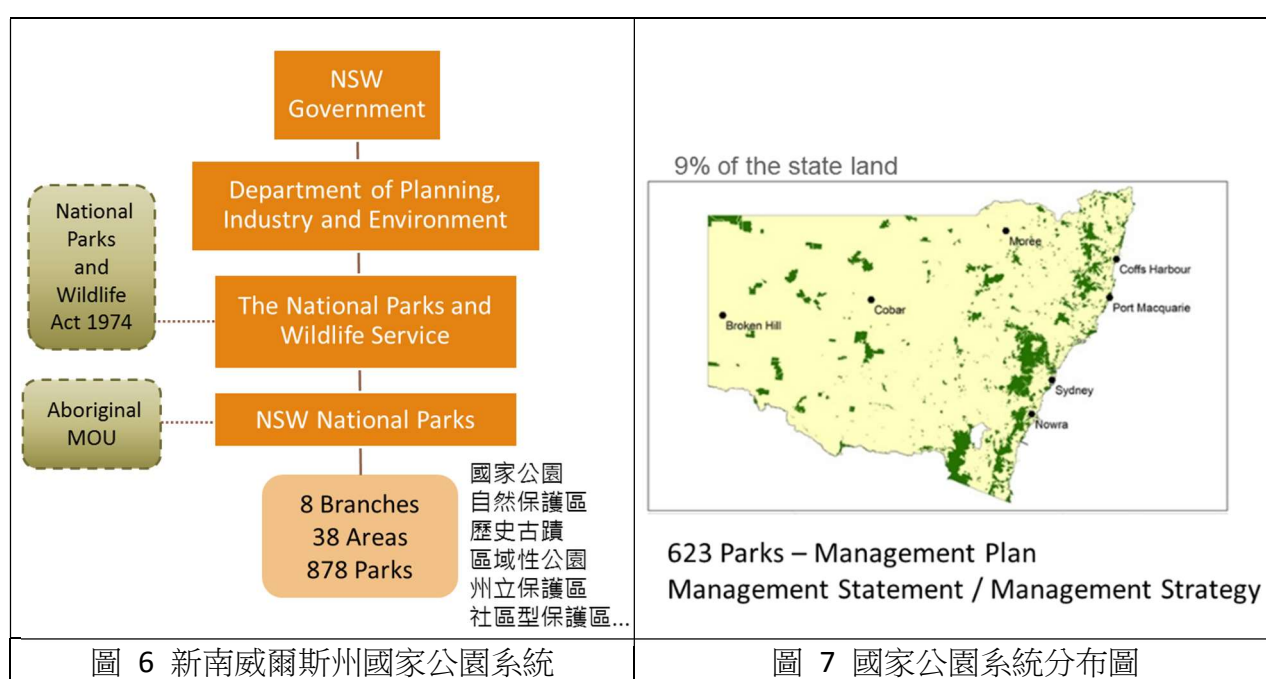




### (三) 新南威爾斯州國家公園經營管理效能評量架構

#### 1. 新南威爾斯州國家公園系統

新南威爾斯州國家公園系統隸屬於新南威爾斯政府轄下「規劃、產業與環境部」的「國家公園與野生動物管理署」，國家公園系統在區位上分為 8 個分支、38 個區域，共 878 個公園，類別涵蓋國家公園、自然保護區、歷史古蹟、原住民區域、區域性公園、州立保護區及社區型保護區等。每個區域(Area)配有 1 位區域經理 Area Manager，每個區域可能掌管 3 個較大型的公園，亦可能掌管 40 個小型公園。相關上位法令包括：1974 年通過的「國家公園與野生動物管理法」，以及各國家公園與原住民族簽署的合作備忘錄。



新南威爾斯州的國家公園系統範圍佔約 9%的州立土地，但其中 623 個公園系統有經營管理計畫，45 個公園目前僅有計畫草案，202 個公園為經營管理聲明(Management Statement)，而 8 個原住民區域沒有任何計畫，雖然有經營管理策略(Management Strategy)作為輔助，但一整體的經營管理評量架構對國家公園系統而言，就顯得相當重要。

#### 2. State of the Parks 評量架構

在 2003 年，新南威爾斯州國家公園與野生動物管理署體認到經營管理必須訂定明確的目標和優先順序，需仰賴一套全面的系統來檢測評量經營管理結果，改善規劃和決策，於是在署內成立執行團隊，召集專家學者及相關的權益關係人，參考 IUCN 經營管理效能評量架構，設計出屬於新南威爾斯



州的「State of the Parks」評量架構。

### (1) State of the Parks 的架構

State of the Parks 設計為一線上操作系統，以方便管理者勾選填列，並利於上級長官取得分析資料以比對確認，主要架構包括：

#### A. 保護區特性(Attributes)

針對保護區勾選填列基本資料，如保護區面積、類別、是否為原住民共管等資訊。

#### B. 保護區背景(Context)

保護區之相關上位計畫、經營管理計畫、保護區之核心價值（填列最優先之五項價值）、對應核心價值的威脅來源（詳述威脅對前述珍視的價值造成何種衝擊、其威脅程度與嚴重性，以轉化為風險等級）、相關權益關係人描述，以及遊客量等情形。

#### C. 經營管理效能(Management Effectiveness)

針對自然遺產、原住民文化遺產、歷史遺產、遊憩管理、權益關係人參與情形、野火與病蟲害、雜草管理、公共設施、非法行為等各項目予以進行質化的評量，並輔以量化的研究監測資料佐證。其中，因為各保護區各年度之經營管理計畫資料也置入系統，因此相關投入的工作、研究報告、監測數據等，也成為進行效能評量階段可引以相對應的佐證資料。

### (2) State of the Parks 的操作

自 2004 年建置好評量架構，2005 年第一次試測後，原則上每 3 年進行一次評量，每次評量為期 3 個月。目前新南威爾斯州的國家公園系統已於 2005、2007、2010、2013 與 2018 年操作過 5 次。評量的參與者包括保護區現場同仁、專家學者、原住民共管會成員、區域經理等。評量過程所根據的是研究監測數據、同仁業務觀察經驗、相關委託案成果或是社區意見等。而評量的結果需經第一線同仁內部討論達成共識後，復經區域經理以及上級長官確認後遞交管理署，管理署的執行團隊也會針對結果，覺得有疑問之處向各階層管理者確認細節後作最終資料的確認。

### (3) State of the Parks 的貢獻

經過了 5 次操作，State of the Parks 評量架構已累積近 13 年的數據，線上系統可協助各類數據的交叉比對和分析，針對不同類別的保護區、或同一類別不同區域的保護區，以及針對不同威脅來源，都可分析其長

期的變化消長，有系統地釐清保護區的狀態，提供每個層級規劃決策的依據，同時作為面對內部與外部權益關係人的溝通橋樑：

- A. 管理者對所有公園的價值狀況和對個別公園的威脅來源可增進瞭解
- B. 針對設立的目標和預計達到的成果，藉此評量經營管理上的成效與否
- C. 作為各管理階層規劃和決策的參考
- D. 將經營管理績效傳達給內部和外部的權益關係人
- E. 長期回顧經營管理的成效，觀察成功的趨勢和模式。

#### (4) State of the Parks 的評價


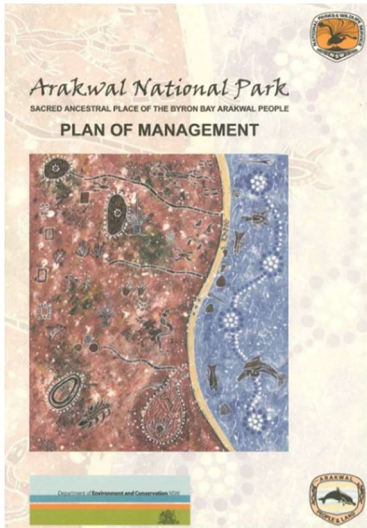
從最初導入此評量架構，時至今日，針對參與者的訪談發現對評量系統的評價頗佳，國家公園與野生動物管理署的人員表示，**State of the Parks** 評量架構的關鍵在於「改變」，是有關上至機關首長，下至國家公園從業人員「思維與文化的改變」，肯定經營管理效能評量這件事情是重要，值得也願意去執行的：

- A. 參與者評估長期經營管理效能評估的重要性：從 81%增加到 90%的參與者認為長期的效能評估是非常重要的。
- B. **State of the Parks** 評量工具是否有幫助：三倍比例的參與者認為 **State of the Parks** 評量工具對於長期的效能評估很有幫助。
- C. 是否願意使用 **State of the Parks** 評量工具來輔助經營管理決策：兩倍比例的參與者認很樂意使用此評量工具協助經營管理決策。

		
<p>圖 8 國家公園與野生動物管理署的 Andrew Growcock 為大家講授 <b>State of the Parks</b> 評量架構</p>	<p>圖 9 致贈臺灣國家公園出版宣導品致謝</p>	

### 3. 案例分享

#### 阿拉瓜爾國家公園與拜倫角州立自然保護區—經營管理計畫、效能評量與 Green List 的對應

	
圖 10 阿拉瓜爾國家公園與拜倫角州立自然保護區位置圖	圖 11 阿拉瓜爾國家公園經營管理計畫

1993 年，澳洲政府通過了聯邦原住民所有權法(The Commonwealth Native Title Act)，經過了 7 年多的溝通協商，2001 年 8 月 28 日阿拉瓜爾族人對於此區域傳統領域的土地所有權，才正式獲得認可，簽署土地使用協議 Indigenous Land Use Agreement (ILUA)。這是澳洲首例立基於 ILUA 所建立的國家公園，由阿拉瓜爾族人與國家公園野生動物管理署共同管理(Joint Management)，成立共管委員會(Arakwal National Park Management Committee)。該經營管理計畫(Plan of Management)融合了國家公園野生動物管理署的科學知識，以及阿拉瓜爾族人的在地知識與傳統文化。同時，也是 2014 IUCN 所發布的綠色名錄中唯一共管形式的保護區。藉由了解阿拉瓜爾國家公園對核心價值之一：拜倫灣蘭花(Byron Bay Orchid *Diuris byronensis*) 撰寫的「對關鍵物種有效的跨文化保育規劃」，可進一步了解其經營管理效能評量與經營管理計畫之邏輯對應，也正是其和 IUCN 綠色名錄規範能夠快速應對的原因。

## Effective cross-cultural conservation planning for significant species

Best practice guidelines developed to care for the Byron Bay Orchid habitat  
@ Arakwal National Park, Australia



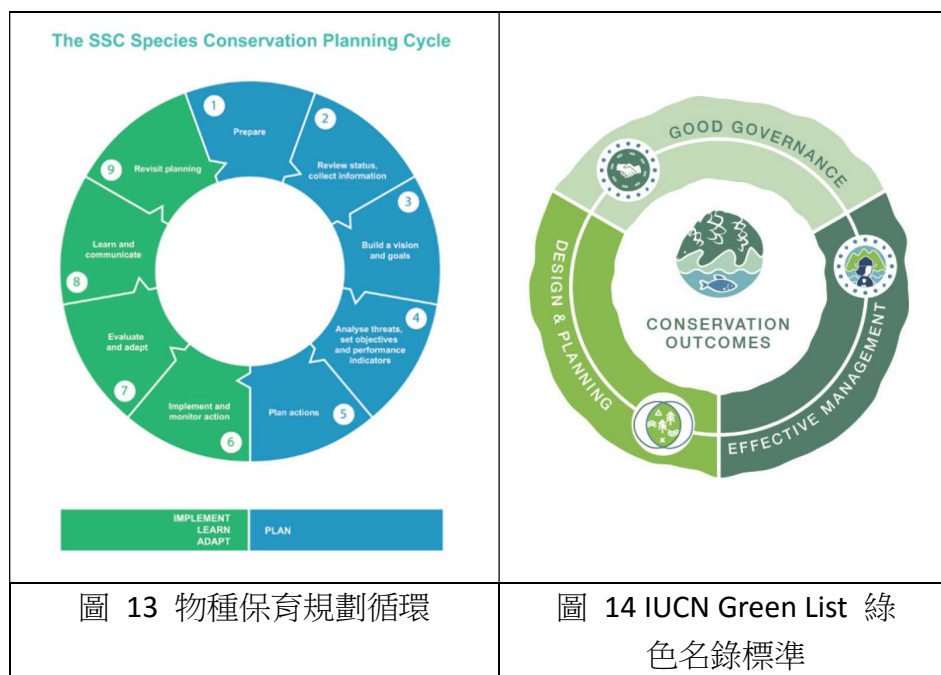
圖 12 對關鍵物種有效的跨文化保育規劃—建立一套指導原則 (Guidelines)，描述一系列步驟，協助提供在此跨文化的保護區裡，拜倫灣蘭花和粒狀黏土地景的規劃、經營管理和效能評量。

### (1) 規劃和評量架構

此規劃遵循了 IUCN 物種生存委員會(SSC)所制定「物種保育計畫週期」的 9 個主要步驟，阿拉瓜爾族人、國家公園管理者和國家公園野生動物管理署共同將跨文化的視角與經驗應用於這 9 個步驟，制定相關指導原則，同時運用綠色名錄架構來評量每一個步驟的成效。以下分述 9 個階段：

- A. 準備階段(Prepare)：需要界定保育目標、範圍、時程、物種的重要價值等。而 Green List 在此階段協助檢視評估是否有根據適當的協作流程進行準備工作。這些準備工作需充分反映阿拉瓜爾族人和保護區管理者雙方的意見。
- B. 檢視狀態、收集訊息(Review status, collect information)：檢視物種的歷史資料與當前分布，定義物種和棲地的價值，定義威脅來源，本過程應盡可能地整理和使用傳統知識，了解人與環境之間的關係。在跨文化背景下，此階段應採用有效的協作流程來定義價值及威脅。
- C. 建立願景與目標(Build a vision and goals)：經過協作討論後，確立願景與目標為物種和棲地能長期處於健康狀態、受到族人的照顧、了解和使用。





- D. 分析威脅、設定目標和績效指標(Analyse threats, set objectives and performance indicators)：分析主要威脅包括火太少、雜草入侵、人類踐踏土地、傾倒垃圾、土壤侵蝕，棲地破碎等。另一個主要問題是失去蘭花和棲地的傳統知識，以及原住民人口的流失，因為唯有人口持續，才能維持棲地的歷史價值。瞭解威脅後，建立科學量化的指標，同時藉由相關調查研究，作為訂定指標的基準值(baseline)。
- E. 規劃行動(Plan Actions)：擬定足以對應價值、目標和指標的行動方案，且在有限的資源（時間、預算、知識）下確定經營管理行動的優先順序。
- F. 施作和監測(Implement and monitor)：相關的行動方案會形成一個執行計畫(operation plan)，也可善用月曆規劃工具(calendar planning tool)來協助何時何地要採取甚麼樣的行動。而這些執行計畫同時需要建立監測計畫，來確保相關行動方案是否有助於達成預設的目標。很重要的是，監測計畫中需要確認生態系統或物種的閾值，以確保文化生態系統的品質是否有關鍵的改變。以原住民施放的文化火(Cultural Burn)來說，在施放前後均要有嚴謹的監測，以了解放火前後動植物相的變化。
- G. 評量和適應性調整(Evaluate and adapt)：運用評量架構，評估行動的有效性，是否對應物種和棲地的價值、願景和目標。
- H. 學習與溝通(Learn and communicate)：在這整套規劃過程中，不同的文化觀點得以達成共識，產出這本規劃報告和「季節性規劃月曆」

(Seasonal Planning Calendar)，考量季節、天候、傳統實踐等因素作為經營管理動作的參考，亦作為後續溝通和行動的工具。

- I. 通盤檢討規劃(Revisit planning)：將先前每個步驟的學習經驗回饋到最初的規劃階段，通盤檢討依實際需求可以是每年重新規劃，也可能是 5 年、10 年甚至 20 年一次，是一循環性的規劃架構。

這一整體的規劃流程與指導原則，連結了綠色名錄評量架構中的四個重要組成(Good Governance 良好的治理、Sound Design and Planning 健全的設計與規劃、Effective Management 有效的經營管理、Successful Conservation Outcomes 成功的保育成果)，只是配合跨文化的共管脈絡下有所調整，這也是為何當阿拉瓜爾國家公園與拜倫灣保護區在操作綠色名錄標準規範時容易對應，其申請過程相對順利，區域經理與國家公園同仁也表示綠色名錄的標準規範協助其檢視既有的評量循環架構，同時在申辦的過程中凝聚同仁和社區居民共識，給予第一線人員表彰認可的驕傲。

		
<p>圖 15 區域經理與國家公園同仁分享共管經驗</p>	<p>圖 16 國家公園同仁分享阿拉瓜爾族人的傳統知識與文化實踐</p>	<p>圖 17 提供經營管理決策參考的「季節性規劃月曆」</p>

#### (四) 昆士蘭州國家公園經管理效能評量架構

##### 1. 昆士蘭州國家公園系統

昆士蘭州國家公園系統隸屬於昆士蘭政府轄下「環境與科學部」內的「昆士蘭公園與野生動物管理署」，共包含了超過 1,000 座國家公園、森林和其他保護區，以及五座世界遺產區域。國家公園和區域公園遵循 1992 年頒布的自然保育法(Nature Conservation Act)；海洋公園遵循 2004 年頒布的海洋公園法(Marine Parks Act)；魚類棲息地遵循 1994 年頒布的漁業法(Fisheries Act)；國家森林和木材保留區遵循 1959 年頒布的森林法(Forestry Act)。而令人敬佩的是，針對昆士蘭的公園與森林系統，有一最上位的總體計畫，時程直達 2025 年，使得各區域在經營管理上都有清楚明確的綱要原則得以遵循，政策方向不致輕易變更。



圖 18 昆士蘭公園與森林總體規劃 (至 2025 年)

## 2. Values-Based Management Framework 以價值為基礎的經營管理架構

### (1) 經營管理架構概述

大約十年前，昆士蘭公園與野生動物管理署面臨財政單位質疑多年來的經費投注成效，發現當問到各保護區的狀況如何時竟難以回答。有關工作量的投入雖容易彙整，例如一年巡護了多少次、除了多少面積的草、滅了多少次的野火，但當要回答所謂的成效，例如珍視的某生態系、某瀕危物種的保育狀態是否惡化或是改善、遊憩壓力是否減緩了、遊憩品質是否提升了等等問題，卻無所根據。因此下定決心參考 IUCN 的評量架構精神，創建了以價值為基礎的經營管理架構(Values-Based Management Framework, VBMF)，以釐清公園的主要價值，查看公園的狀況和趨勢，找出對公園的威脅項目，據此訂定策略管理計畫；透過整個過程，對策略行動排定優先順序，再根據相關監測報告回饋調整經營管理計畫內容。在導入的六大元素流程中，管理單位得以用更具彈性且簡易的方式，隨著時間變化調整並增進經營管理效能。

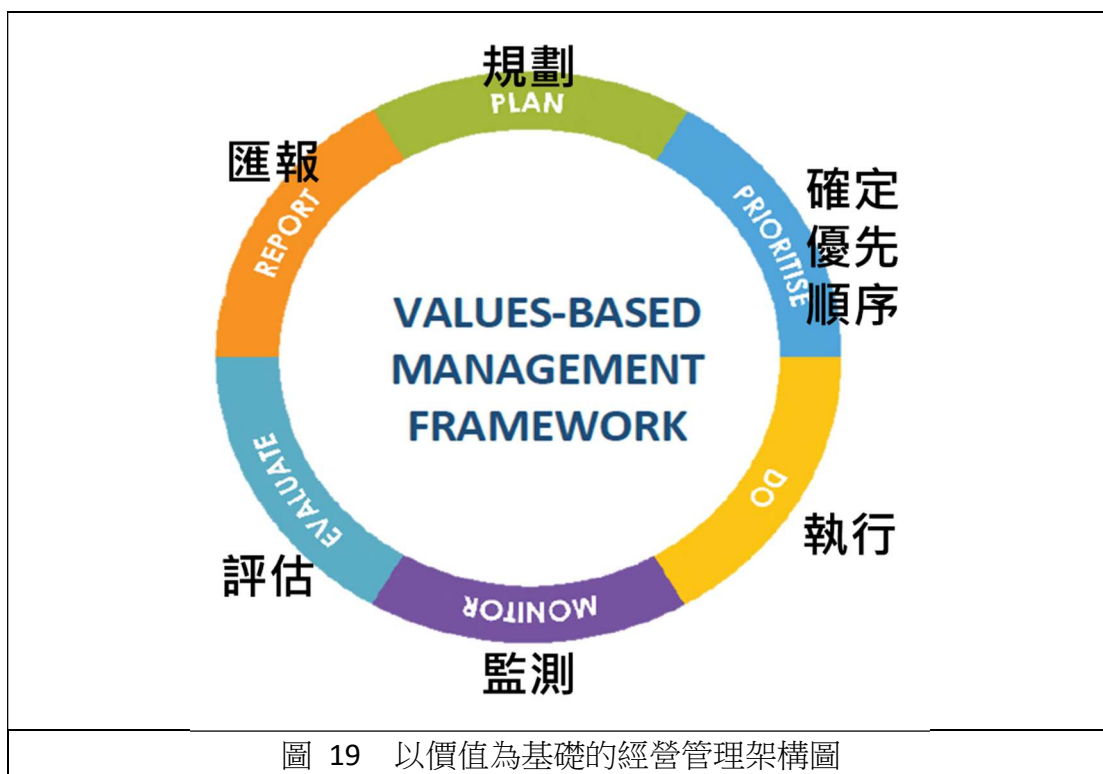


表 2 以價值為基礎的經營管理架構內涵

元素流程	內容	相關文件
1.規劃(Plan)	<ul style="list-style-type: none"> <li>➤ 為保護區的特殊之處奠立明確基礎的論述</li> <li>➤ 說明如何維持或改善保護區的狀態</li> <li>➤ 確立保護區需要何種層級的經營管理</li> </ul>	經營管理計畫(Mgmt. Plans) 經營管理聲明 (Mgmt. Statements) 主題策略 (Thematic Strategies)
2.確定優先順序 (Prioritize)	提供相關佐證資料來為投入工作排定優先順序	關鍵價值(Key Value) 服務水平的資料(LoS data)
3.執行(Do)	提供一致且經過精心設計的簡單系統和流程，使專注致力於最重要的事情	系統計畫(Systems eg. FLAME) 行動計畫(Action Plan)
4.監測 (Monitor)	有關投入的工作是否造成關鍵價值狀態的變化，提供簡單的工具來量測	健康檢查表單(Health Checks)
5.評估 (Evaluate)	提供一致且簡單的評量過程，立基於系統數據資料，以利於了解經營管理投入是否有效	回顧報告(Park Review)



6.匯報 (Report)	公開透明且常態地對外報告保護區的健康狀態與經營管理成效	報告卡(Report Cards) 公園狀態報告(State of the Parks)
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若將 6 大元素流程與各層級的經營管理計畫再進一步比對，可發現昆士蘭國家公園與野生動物署所建立的清楚邏輯和階層架構。同樣地在最初的規劃階段就需要確立保護區的關鍵價值、重要性、狀態與對應的威脅，以決定服務水平(Level of Service, LoS)與經營管理方針。

經營管理文件分成了幾個層次，最上位第 1 層次為「經營管理計畫」（設定策略性、指導性的經營管理方向）與「基礎資源資訊」（相關的背景故事或研究數據以提供佐證資料）；第 2 層次為各種「主題策略」（設定可量測的經營管理目標，包括有野火、病蟲害、自然價值、歷史文化遺產、遊客管理、夥伴關係、現場管理能力、營運計畫和支持等 8 個主題策略）；第 3 層次為提供第一線人員的「行動計畫/工作方案」（設定在地行動，以達到經營管理目標），行動計畫/工作方案會直接連結到現場的執行層面。而有系統的監測與評估結果，除了定期匯報成報告，以回饋調整最初規劃步驟外，也可以彈性調整下一年度的工作方案，或是調整設定新的主題策略。藉由下方的圖示，我們會發現整體規劃架構，奠基於適應性管理(Adaptive Management)的精神，使得經營管理兼具層次分明與彈性調整的特性。

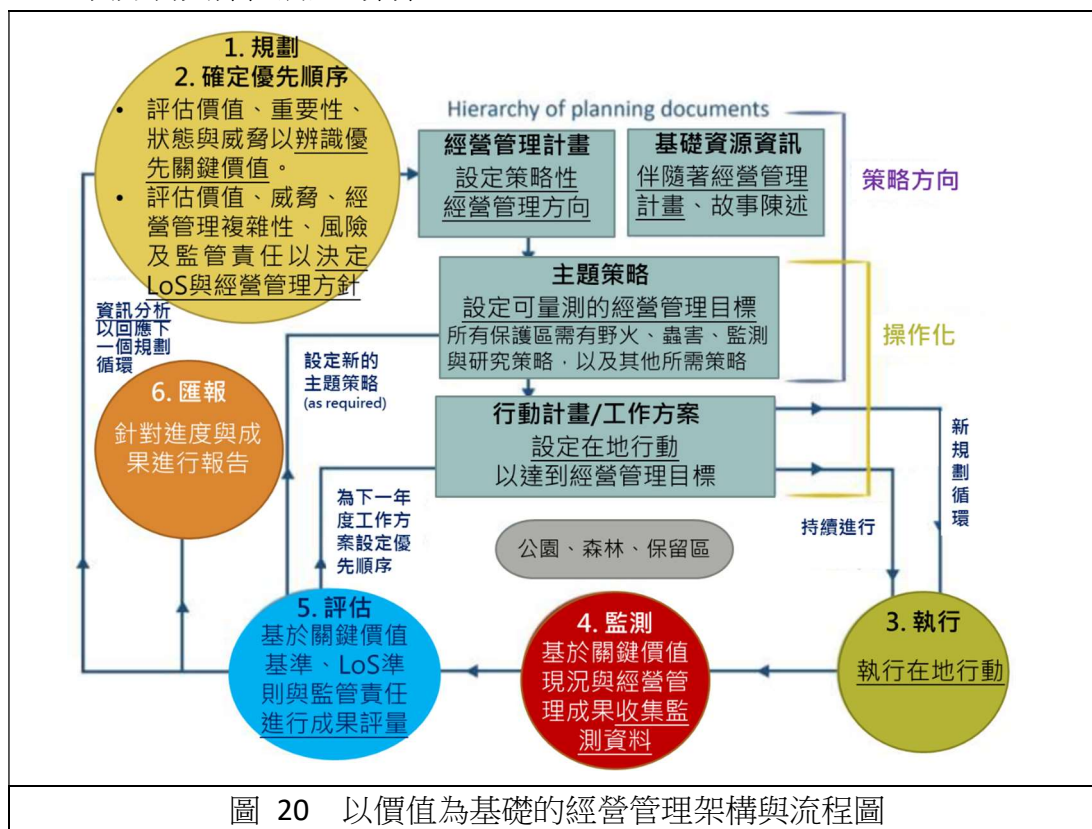
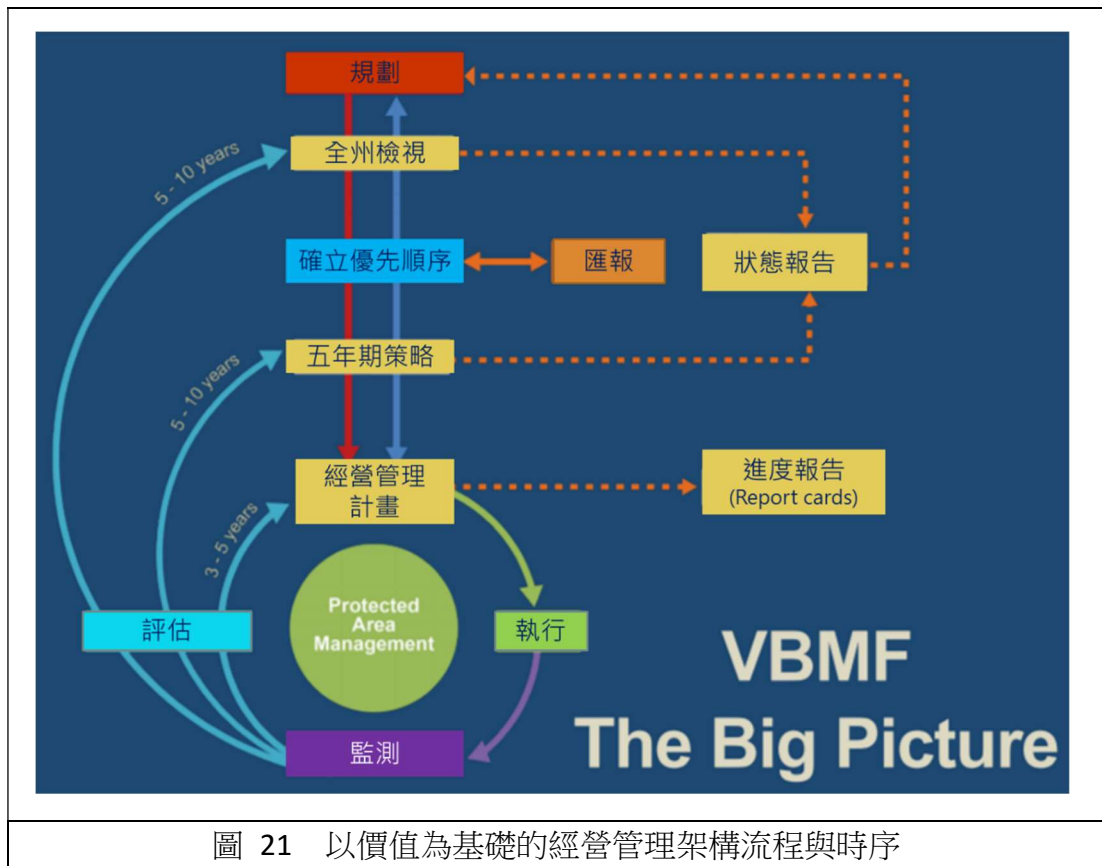


圖 20 以價值為基礎的經營管理架構與流程圖



## (2) 關鍵價值(Key Values)

VBMF value categories							
Natural Values	Significant ecosystems (terrestrial)	Significant ecosystems (marine)	Habitat for significant species (terrestrial)	Habitat for significant species (marine)	Significant species	Significant geological features (terrestrial)	Significant geophysical features (marine)
Cultural Values	First Nations Peoples	Historic					
Social Values	Recreational opportunities	Ecotourism	Educational	Scientific research	Partnerships		

圖 22 關鍵價值分類表

昆士蘭州的關鍵價值分為自然價值、文化價值與社會價值等三類。自然價值包括重要的陸域生態系、海域生態系、重物陸域物種棲息地、海域物種棲息地、重要物種、重要陸域地景、重要海域地質特徵等；文

化價值包括原住民族、歷史；社會價值包括遊憩價值、生態旅遊、教育價值、自然研究與夥伴關係等。監測評量的結果最終是為反映保護區的關鍵價值狀態、關鍵價值的趨勢、以及評量的信心程度（評量過程中是否掌握足夠的資訊），如下圖所示：












Condition of key value	<b>Good</b>  The value is in good condition and is likely to be maintained for the foreseeable future, provided that current measures are maintained.	<b>Good with some concern</b>  The value is likely to be maintained over the long-term with minor additional conservation measures to address existing concerns.	<b>Significant concern</b>  The value is threatened by a number of current and/or potential threats. Significant additional conservation measures are required to preserve the value over the medium to long-term.	<b>Critical</b>  The value is severely threatened. Urgent additional large-scale conservation measures are required or the value may be lost.
Trend rating of condition	<b>Improving</b>  The existing condition class score is above the previous condition class score.	<b>Stable</b>  The existing condition class score is the same as the previous condition class score.	<b>Deteriorating</b>  The existing condition class score is below the previous condition class score.	<b>No consistent trend</b>  It is not possible to confidently describe the change from the previous to the existing condition class score.
Confidence in assessment	<b>Inferred</b>  Very limited evidence, based on anecdotal information <u>Informed guess:</u> An estimation given by QPWS&P's staff or others with knowledge of the area.	<b>Limited</b>  Limited evidence or limited consensus Basic / limited data <u>Expert opinion:</u> Judgement made by a person who has extensive knowledge and/or skills in the subject being assessed.	<b>Adequate</b>  High-quality evidence and high level of consensus <u>Detailed monitoring or research:</u> Data supported by monitoring or research utilising appropriate scientific protocols. <u>Expert opinion:</u> Judgement made by a person who has extensive knowledge and/or skills in the subject being assessed.	

圖 23 關鍵價值評量結果

### (3) 服務水平(Level of Service)

服務水平 Levels of service (LoS)是 VBMF 經營管理架構的基礎，每個保護區針對不同經營管理主題設立期望水平(Desired LoS)，有助於管理人員和大眾了解保護區合適的經營管理水準。

服務水平(LoS)分成了 5 個等級，從可接受(Acceptable)、中等(Medium)、高(high)、極高(Very High)到優異的(Exceptional)。應用於 8 個主題精管計畫，包括野火、病蟲害、自然價值、歷史文化遺產、遊客、夥伴關係、現場經管能力以及營運計畫與支持。

服務水平等級的評定是依據關鍵價值、風險、威脅、社區狀態等等評量而來，涉及兩個步驟：

- A. 對每個公園和保護區的每個管理主題進行評估，評分和排名。
- B. 進行全州範圍內的保護區評比過程，針對每個管理主題期望的 LoS 進行所有公園/森林/保護區的總體排名。

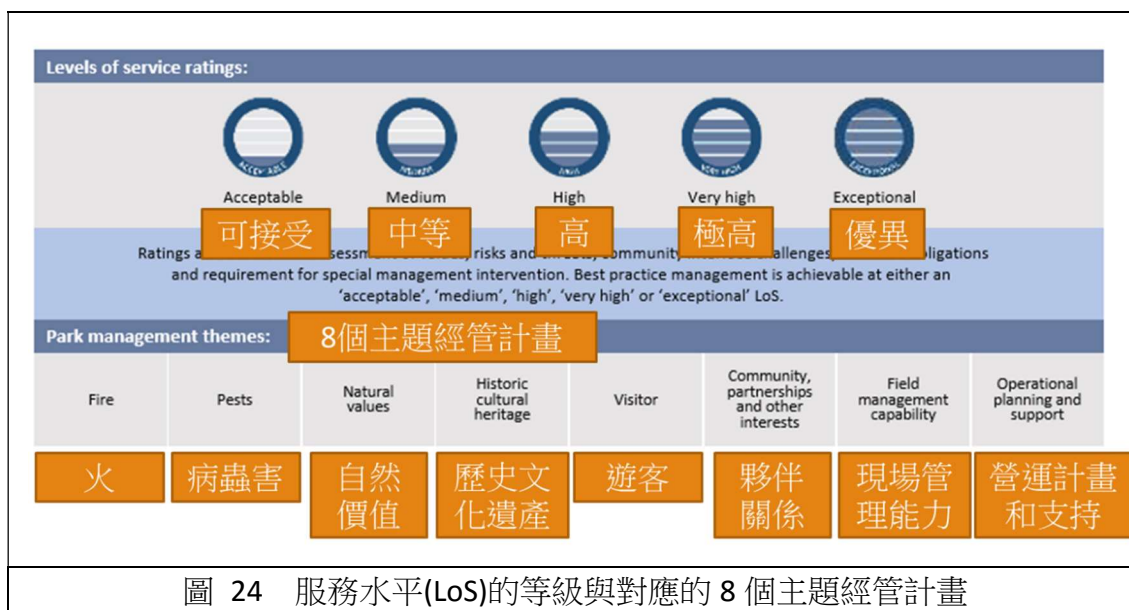


圖 24 服務水平(LoS)的等級與對應的 8 個主題經管計畫

LoS 分為期望水平(Desired LoS)和現況水平(Current LoS)兩者。所謂的期望水平，是我們希望達成的標竿(we want to be)，公園與野生動物管理署、保護區管理者與相關專家學者參與正式審查程序，確立每個保護區的每個管理主題有一期望達成的水平等級，有個保護區的重點在於野火管理，有的保護區野火並不嚴重，但是病蟲害控制被期望應該要達到很高的水準，透過期望水平的設立，有助於全州保護區一致排開時，上級對資源（資金與人力）的合理分配。

而現況水平，則是透過評量結果告知我們保護區的現況在哪裡(we are now)，此評估並非工作績效的評量，而是讓管理者了解當前的資源狀態和工作方向，是否擁有足夠的資源來達到期望的水平。例如，某個保護區的病蟲害管理的期望水平很高，但是現況水平卻顯示只有中等，那麼中間的差距就是亟待解決的地方。

有趣的是，服務水平(LoS)也協助判定相關監測研究應採取的方式和程度，如下圖所示，保護區的某管理主題假如為服務水平較低者，那麼監測研究主要由現地職員以 Health Checks 進行關鍵價值的基礎監測即可；然而隨著服務水平提高，所需的監測研究專業程度也需要提升，需要現地職員進行其他基礎監測、或邀請專家學者或中央職員進行詳盡監測，而服務水平更加優異的管理主題，更需要邀請外部研究者進行目標研究，以提供更加詳盡專業的監測資料。



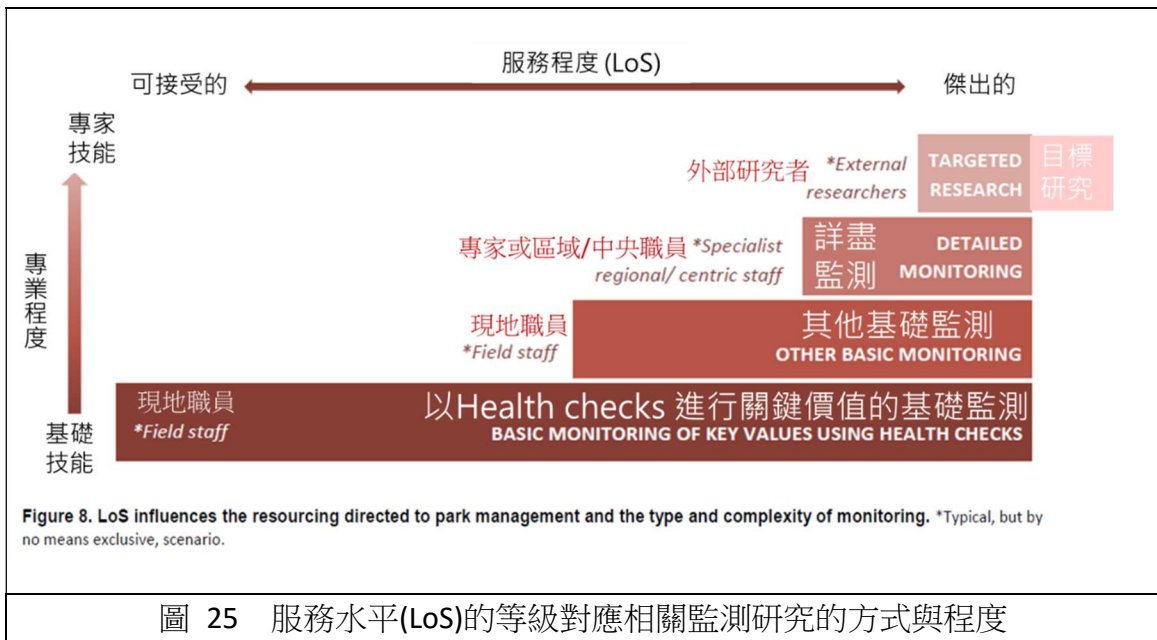


圖 25 服務水平(LoS)的等級對應相關監測研究的方式與程度

#### (4) 健康檢查表單(Health Checks)

Health Checks 表單是 VBMF 架構裡設計的重要監測工具，使用簡單易懂的表單格式讓第一線從業人員簡便、快速、常態地回報保護區的關鍵價值狀態，且表單皆已電子化，現地人員以手機或平板工具操作即可。Health Checks 具備以下幾個特點：

- 有效率且常態性衡量保護區關鍵價值狀態的工具。
- 使用視覺化「提示」，毋須仰賴專業技能或設備。
- 提供管理單位常態性檢視保護區關鍵價值的經營管理效能。
- 建議由管理單位自行完成，以了解目前經營管理行動是否合宜或者需要被調整，以及是否需要額外的經費支持。
- 相關結果應回到權益關係人溝通平台共同檢視。

Health Checks 分為了評量自然價值、歷史價值與遊憩價值等三類，自然價值類別內共有 20 個指標(indicators)，歷史價值類有 13 個指標，遊憩價值類的也有 13 個指標。相關文件如下圖：

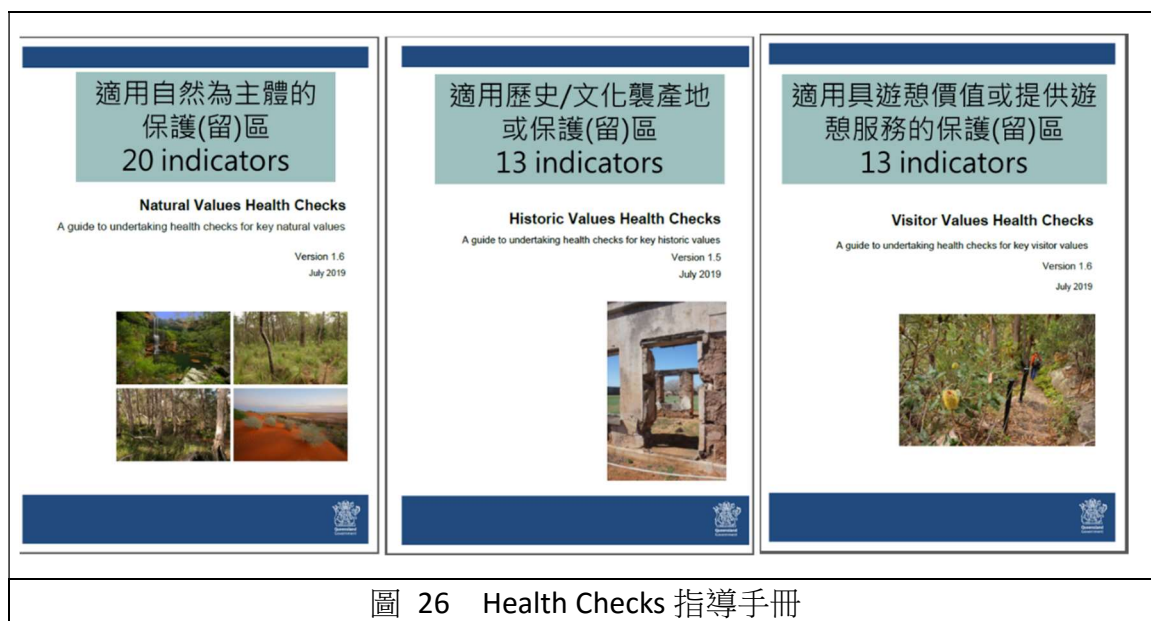


圖 26 Health Checks 指導手冊

Health Checks 表單首頁須填列保護區的基本資料與所評量的關鍵價值項目，接著針對每個指標項目來評定價值狀態，包括了很好(good)、很好但有些擔憂(good with some concern)、非常擔憂(significant concern)、嚴重(critical)等四個等級。每一個關鍵價值紀錄表至少要選定五個基地樣區。而表單內除了狀態等級的評量外，另可針對每個指標質化填寫需要關注的議題、威脅等資料。

Health Checks 的引進有助於保護區在以下幾點的經營管理：

- A. 明確化保護區關鍵價值的優先性。
- B. 使各保護區監測更具系統性。
- C. 提供經營管理效能評量的資料依據。

### Attachment 2 Record sheet: Natural Values Health Checks

Park name (& section) \_\_\_\_\_

Recorder/s: \_\_\_\_\_

Value¹: \_\_\_\_\_

Site Details (for permanent and non-permanent sites):

Site Id.	GPS Location (Datum: )	Permanent site & photo point established (Y/N)	Approx. site area	Date assessed (d/m/y)
1				
2				
3				
4				
5				

**Site & photo point definition**

In many cases it will not be necessary to precisely define the boundary of your sites in order to ensure that the next time you (or a colleague) do the Health Checks you use exactly the same areas....a few metres either side will not be a problem. However, in some circumstances the definition of your sites will be important. Is it likely that someone else coming to do the Health Checks in future could be confused about what might or might not be included in the site you are establishing? If so, then provide clear details about your site and its boundary below.

Details about why you chose the site may also be useful.

For permanent sites describe how the photos were/are to be taken. Record photo numbers here also.

Site 1

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Site 2

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Site 3

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Site 4

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Site 5

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Table 2.1 Record of the Condition Class for a key ecosystem/habitat.**

Key: G = good; GC = good with some concerns; SC = significant concern; C = critical; NA = not applicable.

Health Check Indicator	Condition Class					General impression (Not an 'average')
	Site 1	Site 2	Site 3	Site 4	Site 5	
1. Infestations of ecosystem-changing pest plants						
2. Infestations of pest plants other than ecosystem-changers						
3. Risk of future invasion by significant pest plants not already present						
4. Rainforest invasion						
5. Woody thickening (other than by rainforest species)						
6. Overgrazing/browsing by feral animals, stray stock or natives						
7. Trampling, digging or rooting ..... or trampling by visitors						
8. Impacts on wetlands						
9. Vehicle impacts						
10. Dumping						
11. Ground cover						
12. Fire damage to fire-sensitive and non fire-dependent ecosystems						
13. Fire damage to peat-based ecosystems						
14. Age class distribution in fire-adapted ecosystems in conservation....						
15. Severe wildfire in fire-adapted wooded ecosystems						
16. Severe storm, cyclone or tornado in wooded ecosystems						
17. Overtopping, erosion and associated impacts resulting.....						
18. Tree/shrub health and dieback						
19. Key features for faunal biodiversity in terrestrial ecosystems						
20. Recruitment of canopy species						
Overall Condition Class (refer Table 2.2)						

表 3 Health Checks 表單，填列保護區基本資料與關鍵價值項目

表 4 針對 20 個指標，逐一填列關鍵價值的狀態

## (5) 報告卡(Report Cards)

除了 Health Checks 表單的建立外，昆士蘭公園與野生動物管理署也預計在 2020 年 6 月以前針對 3 個重點國家公園建立報告卡(Report Cards) 制度，根據監測和評量的結果產出年度的進度報告，以釐清優先工作項目、人力與經費的分配。公園與野生動物管理署也會和管理部門召開工作坊，討論每個國家公園報告卡的結果，以回饋到下一年度的管理週期，修正下一年度的經營管理計畫，完成 VBMF 適應性管理的循環架構。

## (6) 開始綠色名錄申請流程

稍晚於新南威爾斯州，昆士蘭政府經過考量選擇後，目前才開始選定 Currawinya National Park 及 Lamington National Park 兩座國家公園提送綠色名錄的申請流程。但幸運的是，昆士蘭政府經過這幾年的努力，已經建立了完整的 VBMF 以價值為基礎的經營管理架構，而前述的 Health Checks 表單亦已連結關鍵價值的閾值，相對容易與綠色名錄的評量標準作對應，而不致額外增加同仁太多工作負擔。對於昆士蘭政府而言，國家公園署認為目前已有一強大的系統，但尚未經過真正的測試，因此，如果申辦綠色名錄通過，並且能夠陸續推廣到其他國家公園，便

代表 VBMF 的框架是受到國際認證的。而對於國家公園的工作人員來說，申辦流程也是對他們工作投入的認可，並且作為與相關專家學者、社區與 NGO 交流溝通建立共識的良好機會。



圖 27 雷明頓國家公園管理者 Wil Buch 講述國家公園經營管理概況與挑戰



圖 28 昆士蘭國家公園與野生動物管理署 Sherri Tanner-McAllister 詳細介紹 VBMF 架構



圖 29 致贈臺灣國家公園出版宣導品致謝



圖 30 至雷明頓國家公園現地試操作 Health Checks 表單



## 二、 參訪

澳洲行政轄區分為 6 州（新南威爾斯州、昆士蘭州、南澳州、塔斯馬尼亞州、維多利亞州及西澳洲）及 2 領地（首都領地及北領地），本次考察主要地區包括新南威爾斯州阿拉瓜爾國家公園、拜倫角州立自然保護區 2 處、昆士蘭州雷明頓國家公園、大衛菲力野生動物園 2 處及北領地烏魯魯—卡達族塔國家公園 1 處。

### （一）新南威爾斯州

#### 1. 阿拉瓜爾國家公園 (Arakwal National Park)

阿拉瓜爾國家公園位於澳大利亞大陸最東端的拜倫角，有金色的沙灘和海岸石楠叢，並以過去擁有這塊土地的原住民族命名。拜倫灣的 Arakwal Bumberlin 人，隸屬於 Bundjalung 族，在拜倫灣周圍的沿海地區居住至少 22,000 年。

連接拜倫角州立自然保護區(Cape Byron State Conservation Area)與布羅肯海德自然保留區( Broken Head Nature Reserve)，由阿拉瓜爾的原住民社區與國家公園與野生動物管理署(NPWS)共同管理。管理事務係由阿拉瓜爾國家公園聯合管理委員會召集，共管者共同將跨文化視角和經驗應用於 IUCN 物種保護計畫中為國家公園提供經營管理芻議。IUCN 表彰其為改善及提昇保護區的自然和文化價值永續經營的決心，於 2014 年通過其綠色名錄申請，成為世界上第 1 批列入綠色名錄的國家公園。

此行由在地的 Arakwal 解說員，為大家解說 The Pass Midden 的古與今，以精湛生動的解說搭配著吟唱傳統樂曲，傳達先人對保育疆土以及保存智慧文化的使命。

The Pass Midden 為一原住民遺址，1980 年首次被記錄，1994 年考古學家探索地面下 70 公分深的地方挖掘出 1000 年前的文物，國家公園管理處利用 The Pass Midden changes over time 的主題展版訴說著 1770-1899、1900-1980、1990-迄今各年代的歷史以及原住民如何運用文化及智慧生存（包括運用灌木叢線和打結的草梗緊密編織製成籃子和袋子，用於捕魚和狩獵等等）。

	
<p>圖 31 The Pass Midden changes over time 的主題展版</p>	<p>圖 32 Arakwal 解說員訴說 The Pass Midden 的古與今</p>

## 2. 拜倫角州立自然保護區 (Cape Byron State Conservation Area)

坐落於澳洲新南威爾斯州北海岸之北端拜倫灣東北 3 公里，面朝太平洋，是澳洲大陸的最東端，隸屬新南威爾斯州國家公園與野生動物管理署經管。1980 年代初期開始，拜倫灣社區就開始建立自然保護區、國家公園和海岸公園，以保護沿海環境。

依允許活動的類型將拜倫角海洋公園分區管理，共有 3 種允使用層次，第一為允許一般用途區域（允許進行商業和休閒捕魚的區域）(General Use Zone)、第二為具有特定限制的區域(棲息地保護區) (Habitat Protection Zone)、第三則為禁止捕魚和採集等活動的小型保護區 (Sanctuary Zone)，詳參分區地圖及分區許可使用一覽表。

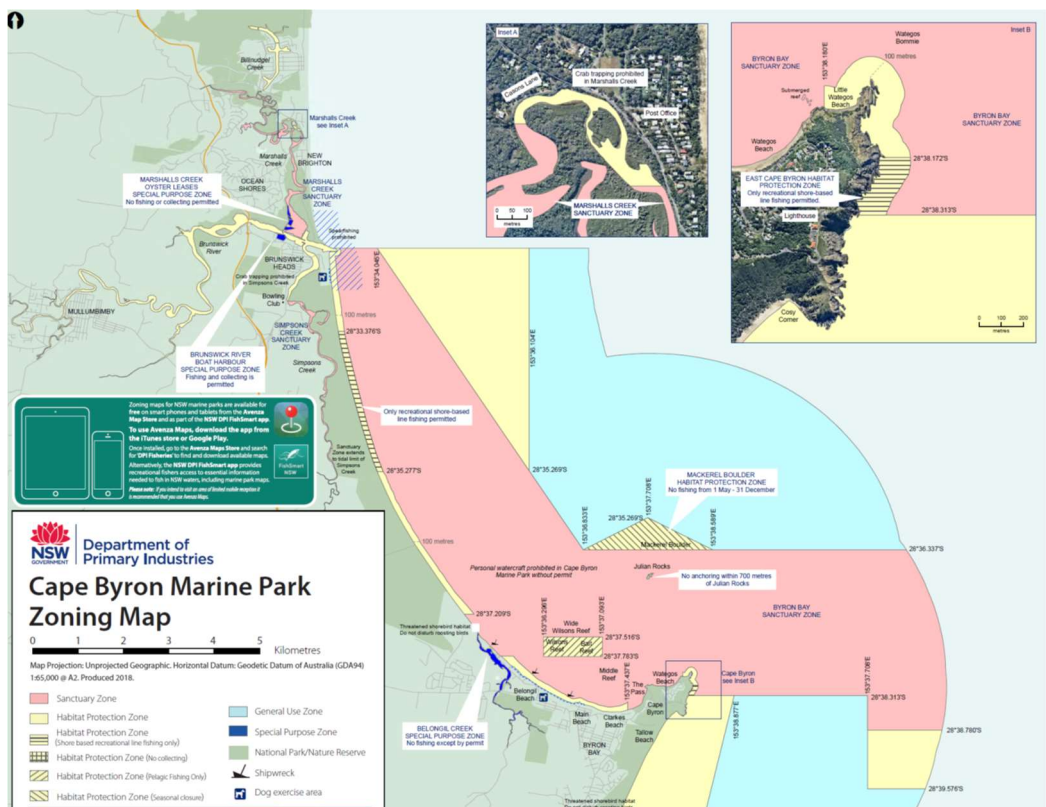


圖 33 拜倫角海洋公園分區地圖

表 5 NSW 海洋保護區分區活動許可表

Activity	Sanctuary Zone	Habitat Protection Zone	General Use Zone
<b>Recreational fishing</b>			
Line fishing	X	✓ (a)	✓
Trapping	X	✓ (b) (c)	✓
Spearfishing	X	✓ (d)	✓
Netting	X	✓ (e)	✓
<b>Collecting</b>			
Recreational (bait/food)	X	✓ (b) (e)	✓
Scientific/educational	P	P	P
For private aquariums	X	P	P
For commercial aquariums	X	X	X
<b>Recreational boating, scuba diving/snorkelling</b>			
Recreational boating	✓	✓	✓
Recreational SCUBA diving/snorkelling	✓ (f)	✓	✓
Anchoring and mooring	✓ (f)	✓	✓
Personal watercraft (jetskis) and hovercraft	P (f)	P (f)	P (f)
<b>Commercial fishing</b>			
Line fishing	X	✓ (a)	✓
Spanner crab netting	X	✓ (b)	✓
Lift netting for bait (non-saleable)	X	✓ (b)	✓
Trapping (including fish, crab, eel and lobster)	X	✓ (b) (c)	✓
Hand gathering (pipi and beachworm)	X	✓ (g)	✓
Beach hauling	X	✓ (h)	✓
Trawling	X	X	✓
Setline/dropline, longlining, estuary mesh netting	X	X	X
Purse seine netting	X	X	X
<b>Commercial tourism</b>			
Commercial tour operators (non-extractive)	P (f)	P (f)	P (f)
Charter fishing	X	P	P
<b>Other activities</b>			
Aquaculture	X	✓ (i)	✓ (i)
Organised events	P	P	P
Research	P	P	P
Horse riding	P	P	P
4WD and motorised vehicles	P	P	P

### 3. 拜倫角燈塔

位於澳洲最東點，拜倫角燈塔建於 19 世紀初，旨在保護沿海岸航行的船隻，屹立於澳大利亞大陸最東端。22m 高的白色塔樓提供仍然照亮夜晚海灣的光線。過去燈塔管理員負責點燃燈塔的傍晚光線。1989 之後以自動照明系統取代。目前仍保留其燈塔所賦予的歷史魅力，透過解說更體現昔日燈塔管理員在此的生活與洞察力。

## (二) 昆士蘭州

### 1. 雷明頓國家公園 (Lamington National Park)

雷明頓國家公園面積 20,600 公頃，大部分範圍位於海拔 900 公尺，距太平洋僅 30 公里。以其山脈、瀑布、洞穴、岡瓦納雨林、森林、溪流、野生動植物、鳥類、老樹、瀑布、步道和山景聞名，擁有全球保存面積最大的亞熱帶雨林及世界上最大的高地亞熱帶雨林，1986 年被列入世界遺產名錄，2007 年被列入澳大利亞國家遺產名錄。被 BirdLife International 標識為重要鳥類保護區，以保護瀕危鳥類為宗旨。

國家公園僅 9 個正式員工，30 個志工支援假日服務，因此大部分工作為外包及 O'Reillys Rainforest Retreat 歐雷利雨林度假村自主維護。

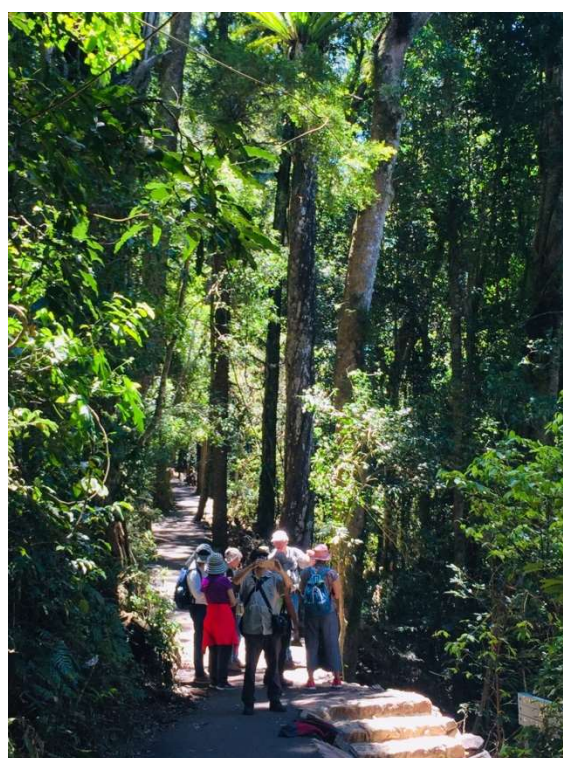


圖 34 雷明頓國家公園步道觀察



## 2. O'Reillys Rainforest Retreat 歐雷利雨林度假村

歐雷利雨林度假村位於世界遺產岡瓦納雨林區內(Gondwana Rainforest)、雷明頓國家公園園區範圍外，由 O'Reilly 家族私人產業所經營。1915 年 O'Reilly 家族在雷明頓國家公園接待遊客，1926 年開始建造提供休憩住宿的空間。

- (1) 企業品牌及自主營運：以為每位遊客提供「綠色」體驗、為雷明頓國家公園的歷史、遺產及教育注入力量為其企業品牌，園區內步道、各項安全指示牌標誌及自然生態保育措施多為其自主營運及維護管理。
- (2) 雨林渡假村提供多樣的探索活動：包括清晨健走、清晨賞鳥之旅、歷史之旅、生態之旅、猛禽表演、歷史講座、自然/人文影片播放、生態巡查、私人導覽、螢火蟲之旅、野生動物觀察及高架雨林步道之旅。高架雨林步道(Treetop Walk)為其主要的體驗設施，設置原則以不影響植物自然生長又能輕鬆近距離觀察雨林的樹冠層為主，木棧道易滑倒區域架設防滑鐵網保護遊客安全。沿著樹林搭建吊橋，每節吊橋不可超載 6 個人以上，並有設置爬上樹冠層之安全鐵梯，每次可以讓 2 個人上去觀察樹冠層。



圖 35 步道、各項安全指示牌標誌由業者自主自發性營運及維護管理



圖 36 高架雨林步道(Treetop Walk)

## 3. 大衛菲力野生動物公園 (David Fleay Wildlife Park)

成立於 1952 年，由澳大利亞著名的自然主義者 David Fleay 創立，1982 年賣給昆士蘭州政府，現由澳大利亞環境保護署管理。2001 年 2 月 23 日納入昆士蘭遺產名錄。

David Fleay 野生動物公園被 37.3 公頃（92 英畝）的 Tallebudgera Creek 保護公園所環繞，園內動物棲息設計與自然棲息地相似，內設有動物醫院，

以照料和救助患傷病的動物。

區內解說展版輔以生動繪圖，並加強宣導遊客不餵食、不自拍、不觸摸、留在步道上及尊重野生動物等觀念。每年假期規劃有各式環境教育活動，例如小小生態巡查員(Eco Ranger)或菲力英雄(Fleay's Hero)等活動。

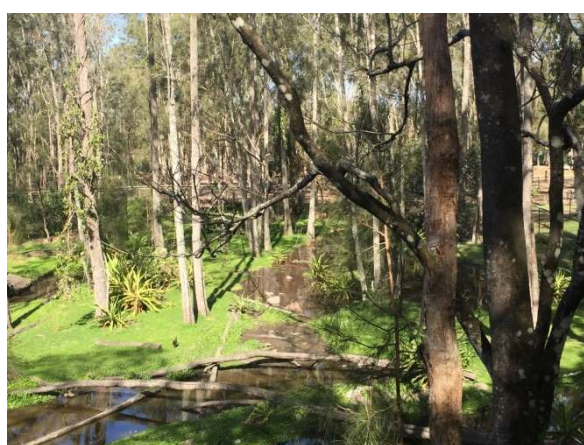


圖 37 David Fleay 野生動物公園



圖 38 David Fleay 遊客須知

### (三) Northern Territory 北領地

#### 1. 烏魯魯—卡達族塔國家公園 (Uluru-Kata Tjuta National Park)

烏魯魯—卡達族塔國家公園位於澳大利亞北領地的南部，獲得雙重世界遺產名錄。1981 年被列入世界自然遺產。1987 年被列入 UNESCO World Heritage 名單，國際社會公認其壯觀的地質構造、稀有動植物和自然風景。1994 年聯合國教科文組織認可其文化景觀-彰顯自然環境與地球上最古老的社會之一「阿南古」信仰體系之間的獨特聯繫。最著名的地標是烏魯魯和卡達族塔對阿南古人（Anangu）（該地區的澳大利亞原住民）有重大的文化意義。烏魯魯—卡達族塔國家公園共同管理委員會、國家公園管理處及諮詢委員會的成立及運作，共同管理的最基本精神，便是「協力工作」（working together），而此協力工作更是必須基於彼此的互信關係。在此互信基礎之下，Anangu 原住民和國家公園一起合作。

烏魯魯巨石是世界上最大的獨塊岩體，沙岩地層高達 348 公尺，總周長 9.4 公里。巨石表面的顏色會隨著不同時間而改變，最引人注目的是黎明和日落時岩石表面會變成艷紅色。由於公園被列入了世界遺產保護區，2000 年之前，每年的遊客訪問量攀升超過 40 萬人。不斷發展的旅遊業為當地和國家創造了經濟效益，這也為平衡文化價值的保存和旅客需求帶來極大的挑戰。烏魯魯巨岩傳統上的擁有者阿南古人（Anangu），自 1985 年這片園區



回歸原住民管理以來便要求進行封山。阿南古人認為烏魯魯是祖先走過的路，對他們來說有極大的精神意義。2019 年 10 月 26 日烏魯魯岩石永久對外關閉。



圖 39 烏魯魯巨岩



圖 40 阿南古聖地擁有豐富的泉水、水潭、岩石洞穴和岩畫，導遊帶領遊客做徒步旅行，介紹當地的動植物生態及土著神話。

## 2. 用火的智慧-民俗生態學 (Ethnoecology)

澳洲中北部乾旱地區長期以來由原住民以「火」來經營土地，一方面有些重要的食物來源是在火燒後的大地重生階段前期生長的；另一方面這樣乾旱的地方若沒有定期的以人為的火來經營，當植物量累積到一定程度時，一場自然或意外的火將變得不可收拾。因此國家公園與阿南古人合作，將傳統知識和現代科學相結合。文化與自然資源管理員與原住民耆老商討進行國家公園範圍內不同區域的放火。



圖 41 用火的智慧

資料來源：烏魯魯—卡達族塔國家公園官方簡報

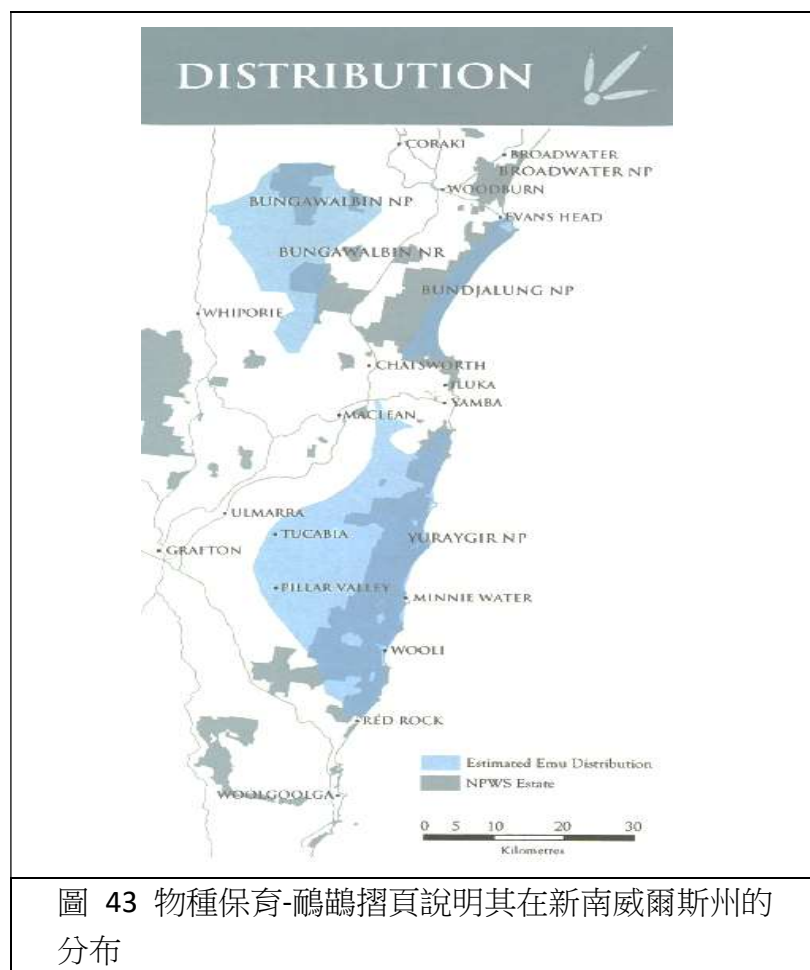




#### (四) 保育作為

##### 1. 物種保育-鵯鵯 (EMU)

鵯鵯(EMU)是現存世上除了鴛鴦以外最大的鳥類，僅分布於澳洲，是極具代表性的物種，澳洲國徽上有本物種，受到「瀕危及受威脅物種保護法」及「國家公園和野生動物法」所保護。新南威爾斯州北海岸的鵯鵯是一群孤立的族群，個體約少於 120 隻。由於鵯鵯對道路敏感度低，州政府設立道路警告標誌、規劃當地學校的認識 EMU 計畫、並啟動新南威爾斯州北海岸年度社區普查(2000-2010)、針對分布範圍、遺傳學和對築巢鳥類的威脅進行長期研究。而政府也提醒遊客放慢速度、注意 EMU、控制狗、向 NPWS 通報目擊紀錄（日期、地點、數量、雌雄、距離馬路的最近距離、拍照）。



##### 2. 人與野生動物的界限

棲息於雷明頓國家公園雨林及其邊緣的緞藍亭鳥(Satin bowerbird)，雄鳥在繁殖期會花時間在森林的地面清理出一塊小空地，用細樹枝搭造求偶用的亭子，兩側高起，中間低下可供走過，最後用許多羽毛、花朵、石頭等裝飾

周圍環境，特別喜歡亮藍色的物品。當雌鳥造訪時，雄鳥會用叫聲求愛，並且用喙銜著它的藍色蒐藏品，展示給雌鳥觀賞。過去都是撿藍色羽毛、花朵、石頭回來裝飾，如今帶回裝飾的是藍色的瓶蓋、吸管、各種塑膠垃圾，令人省思。此外，由於人與野生動物的距離很近，區內的賣店餐廳常有野生動物如彩虹鸚鵡來覓食，對野生動物的健康造成威脅。



圖 44 緞藍亭鳥的藍色蒐藏品



圖 45 緞藍亭鳥的巢

### 3. 保育設施

#### (1) 州際檢疫 (Interstate Quarantine Rule)

為限制有害生物雜草種子病源擴散對當地農作物造成之經濟損失，澳洲境內跨州和邊界均採取嚴格的檢疫措施，此外各州和領地內都設生物安全區或檢疫區。



圖 46 ULURU 機場入境前的水果回收桶

## (2) 入園防護

為防止遊客將病原菌及外來種帶入雷明頓國家公園，進入園區邊界遊客需使用鞋刷設施，噴灑清洗後方得入園。

	
圖 47 雷明頓國家公園鞋刷設施	圖 48 雷明頓國家公園鞋刷用途說明

## (五) 生態旅遊

### 1. Uluru Tours Guide

本次遊程由 SEIT Tour company 負責帶領，透過州立與聯邦政府的協助成立，該公司具有完整的解說員訓練。遊程可指定由在地原住民帶領。

### 2. 出發前申請公園許可證

入園前須於線上付費申請(澳幣 25 元)烏魯魯一卡達族塔國家公園許可證 <https://book.parksaustralia.gov.au/passes/uluru/>，從申請入園開始，國家公園即掌握入園者之基本資料及聯繫方式，以利後續入園須知及滿意度調查等訊息之傳送



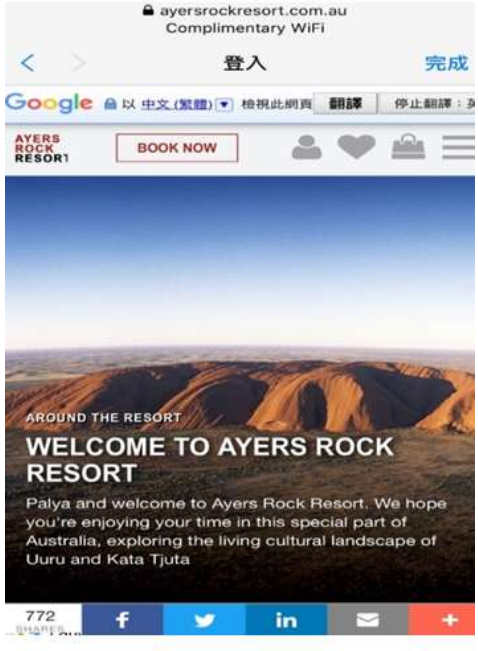
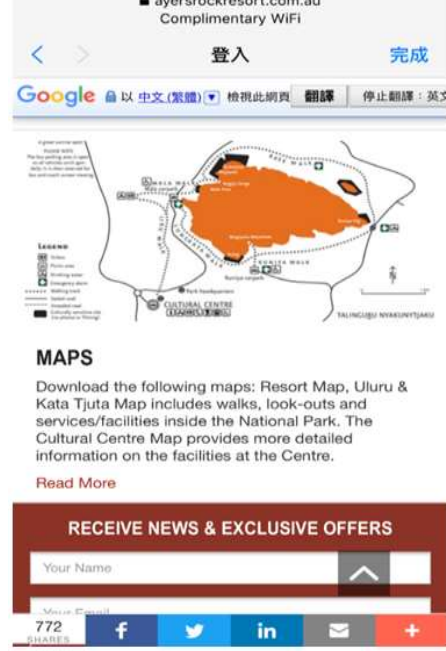


圖 49 SEIT 生態旅遊公司網頁

	<p><b>Welcome to Uluru-Kata Tjuta National Park!</b></p> <p>Palya,</p> <p>We're excited you're getting a pass for Uluru-Kata Tjuta National Park! We look forward to welcoming you to this unforgettable landscape.</p> <p><b>Your pass</b></p> <p>If you need to change the dates of of your visit use <a href="#">this link</a> to access and manage your order at any time. Please save your park pass to your phone, or print a copy to carry with you during your visit. You will need to be ready to show your pass at the entry station, or if asked while in the park.</p>
<p>圖 50 烏魯魯—卡達族塔國家公園公園許可證</p>	<p>圖 51 申請完成之後收到烏魯魯—卡達族塔國家公園歡迎信</p>

### 3. 抵達時一站式服務

抵達 Ayers Rock 機場連接 WIFI 可登入官網，網站上呈現整合型訊息，包括交通、食、宿、設施、生態旅遊遊程、地圖及新聞訊息等。

 <p>The screenshot shows the mobile version of the Ayers Rock Resort website. At the top, there's a header with the website URL 'ayersrockresort.com.au' and 'Complimentary WiFi'. Below this is a navigation bar with a '登入' (Login) button and a '完成' (Done) button. The main content area features a large image of Uluru with the text 'WELCOME TO AYERS ROCK RESORT' and a brief welcome message. A 'BOOK NOW' button is prominently displayed. At the bottom, there are social media icons for Facebook, Twitter, LinkedIn, and Email, along with a '772 SHARES' indicator.</p>	 <p>The screenshot shows the mobile version of the Ayers Rock Resort website. At the top, there's a header with the website URL 'ayersrockresort.com.au' and 'Complimentary WiFi'. Below this is a navigation bar with a '登入' (Login) button and a '完成' (Done) button. The main content area features a map of the resort area with various landmarks labeled. Below the map, there's a 'MAPS' section with text about downloading maps and a 'Read More' link. At the bottom, there's a 'RECEIVE NEWS &amp; EXCLUSIVE OFFERS' section with a 'Your Name' input field and a '772 SHARES' indicator.</p>
圖 52 Ayers Rock 機場網頁	圖 53 網頁整合型訊息

### 4. 行程結束滿意度調查及影像上傳分享

行程結束後系統會寄出滿意度調查問卷(簡版及詳版)，並期望遊客可以將影像上傳分享。

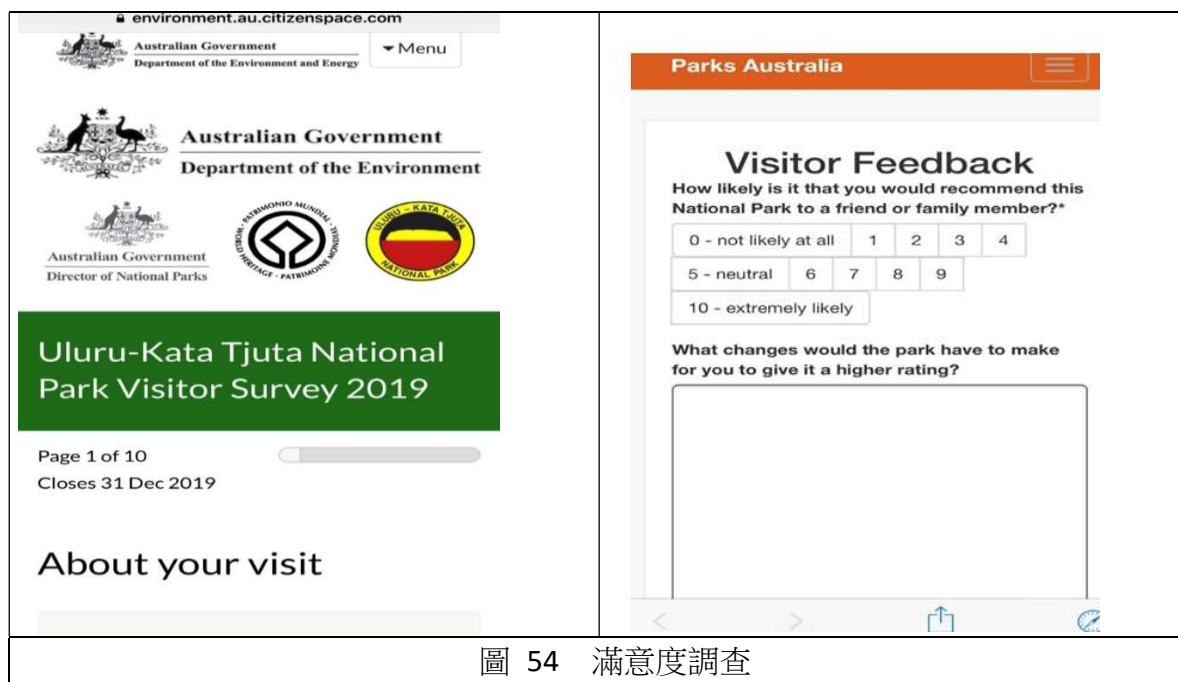


圖 54 滿意度調查

## (六) 環教宣導

### 1. 環保觀念無所不在

飯店中的各式卡片標示，支持浴巾重複使用，省下的洗衣費用 50% 會用於在澳大利亞 4 個因豐富的動植物種類而聞名的地區種植在地樹種，有助於保護當地生物多樣性和瀕危物種，此行動與聯合國永續發展指標 SDGs 目標 14、15 一致。



圖 55 節水、節能，支持浴巾重複使用



## 2. 原住民人文與保育結合宣導

在歐雷特度假村木屋上可見 Jingeri(亦即 Hello)的解說牌，係，教導遊客以 Yugambeh 族語認識物種，Yugambeh 是昆士蘭州東南部和新南威爾士州東北部地區的傳統保管人，他們透過文化和教育交流的倡議與社區合作，以便子孫後代有機會認識其語言，聆聽其故事，並與他們的現在與未來息息相關，真正地與他們的土著遺產聯繫。紀念品賣店並展示結合在地人文資源特色之原住民藝術家文創商品。



## 3. 遊客安全宣導

公園警報 Park ALERT :全國各地有超過野火燃燒, qpws 和 Queensland Fire and Emergency Services-QFES 持續保護野生動物, 人和財產。計畫前往昆士蘭國家公園的遊客須先前往 <https://qldtraffic.qld.gov.au/> 了解公園警報保持最新狀態。

## 伍、心得與建議

### 一、 保育與永續-重視氣候變遷課題，善用跨文化視角與經驗，強化保育措施與公民科學參與。

- (一) 本次行程原先規劃停留之雷明頓國家公園賓納布拉山居旅館(Binna Burra Mountain Lodge，1930 年代建造，名列世界遺產)，2019 年 9 月被野火吞噬，使得我們不得不臨時更換留宿地點；更令人憂心的是，長達 4 個月以來澳洲飽受森林野火肆虐難以停止。根據研究顯示，全球氣候變遷下導致的火龍捲（或火風暴）將成為澳洲更常見的景象。火風暴造成的野火基本上無法控制，只能任其延燒。下一階段，氣候變遷所帶來的課題將不容忽視。
- (二) 澳洲國家公園及保護區得以有效經營，在於其結合傳統生態智慧與現代科學知識。阿拉瓜爾國家公園瀕危物種保育計畫便是由公園的傳統所有者、公園管理者與國家公園與野生動物管理署（科學家）共同努力將跨文化視角和經驗應用於年度物種保護規劃週期，可供我國各國家公園參考。
- (三) 國家公園及保護區邊界不一定設有圍籬，但透過州際防疫之源頭管理來保護國家公園免受外來種或病原菌入侵之防治，以及遊客入園前更確實的保育設施，國家公園與保護區可獲得多重保護。
- (四) 本次觀摩之保育措施較少，但從相關保育摺頁中可知全民參與式之保育（公民科學與科學教育）已是世界自然保育趨勢。

### 二、 體驗與環教-完善利用在地社區人力，建構完整生態旅遊鏈

- (一) Uluru 透過州立與聯邦政府的協助，成立 SEIT Tour Company，政府有完善之在地解說員訓練，正式開始經營 Uluru Family Tours。
- (二) 從出發前須申請公園許可 Park Pass 到抵達烏魯魯一站式的網站服務及返家的回憶上傳及滿意度調查，成功建構一系列完整的生態旅遊鏈！
- (三) 透過置入性行銷，賣店及飯店內國家公園的系列產品無所不在。

### 三、 夥伴與共榮-透過協議方式與共管委員會機制和諧運作，建立長久夥伴關係

- (一) 從雷明頓國家公園與歐雷特度假村的關係  
雷明頓國家公園職員相當少，妥善運用周邊企業夥伴提供優質的生態服務。歐雷利度假村非位於國家公園範圍內，不為國家公園法令束縛，可與國家公園一起執行保育工作，協助維護經管雷明頓國家公園設施。
- (二) 烏魯魯原住民與國家公園共管的關係

Uluru-Kata Tjuta 國家公園共同管理委員會成立於 1985 年，互信基礎的合作與互助，如今由原住民與非原住民共同組成的諮詢委員會包括旅遊諮詢委員會、科學諮詢委員會、文化中心執行委員會及就業、教育與訓練委員會)，透過共管委員會、國家公園管理處及委員和諧運作。其共管模式為全球所關注與學習的典範。

#### 四、效能與創新-應妥善建置保護區經營管理價值系統、效能評量及健檢等檢核工具。

WHERE are we? WHAT is going on?

Did we achieve what we said we would?

Did we meet our objectives?

無論是新南威爾斯州或昆士蘭州國家公園系統建立的經營管理效能評量架構，對他們來說，都是一條漫漫長路的「文化改變」過程（Culture Change）。臺灣國家公園成立多年，如透過價值評估的過程，主管與同仁可一起思考保護區存在的關鍵價值為何？欲達成的目標為何？便可有邏輯地引導至經營管理計畫的梳理調整，以對應每一個階層的行動方案。下一步該怎麼做？為何要做這個計畫？經費人力分配是否合理？是否值得繼續推動？行動計畫完成後是不是能反映公園的目標與經營管理效能等。

透過年度的健檢(Health check)，設定評量指標，評出年度各項計畫執行效率，以便做為未來年度預算編列或預算分配比重的參考。這不能只是形式，而是透過一套清晰合理的架構流程來檢視國家公園經營管理的效能。

而有關 IUCN 綠色名錄的申請，臺灣目前的局勢不一定能成功申請列入，但誠如 Marc Hockings 教授創立此規範時的根本目的，相較於汲汲於登入名錄，若能藉此國際通用的評量工具，協助各保護區檢視並精進保育效能，才是更大的意義。臺灣國家公園即將邁向新的里程碑、惟有透過評量檢討，方能掌握下一哩路。未來無論組織如何擴增或調整，臺灣的保護區都需要有一套有效的評量機制，藉由啟動相關規範之檢視及申辦操作，為保護區經營管理做一個透徹的檢視及滾動式修正。

#### 陸、致謝

此行感謝國立臺灣大學地理環境資源學系林俊全教授辛勞籌劃率隊，及中央研究院生物多樣性中心劉小如教授、國立臺灣大學生態學及演化生物學研究所周蓮香教授、國立東華大學自然資源與環境學系劉瑩三教授、國立臺灣大學地理環境資源學系周素卿教授、國立臺灣大學地理環境資源學系李美

慧教授、國立師範大學地理學系王文誠教授、國立東華大學觀光暨休閒遊憩學系吳宗瓊教授、國立臺灣大學森林環境暨資源學系盧道杰副教授、中華大學旅遊與休閒學系陳瑋苓助理教授、中華民國國家公園學會洪敏榮醫師、紐西蘭奧塔哥大學觀光學研究所詹庭萱同行、與談、交流，並無私分享所有的文件錄音檔及照片。更感謝周素卿教授及外籍生 Sophia Roces 在臺灣大學永續地球尖端科學研究中心之經費支持下，協助將所有的會議討論逐字繕打，為本出國計畫參訪留下最完整之紀錄。



#### 柒、參考資料

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附件

## 一、月曆規劃工具 (Seasonal Planning Calendar)



## 二、工作坊逐字稿

20191104-1Marc 總介紹.m4a

I think it's worthwhile getting everyone on the same page. I often get enthusiastic when I talk and I will speed up, so please shout out and tell me to slow down if I start talking too fast for you. I realize you're working in a second or a third or a fourth language, and on top of that, it's not ordinary English, it's Australian, so that's doubly difficult, so please if I'm going too quickly or you do not understand, please stop me and we'll slow down.

But as I mentioned in my introduction, we started work within IUCN on the issue of management effectiveness in the early 90s and it was interest in people understanding how well protected areas were delivering on their objectives, so they were being regarded as more and more important as a means of conserving nature, but people were starting to understand that they were not always effective. So, how can we understand that in a way that helps us to manage better? So we set up a task force and prepared some guidelines which were first published in draft in the late 1990s, then we published the first sort of guidelines in 2000, and then a revision of those in 2006, and I can provide you with the electronic copies of those before we go. But we define management effectiveness in those guidelines as an assessment of how well a protected area is being managed, and most importantly the extent to which it's protecting its values and achieving its goals and objectives. And when we looked at that, we recognized 3 different types or areas of evaluation that we would like to understand. The first one, which we call design, is really about whether or not a protected area has been set up in such a way that it actually has the capacity to succeed. So there may be either inherent strengths or limitations in the way a protected area has been established that limit its capacity to maintain the values for which it was established. So we need to understand if there are design limitations, so we can then seek to overcome them. The second one is about the way we go about management. So as a manager, whether it's a protected area agency or a private protected area or a community protected area. What are the things that they do to actually manage the land and are they adequate, are they doing enough of them? Do they have enough resources and enough people? And secondly how appropriate are they? Are they doing the right things or are they perhaps not doing things in the right way that limit effectiveness? But then most importantly, what are the results of that



management? So one of them, is it delivering in terms of carrying out work programs, but most importantly the maintenance of the values, the things that make that protected area important. So we said we need to look at all of these to understand management effectiveness.

We also thought about why, so what's the point of doing this evaluation? And probably because I had been a manager, I was interested in helping managers do a better job. So the most important thing I think, is actually to improve management, that's the fundamental reason. But, and I suspect the same is true in Taiwan, as it is here and in many other places in the world, there are increasing demands from government, from civil society, from NGOs for managers to be accountable, to report openly and transparently on what they're doing. So I'm taking an evaluation can help you provide the information for those reports. But we will note, and we can talk a bit about it later, there's a tension in that; there is a desire for people to report openly and transparently but there's also a tension from within governments, who often only want to report the good news, right? So we've got this thing, on one hand, they want the open and transparent, and on the other hand they'd rather only present good news, and often the news is not so good. So that's a tension. And we can talk about that and how we manage that later.

The third area is, in terms of the resources that we need, and in helping to allocate resources. I've talked at I'm not sure how many thousands of times around the world about management effectiveness, often in rooms full of managers. We have a few managers here; one of the questions I often ask is "Do you have enough?" So who are the managers in the room? Can all the managers in the room put their hands up? Anyone who's a park manager, anyone who's not from a university. Okay, right, now, keep them up. If you have enough money and enough staff, put your hand down. Only once, I had a manager in Singapore who stood up and said "I've got enough, I've got all the money and all the staff...", only time. And at the end of the talk he stood up and said, "I want to change my mind. (laughter) Now I understand what we mean by 'I don't have enough.'"

So this is not , I'm sorry to disappoint you, this management effectiveness evaluation for the Green List is not suddenly going to deliver you a pot of gold. You're not going to get everything that you need. But it can do two things: It can help you use what you've got more efficiently, and it can help you

make the argument to the people who hold the purse strings, why you need more. So instead of just being like Oliver Twist, if you have read Charles Dickens, instead of just going to government and saying "Please, sir, I want some more, I need more." You have a reason, you can argue why you need more. So those were the first three we had in mind. This one we didn't initially have on our list of reasons, but we've added it now, because we've found that this was an unexpected result. So I think that being open and transparent, looking at what you're doing and how you're doing it, can actually help build support from civil society; that people understand the challenges that you face, they understand what's working and what's not, and very often, people who may be antagonistic actually become supportive of the agency. So that was a new one. And maybe during the week when we have more time, I'll talk to you about some examples of that.

So as I said, we produced in the late 90s, the first set of guidelines around about evaluating effectiveness, and then when we actually had done some of this work and learnt about the mistakes we made, we revised our guidelines and we had revised guidelines published in 2006. Those guidelines, we started out to develop a system for evaluating management, but we very quickly realized that you can't make one system that works everywhere in the world very easily. So what we produced was guidelines to help you design systems rather than designing a methodology, and these guidelines have been used to develop many different systems, some of which have been applied already in Taiwan, \*\* (9:31), so there's a variety of different systems, and we'll look at one of those in NSW's State of the Park system in detail today.

But they're all-- many of those systems, most of those systems have been based around this common framework, so this is the work that we did in developing the guidelines. And it's a very simple approach, it's not rocket science. We look at the outside of this circle, we said, "This is what you do as managers, you establish protected areas because of values, because of those things that you want to achieve, and so we want to understand those and we also want to understand what are the threats to those, what are the things that could stop you from keeping those values?" And then you develop management plans, so we've heard that you have management plans for all of your parks, plans that set out how you're going to manage, what strategies you're going to use. And then you put in the resources, the staff, the knowledge and the money to manage. So this is the resources, and this is where the management happens,

these management processes, so this is what you do, the day-to-day work; to do patrols, to develop tourism facilities, to run education programs, to control invasive species, to manage fire, all of these things happen in this box. And that activity produces results, so this might be the number of kilometers of walking tract that are maintained, or it might be the number of patrols that I conducted, or it might be the number of hectares of invasive species that I've treated with weed-killers. And these outputs, we hope, will achieve the outcomes that we want, which are to maintain our values, to reduce our threats, to achieve the other objectives that are set out in management planning.

And then this is the cycle, as we go through this, we continually manage. what we did in the framework for management effectiveness, is something a little different. We put evaluation in the middle, we said we need to know all of those things if we want to be able to improve management. So that framework is the structure of the system. And here are the same six elements: context, planning, inputs, processes, outputs, and outcomes. And here are some of the criteria, the things that you would look at to evaluate that component of management. So we know what the values are, we know what the threats are, we know who the stakeholders are, we know what the policy settings are that affect protected area management. In planning, we want to look at both the broader legislation of policy, but also the details of management plans. The plans exist, do they exist, are they appropriate, are they being implemented? The next is these 3 areas of inputs, basically there are 3 types of inputs into management; one is knowledge to help you make decisions, the second is people to do management, and the third is resources or funds to manage. So they're the 3 fundamental inputs.

The next one which is only one short phrase, but it covers a multitude of things, is "Are we doing it in the best way?" So this is, we think of best practice management, are we following the best practices to produce results or services? And then the outcomes, the impacts on management in relation to values and reducing threats. So it's a very simple structure, but tries to look at all of the way management works. As I said, this outer circle is not new, you'll find that in many, many management textbooks around the world. Mostly what they do is they put evaluation here, they say we go through the cycle, when we get here we evaluate the outcomes, and if we didn't achieve our outcomes, we start again, and try again. What we did was shift evaluation from there and put it into the middle of this process, and said, "If you want to be able to adapt

management, you actually need to know all of it." You absolutely need to know about outcomes, but on their own, outcomes won't tell you how to adapt, it just tells you that something needs to change. But what needs to change? Do you need to do these things differently, or is it just a loss of resources or a lack of resources? So I'll come back and look at that and some examples a little.

The other thing I wanted to just talk briefly about, and again this will come up when we start to talk about some of the things around evaluation and the Green List, is how do we connect monitoring and evaluation? What's the relationship between the things you measure and the judgments that you make? So that's very important, if we want evaluation to be based on evidence, rather than just opinion, then we need to collect data, we need to monitor. Within the evaluation literature, people talk about two different sorts of evaluation, formative evaluation and summative. So summative evaluation happens at the end, that's the "Did we achieve our results?" Formative evaluation happens as you do the process and that helps you to adapt along the way. The problem with only doing summative evaluation is you're already at the end of that process, yes you know whether or not you succeeded, but formative evaluation can actually help take you to success. So building systems that integrate and looking at all those six elements help with formative evaluation.

So we need to link monitoring to evaluation. Lots of agencies do lots of monitoring, but the problem is they don't necessarily connect their monitoring to their decision-making, and the danger is that we monitor a species to extinction, and we never do anything different, we just know it's disappearing. So linking monitoring to evaluation, to budgeting and to planning and to-- deciding on your future what programs can help break that problem. Another thing, and we can talk a bit more about this in the example of New South Wales, is the use of different sorts of data. So there's a tendency, and we've got a lot of academics in the room, there's a tendency or a danger that can fall into where we say only things that you measure matter. So we always are looking for quantitative data, and where we can get quantitative data that's good, but there is also, within evaluation, a saying that "What you can measure doesn't matter, and what you can't measure matters," that you need some of the things you can't measure exactly in a quantitative way, so we need to also use qualitative data to form decisions. Measuring something precisely, knowing the exact dimensions of my phone, I can very easily measure dimensions and I can report that, but that doesn't tell you much about whether or not the phone works.

Asking people about whether they're happy with their iPhone will probably give you a better idea than running a tape measure over it, so we need to think about using the appropriate sorts of data. And I'm not saying quantitative data shouldn't be sought, but don't only look at that; consider the role of qualitative data. So yeah, what's measurable isn't meaningful, and what's meaningful is difficult to measure, is the way that phrase goes.

So, we want to think about some of the sorts of questions that we might ask, and I'll go into these in detail, but some of the broader questions are about values, whether or not there have been-- one of the things we need to be alive to, or conscious about, is not just what we intend to do, but are there unintended consequences? So you might go in and manage in a particular way, with the intent of protecting a species, but the way you're doing it actually deprives people of livelihoods and increases poverty, and that leads to more poaching and greater threats. You may not have gone in with the intent of making people poor, but actually that is the result of management, so we need to think about the unintended consequences of our actions as well.

So we'll go through and have a look at those in more detail and think about the sorts of—oh, in a minute, so I'll do this first. The other concept I wanted to introduce in terms of monitoring is this notion of baseline, of what do we measure against? Where do we decide what's the starting point and what's the desirable system here or outcome that we're seeking? So a baseline is a starting point and that is to monitor change, but what's the appropriate baseline can be difficult. Because management's been going on, what was the original ecosystem like? So the system that you're managing now may not be in a natural condition, it may not be the desirable condition, but if you use that as your baseline then you may not know about the results. So you can look for an undisturbed reference ecosystem, if you've got an area that has \*\* (20:30) change, you can say what would this naturally have been like, and look at that as a baseline. So do we know what the original condition of the ecosystem was? Can we find that?

So examples, this is from Florida, a marine park. And this is a big fishing area, this is what they call a brag board. Do you know what bragging is? Bragging is pumping yourself up and saying how good you are, yeah? So this is where the fishermen who are very proud of their fish because they're so big, they come and hang their fish up and they take a photograph of themselves

against all the fish that they took. And here's a very happy fisherman with the fish that he's caught, saying how wonderful they are. This was taken a few years ago, that's what it used to look like. (laughter) So if your baseline is what you're catching now, and you say this is really good, but that's what fishing used to be like in Florida, and that's because people are using the wrong baseline. In Australia, so those baselines shift over time, where and how you measure them.

When I first started working in the Great Barrier Reef Marine Park in the late 1990s -oh sorry the late 1980s, so this is a bit after that, this is 1994, this is in the \* (22:07), this is a fringing reef. And it's mostly mud and some dead coral and a lot of coral and algae. And we thought, this was inshore reef, we thought this was the natural condition for an inshore reef. It's all we had ever known, ever since the marine park existed that's what that looked like, all of the marine biologists basically, there was no concern about this, they said this is inshore fringing reefs, there's a lot of sediment, that's normal, that's what they looked like. Then someone had the idea of "Let's go back and find and match photographs from the early days of European settlement," and because this is a -we've got continental islands, you can identify the place where that photo was taken precisely.

So they went back and they found old photographs; this is exactly the same place in the 1890s, and you can see it's completely different! This is at low tide, that's all living coral cover, so it's probably 80% living coral cover and here it's maybe 2%. We didn't know that that's what it naturally looked like, so we shouldn't be happy with this because it's vastly changed. So we always need to think when we're modeling, that we're thinking about what's the natural condition of the ecosystem and how can we work? This is unattainable, we will not restore that in my lifetime or my children's lifetime, or even their grandchildren's lifetime. It would be very hard to go back to that, but we should recognize that what we're dealing with is a heavily degraded ecosystem, so all the time we're looking at what does good management look like, thinking about what natural ecosystems are like.

So just wanted to finish with some, raising some key questions and then Andrew will talk a little bit about how they actually do this system. So in terms of context, we'll look at those six elements of the framework. So do we know what the values are? Do we know why we should be managing this area? And are they used to actually help us make decisions, so are we taking what we call a



values-based approach to management? Do we know what the threats to those values are? Do we know who the key stakeholders are? So this is not really about how management is going, this is about who we know -what we've got in front of us to manage. So this is our understanding, so this is not about how you're managing, it's about do you appreciate what the job is? In terms of planning, do you have planning documents that are up to date? Many places have management plans but they might be 15-20 years old, or they might have plans which aren't accessible, which essentially sit on the shelf 'cause someone else wrote it, and gave it to the manager, and the manager goes off and does what they want and they ignore the management plan and it sits on the shelf.

Were stakeholders involved in planning? Or was it just done by the technical experts in our agency? Do they actually guide what you do? So do you actually implement the management plan? And how do you adjust them? So if you're doing monitoring, you take the results from monitoring and use that to think about whether or not the plans are still appropriate, and do you adjust the plans? Do you have the right number of staff? But very often, and most importantly, do you have the appropriate skills? Do the staff know these things, and how to do their job? Do you have enough funds? Well we know basically, we answered that as 'no' but do we have enough to be able to do the basic job, and are we using it in the most appropriate way? And is it sustainable? So, many protected areas go through a cycle of boom-and-bust, particularly in developing countries, not so much Australia, but I would think not so much in Taiwan, but if we go to places in Africa, one year they'll have a big project funded by the GEF and they've got millions of dollars, and then the next year the project's run out, and they can't even put petrol in their vehicles anymore. So is it sustainable over the long term?

And the key one I think is: do you have the information? It's not do you know everything, but do you have the information you need to manage? Are there decisions that you have to make where you really need to know more to be able to take a good decision? So in terms of processes, do you have a regular work program? So is there an annual work program and if so what? Are the right people involved, in terms of participation, as more and more requirement for public participation and stakeholder participation? Are the right people involved? And are they able to actually influence decision-making? A key part of management is often compliance or enforcement, so we have a set of rules but are we actually able to make those rules be followed? So do we have the staff to

enforce them? Do we have a culture that expects people to obey the rules? And are they applied equitably? So very often, and again it depends on where you are, where corruption might be quite high in society, you might have rules but they're actually not applied because people get around them. Protected areas are not complete no-go zones, so there's a variety of different protected area categories, some of which allow for resource use but is that sustainable and is it regulated within those limits? Do we address both the ecological and the social aspects of management? So very often, managers are biologists or have a natural resource training, but a lot of management is actually social, so do we have the skills, are we managing within the social aspects of management? And are we monitoring, so are we actually measuring the things that we need?

28:58

A couple of, probably one of the simpler ones, are we actually doing what we said we would in plans? So are we implementing plans in a timely way? Are our work programs completed? Or do we have lots of plans but we don't ever get them done for one reason or another? Are stakeholders participating, and have monitoring results been fed back into planning? Are we using the monitoring that we're doing? And one of the key ones is about outcomes. So has the condition of natural values been maintained, or has it improved? Are they within acceptable thresholds, and we'll talk more about thresholds later in terms of The Green List, so I don't want to go into that now. As well as the biological conditions, are the social livelihoods and cultural values of the site being maintained? Are management objectives for things like tourism, so not all objectives relate to values, some relate to programs, are they being delivered? Are threats being diminished or minimized? And are stakeholders satisfied? So we have positive results in terms of stakeholder views on the park. So these are some of the questions we might want to have a system and answer.

I just want to finish by talking about how we use that, if we all measure all six of those elements from context through to outcomes, how do we make sense of that in decision-making? So let's play a little scenario game, let's assume that when we finish measuring and we look at the outcomes, so the condition of the values of the protected area are declining, so that result is not okay, we're not happy with that. So the first question we ask is: "Why?" So why aren't they okay? So then we need to look at the other parts of the evaluation system, maybe the outcomes, the condition, is not okay because we actually didn't do the things we said we would. So we were going to control invasive species to protect one of the natural values of the site, but we didn't do that; for

one reason or another we weren't able to control weeds across the whole area, or if it's an invasive animal, we weren't able to control the numbers of that.

So we didn't actually deliver the outputs; we said we were going to do invasive species control but we didn't do it. Well, the first thing you might try is doing that. If you're not happy with this result, try doing the things that you said should lead to a positive result. That's a good theory. If you didn't do those things, if you weren't able to do the invasive species control, well then why not? Well maybe you didn't have enough money or enough staff, so before you can do this, you actually have to redirect the resources that you've got to put those resources into doing that work. So if that's what it looks like, the first thing I would do is consider increasing the resources for invasive species control. But let's say when you look at the resources, they're actually okay, you had the resources, but you still didn't deliver. So why? Then you can start to think about the work programs and the processes. So maybe you were doing it at the wrong time of the year, so the way your work program was organized when you did invasive species control, it wasn't during the growing season and so that's the time when applying weed-killer will actually be most effective. So you might change the timing. Or if you're shooting invasive animals, like pigs, you're doing it but you're not doing enough; to control the pig population you have to get more than 90%, you have to kill more than 90% in one year. If you only kill 80% of the pigs, the next year you've just got just as many, all you've done is increased the survivorship of the young ones. So look at the work programs, why, given that you've got enough resources, you didn't get the result you want. So you might look at other things, maybe you've got lots of resources but the government has a priority for tourism development so instead of sending your staff out to control invasive species, they're maintaining picnic grounds or building camping areas, so you can reallocate resources.

There's another option, the results aren't okay, but you actually did deliver the outputs so the results are wrong, but you did everything that you thought should lead to a positive result, right? So there's a problem with your strategy, you've got to go back to planning. These are the things we plan to do to produce the result, it's not working. So we've got the result, so that means the strategy must be wrong; we need to rethink our plans. let's say the outcome is okay, cause that's also a result, that's--hopefully we'll get that. That doesn't mean you don't look at anything else, so if the result is okay but you didn't deliver the outputs, maybe you were wasting your time doing this work. There

were a lot of resources they took, "Well i'm sorry you said this is what you'd do to produce the result, you didn't do it but the result is still okay, so maybe you didn't need to do that and you could re-allocate those resources."

So this sort of a scenario is the way in which you can get and use the data from different parts of that evaluation framework to help you analyze management, and adapt and make it better. That's all I wanted to say for an introduction now, maybe we just take one or two urgent questions, but what I'd like to do is hand it over to Andrew then, and then you can see what a system for evaluating management within an agency looks like in the real world.

Q: I'm still a bit confused about the difference between output and outcome.

A: Okay so, an output is what's actually delivered, so let's take the invasive species as a case and we'll take a weed and we'll say our management program says that we are going to trade a thousand hectares with a herbicide, okay? And when doing that, because in this thousand hectares, the weed cover is maybe 25% brown cover. So that's what we're trying to address, so we want to reduce that. And you may even have a target, you may even say you want to get that down to below 5%, because your research says once weed cover is less than 5%, it doesn't have an impact on the values. So the output is the area traded, so we get to the end of the year and we've traded - all 10,000 hectares. So we've achieved 100% of our output, but when we measure the percent cover of the weeds - it's still at 15%, so that's the outcome. So this is what we did, this is what we impact it had. So that tells us that the way we're doing it is not good ideal. So maybe the herbicide is being used at too low a concentration, or whatever, but we're doing the amount; another example is patrolling - we do patrolling to stop illegal harvesting of plants. And you have a target, you say you want to do 10 patrols per week, and then the object of that is to reduce infringement. So you want below 10 instances of poaching per year, so if you count the number of patrols, if you do 8 patrols a week, that's the output. The amount of poaching, maybe you only get 3 poaching incidents per year, that's an outcome. Another measure of outcome might be the number of orchids - because that's what's being poached, so this is the ultimate outcome. So these outcomes can happen in different areas, so one outcome is in terms of the incidents, and another one, if the density of orchids is kept at a certain level - so you want to think of outcomes in terms of what you want to achieve, now (out)puts is about what you've done. Does that make sense to people?

C: Yeah.

Q: I have a question about the framework. You adapt an adaptive project cycle to develop the framework. After about 10-20 years of implementation, what kind of strengths and weaknesses have you learned?

A: It will be useful also to consider this question after Andrew's talked; I think that one of the weaknesses is that in some places, people do the evaluation because they're expected to do the evaluation. They produce the result, and then they go back to doing things as normal, but they don't actually work through this process. So I think that's one of the biggest breakdowns, is how do we actually take the results of evaluation and feed them back into management, and I know it's something Andrew has thought long and deeply about, and how do they make sure that that connection exists. The other one, I would say, is that we take-- if we go back to here, the people do this process and they do it all the way around to about here, and they say, "Well that's too hard to measure so we won't do it." And yet that's the most critical part of it. I think you need to do everything, but if you leave this bit out, then you know something about what's been done, but you don't actually know whether it's been effective.

Q: What happens in many cases when you start doing it and you realize very quickly that it's the resources and personnel that's not enough, you hardly need to go beyond that - it's the first stage, you already stopped there. Like many management agencies, and maybe only one or two persons to manage huge issues.

A: Yes and no. I mean, I think when we looked at the results of – and I haven't presented this, I might if we find a period one evening, I might add one on that; we collected the data from tens and thousands of assessments globally and we had a look at what are the things that best predict outcomes, positive outcomes. And one of the inputs that's there, it's not the most significant, so there are, even with limited resources, if you get other bits of management right, you can actually produce positive results, or largely positive results. \*\* (42:41) we've done other research that shows how important those are, but for example, in terms of ecological outcomes, the skills of staff and the effectiveness of law enforcement are the best two predictors. So if you've got well skilled staff and you've got good effective law enforcement, it produces good ecological



outcomes in many instances - not always, but in many. If you look at social outcomes, the best predictors of positive social outcomes was engagement with community and having programs of community benefitting and assistance. So understanding these other things can actually help you, even though these resources are limited. I think the other one is that, to address this, if you're going to go to the minister of finance and say we need more money, if you could actually show the results where our values are being degraded and where are the strengths and weaknesses in management, you've got a much more powerful argument for where our resources should be invested, so I think it's still beneficial to them. Let's stop there and hand over to Andrew, because then we'll get an opportunity to really look at--

Key:

\* - one inaudible word

\*\* - multiple inaudible words

(?) - uncertain

Q: question from the audience

A: speaker's answer

C: comment from the audience

It was lovely for Marc to give a bit of an introduction here for us this morning, and hopefully what I can do now is begin to give you a sense about how here in New South Wales, we're applying a lot of what Marc talked about. And Marc asked a huge number of really interesting questions at the end, many of which I will be able to answer, but I won't do all of them, because we'll be here all day. But I'll give you a sense about how some of this works. So, this is down just north of Sydney, it's called Booti National Park, and as you can see we have lots of beautiful coastal areas as we go along.

Now for my presentation here, what my plan is, is to go through looking at what we do in applying the management effectiveness framework that Marc spoke about, I'll show you how we structure the collection of our information and what that looks like, we'll talk about how the assessment is undertaken and who's involved, and then how the data is being analyzed and showing you how we're actually using our system. (Now I hope, on the left hand side, right hand side, that was a sufficient translation, I have no idea, but I'm hopeful.)

So, with that in mind, the best way to get a sense of what we do here in New South Wales and what that looks like, is to actually see it in pictures, I find. And so, what I thought I might do is show a video.

[video plays until 4:43]

One of the things that we try to do is...I love data, I love monitoring, I love research, I love evaluation, and most people find that boring. So I try and make it a little bit more interesting. So, I'm not sure how familiar you are with Australia as a whole, but if we look at the country in the \* with all of the different states, I'm just talking about New South Wales, this part here. And

within NSW, we have 8.4 million hectares, which is 9% of the state. That's a lot! 878 parks, some of them are very, very big ones, some of them are very small. (To those of you that said you had 8 parks with plans and management for the whole, I love you.) My team also has responsibility for writing all of the plans for those parks, and it takes a long time. When we start drilling down, you don't need to worry too much about this, but it's always a question of how do you manage for all of that. Each of those different color blocks is an area that has a manager. So, across NSW, we have 38 managers that are responsible for plans(?), some of them have 3 or 4 parks to manage, some of them have 30 or 40, so it varies.

So there's a bit of context for where we are in NSW, but the idea of doing evaluation has to come from somewhere, and for us it actually started back in 2004. So we had a different part of government come to us, and they said, "Right, you're not doing a good enough job. We'll have a look." They sat down, they went through, they looked at everything and they went, "You're doing a good job....you're doing a good job...and you're doing a good job, and so are you, but none of you are doing the same thing. You're all doing it a bit different. So, you need to change that, you need to make it clear and consistent in some ways. And it provided lots of advice to us but it came out with two key recommendations. And that was: establish specific objectives and priorities for preserve management, and implement a comprehensive system to measure and evaluate the results.

Now it's that second part here that I'm going to talk about at a fair bit of length today, but the first part speaks to how we do our plans of management as well. And that's also my job, I have twelve staff that have to do that across the state, and keep us very busy. If you jump onto the internet and do a quick Google search, you can find that report, and I can give you some of these slides afterwards if you would like to help you find it easier as well.

So we thought, "Well, we've got to go and do something," and so we picked up the phone and called Marc and the IUCN and a few other people and we said, "How do we do this?" And we went and installed(?) the framework that Marc just talked to you about earlier on, and we went through and we thought about how we could apply those different components into the work that we do. The picture there with building it up; we've done quite a few surveys now so we keep on improving it as we go along, but each time that we do it we keep

coming back and having a look at the management effectiveness guidelines, give us a good sense about where things are at. And so we consider all of the elements, for us, the way that we've done it is fit for scale. So if you've got 700, 800+ parks, you can't do detailed monitoring. You can't really get in and for every single park, get in and do that. As Marc said, we just don't have the resources. I don't think anybody ever would. But how do we get smarter and smarter about doing that? And so then we'll continue to improve our program as we go along, and at the end of my presentation I will talk about where we're going to next and what we're going to be changing, and perhaps we can learn from each other.

So, it's great to talk about doing evaluations of management effectiveness, in terms of what that means for us, and just taking a step back, so how do we define effective management for our parks? I don't know if Marc's mentioned it before, but there's a bit of an idea floating around and that maybe then, instead of just saying how many parks have evaluations that occur, but maybe we should set a target about what effectiveness looks like. And so, if 80% of park values are being effectively managed in conserving biodiversity, that'd be a good thing. It's not just saying, oh, we've evaluated it, half of them are crap and half of them are good, we need to set a higher target.

Now, here in New South Wales, in our state, we aim to maintain or improve the condition of those values. So when we talk about management effectiveness, we're talking about percentage of parks where the value of condition is stable, or improving. So we're going to have a look of our data later, just thinking about it with that, for us, effectively managed means it's not getting worse, it's at least staying the way that we found it, but hopefully getting better, as well.

All right, let's start having a bit of a look at the State of the Parks system where we came, how we go about doing it because it's a great idea to do assessments across all of your parks, but how do you do that? So, for us at initial development stage in 2003, we worked with the IUCN. For us, and it's important for you to consider that we had clear leadership from our head of parks, from the top of the food chain. They said, "We want to be able to evaluate effectively." If you don't have somebody pushing the leadership, somebody saying that, "this is what I want," you won't get anywhere. When you get a change in your leadership, your head of agency, you also need to be able to

show them why you've gotten to where you are and where you're going with it, otherwise you're going to be having a big debate with them saying, "I've got a new idea, I've got a great idea, let's start again and do it differently now." So, leadership and direction is important. For us, our approach was to have a small, but representative group of people from across national parks to help us build. What I think's a great idea may not be what you think is a good idea. It may not be how you actually go and implement it on the ground, so we had to keep it real, because otherwise if we come out with the best practice idea and apply that, everybody might go, "No, I can't do it."

So we gave the first go of that in 2004, and at the end of that assessment, what we found out is we got it all wrong. It was really kind of interesting, we got to the end of it, it was a good idea, it was well-intended, but we mixed up a few things, so we did it again in 2005. Now, when we do state parks, as we go through all of that, we've answered for every single park. So, if you're the area manager who has 3 rangers and 3 parks, saving the parks is easy. If you're the area manager with 40 parks and 3 rangers, it's a lot of work for you. So, we have to think about how do we set up a collection of information and \*\* that way we can get as high quality results as we can. We can answer these questions on condition, impacts from threats, we can look about whether or not it's appropriate, and by doing so, in comparing it all, it means that we can compare results between parks, we can look across different values and threats, and we can look over time.

Now in terms of time, we've done our survey now in 2005, 2007, 2010, 2013, and then we left for a little while before we did it last year, 2018. There's a lot of things that come into play for agencies: restructures, funding, priorities, we need to make sure that when you \*\*, everybody's ready to go with this, and they actually want to do it. So, we've got five data points now, it means that we can start to actually look at trends and information. Interestingly, it's all a lot of qualitative assessment, but it's underpinned by quantitative data. And I'll show you what some of that looks like, and how you can continue to improve it. So, it's a long way to come, we started off in 2001, we got all the way through different steps as we've gone along, and the future is hopefully bright and sunny. My fingers are crossed, we'll see.

All right, let's have a bit of a talk about what data we collect. Marc gave us a whole bunch of questions earlier on, and I do apologize, I didn't go bilingual for



the remainder of it, I ran out of time and didn't quite get there. So, having a look at the information that we first collected, we split our assessments for each part into three different components. So first we ask about attributes: How big is the park? What is the government \*(electric thirteen?)\* Does it have world heritage? Does it have an agreement with aboriginal communities? Questions like that give us a sense of scope.

Next, we ask questions around the context of the park. Have you got a plan? What sorts of plans do you have? What are the values? What is the most important thing that you're managing this park for? And as we talk about the green list this afternoon, you can't get on the green list if you haven't articulated what your values are, and whether or not you're protecting it. So the first thing is, what are your values? Then we ask about threats, or impacts to those values, we ask who are our stakeholders and what are they engaged in, we ask about how many visitors that we have, and there's a continual increase in the number of our visitors over the last ten years. And then we go and ask these questions related to natural heritage, so that's biodiversity, that's water, that's geodiversity ("there's a geologist here, yep"), so that's the natural heritage component. We ask about aboriginal cultural heritage, we ask about shared heritage or historical heritage, so European heritage; Australian white settlers have been here for 200 years, we built lots of huts and fences, and people seem to think it's good stuff that's old and we should keep, and we get to manage lots of it. We ask questions on visitation, stakeholder engagement, and then we get into some very specific complaints, things like pests, weeds, illegal activities.

When Marc first helped us set up the State of the Parks, it had 30 questions. Now we've rolled it up a little bit, we've grouped it together, so in here are four questions, but we just tell everybody it's one. Here's another four, but we just tell them it's one. And it's an important thing because our staff, we'd go in and they'd go, "Ugh, thirty questions, I fill it all in, next question, fill it all in, next question. Now, all four questions are on one page, tick, tick, tick, here's my answer, okay next one. And they go, "You've listened to me, it's so much shorter!" Not really? But it seems that way, and it speaks to those managers on the ground, how they experience it. Because if you're a manager on the ground that doesn't have enough time, doesn't see it as important, you're going to look at the least amount of information that you can, to make sure that I go away, that he goes "Yes, it's done," and I go, "But it's rubbish!" "But I did it!" No, we want to make them enjoy it, so that they can put good information.

[Tea/coffee break until 20:28]

For us, for each time we did State of the Parks, it has three phases. Our preparation work, and that takes about 18(?) months to get ready. Our implementation, and then when we return, the information. I'm going to take you through it \* and I'm going to show you some real data, \* some stuff that we got, give you a sense of how we did it, so it might inspire some ideas around how yours works. So preparation is always a bit of a challenge, we review what we've done before, we make any necessary improvements, so if we've gotta bet up(?) on a new system that \* better data now, we don't ask(?) it anymore, we don't need to, we have other systems. System data preparation and updates, the actual online system, where we go into the computer and fill it all in, all of that data needs to be upgraded, checked, audited, to make sure that it's correct when it's put in there. We should be getting to a point where that's automated, but we're not.

I don't know if you have a similar experience in Taiwan, but my experience with systems, I go to my IT department and I say here's what I need. And they say, "Go and do me a business case," and so I come back and here's my business case, and they go, "Okay now write me a functional specification on how everything worked." It's already here, I don't need to do it. And they say, "Oh, in which case, then it will cost you this amount of money. And I'll say, "That doesn't seem right, hang on a minute, I can do this, this, and this." And they go, "Oh, I'll reduce it by 30%." Excellent. Then it rolls out, they complete it all, they deliver about half of what I ask, and they charge me twice as much. So, reviewing the data and getting systems is always an interesting challenge. We also need to update guidelines and templates and make sure that we have all of that information correct. We need to start communicating with our staff to say, "Hey, it's coming." The video that I had up there is an example of what we did to start to get them engaged, it was a little bit more tailored to what they needed, but it was working its way through getting them excited about why they don't do this, not just that they can afford it(?).

After that, what we've been doing is the implementation stage. Congratulations, it's July the 1st, you now have three months to fill in your assessments. If you've got three parks, no worries. If you've got forty parks, that could become a bit of a problem, particularly if for two months and three weeks,

you're off fighting fires, because half of the state's on fire at the moment. Nonetheless, we go and get it all filled in three months, it's how long we give people for it, every park gets assessed, ranges, specialists, if you're a pest management officer, if your job is to take visitors out, then do it, come and help us, give us the answers! So when our staff fill it all in, get to the end of it, then their managers review it, and they have a look at it all and make sure that it's consistent. And if I'm the manager, I look at it and I go, "Thank you Marc and Joanne for filling it in. I can see, Joanne, you've been very grumpy lately, I can see it in your results. Marc, I think you're a little too optimistic, things aren't that good. So let's have a bit of a look, let's have a chat together, let's make sure they're the same, that we're all on the same page, that it's equal in its assessment." And so the manager moderates the results, not to change the results unfairly, but to make sure that there is some consistency in the way that everybody's filled it in.

At the end of that, it goes up one level, we have eight directors that look after all of the managers and each one of them has to review all of their managers' work. My team sits down with the director and says, "How can we help you look at the data? What do you want to know?" And we go through it, and we show them the bits. "Here's a summary of all the answers for this, do those look right? Excellent, we'll improve those. Let's have a look at these, ooh, hang on a minute, these three here don't look right, let's go and have a look at the results." So we help them go through it. I don't know what your directors or big bosses are like, but ours never have enough time, so anything we can do to help speed that process up and improve the quality, we certainly try to do it. And then when it's all reviewed by them and all signed off, I get my team to go and have a proper look to make sure everything is good.

So, as we get through it, we might do some really simple things. For example, if you used less than 50 characters to describe your answer, in terms of when you were filling it in, I can't believe that you did a very good answer. So, my staff pick up the phone and they say, "Hi, Marc. Listen, you said that impacts are increasing to weeds, but you didn't really \*\*, could you tell me a bit more? And Marc will tell me a whole story and we'll go and type in in, and we'll say, "Great, no worries at all." But we don't ring up and say, "Marc, you did a crap answer, your answer is rubbish." That's not going to win us any points. What we do is, we just say, "Well, tell us a bit more about this," because many managers, the reason we all do our job is that we're really excited about looking after the

environment, that's why we're doing it. So we might as well tap into their excitement and get them to tell us more, and then get their answers. So there's quite a bit of work that goes into making sure the quality of the data is good.

All right, enough about process stuff, let's look at cooler stuff like systems. So, here is a snapshot of our system, we're gonna go and have a little look in and out of it at the moment. We decided that for 870 parks, we needed an online tool, a system to bring all the data together and integrate it. If I only had 20 parks, I reckon I could do it in Microsoft Access, I think you could probably coordinate some of it via Excel, and Excel can be very powerful, and feed it into some analytical tools, like Power of AI(?). So, there are ways and means, but for us, with 870 parks, we need something that the staff around the state can access, and keep the data together. Now within our system here, we have a few different things. We have the assessment itself, click on the map and in you go. We have tools here, I just talked about that review... fantastic, managers are busy...let's make it really simple. Review, and this is my button, I'm going here. Lots of people have told us they want to be able to view the data via a map. Everybody loves a map, click on the map. If you need to look at the data or just see some summary reports, away you go.

While I won't get into it at length today, one of the other things that we have, though, are these two additional ones, the law(?) operations plans, the plans of management. Every year, for all 38 of those areas, and all of the head office type(?) functions that look after them, they have to do an annual plan that provides a list of "here's what I'm going to do this year." We call that our operations plan. And directors get very excitable about it, because they say, "Well, there's a lot of things in there." I have a team of 24 people. If I give them five projects in a year to do, I want you to work on these three plans of management, I want you to do one nomination for the green list, and I want you to contribute something to State of Parks. And, you've got those five, and you've got another six and you've got seven, not surprisingly I have about 120 items in my operations plan. Multiply that by every area and team in the state, there's about 8000 things a year that are in there. The directors go, "Woah, that's too many!" Not really, but it's about saying here's what you're going to do, and reporting against it. And it all links back to our State of the Parks. So when you do it, you fill it in, you describe what type of work it is, and where it's occurring, and within the system, behind the scenes, it connects it to State of the Parks as part of your evidence. So it's terrific to be able to say, "Do an assessment for us,

and tell us what your evidence is; we're giving you as much of the evidence as we can." We also have plans of management, and capacity to go into those. So in terms of plans of management, we currently have 623 parks within adopted plan of management.

Q: What do you mean adopted?

A: Adopted, for our plans of management, for them, it is a requirement under our legislation that we must have a plan of management for each part. For that document to be formalized, it has to go all the way up to the minister, and the minister reviews it and signs off on it. At that stage, it is adopted.

Q: Minister of a state park, or minister of the federal government?

A: Minister of New South Wales, minister for the environment. And the minister is very busy, and there is, as you can see, these are the plans of management that our minister has signed off on in the last three months. So, we have 623, we have 40 parks where we've exhibited it to the public, we've said, "Come and have a look, tell us what you think," and then we'll finalize it and send it to the minister. We still have over 200 parks that don't have a plan of management. We wrote a three- or four-page document that said, "Here's what's important about the park and what we're going to do about it," but they don't have a plan of management yet.

Q: Because they are too small, or because of some other reason?

A: Because plans of management take a long time to write and I have eight plans, and each year the managers come to me and say, "I've got another part that I need you to do urgently." And so it goes on the front of the list, and some of the plans take six to twelve months to write. It's not hard to write a plan of management necessarily, but in doing so you need to make sure you're talking with everybody, finding out what they think, making sure you're doing the right thing, bringing it all together. So, plans of management take a very long time altogether, and they go through all those processes. The legislation says you will have a plan of management as soon as you can, once you've got that park, you will have a plan of management as quickly as you can. Some of these 200 parks are older than I am, so 40+ years, some of those parks, and they still don't have a plan of management.



Q: So you are not required to have a plan of management before its establishment?

A: No. So the park is initially established, and then as a part of its establishment, we go out and do assessments of values, threats, etc. The reality is for the remaining 200, most of them are small, most of them are not complex, and most of them you could probably write a plan of management, I think, in a month, and have a decent draft to show to the public. So you could knock a lot of them over very quickly, if you had the resources and the determination.

Q: So what are the guidelines for those parks' management, if they are without a management plan? They should have a law?

A: That's a very good question. So, under the National Parks and Wildlife Act, our legislation, it has some very clear rules of what you can and cannot do, and the types of reserves that they have(?), and so that gives us some guiding principles about what they're supposed to do within those parks. We also managed the precautionary principle, which means look if in doubt, try not to stuff it up, and do your best practice management as you can. And things like State of the Parks have been very helpful in us writing these statements of management intent. They are not plans of management, they have not been adopted by the minister, but they articulate the values and the key things that we're trying to do. Because while a park may not have a plan of management yet, that doesn't mean it doesn't have other plans that are helping to influence it. So we will have a fire management strategy, for example, for every single park.

Now, the beautiful thing about those plans of management is that at the back of it, it has a list of things that we're going to do. We've put all of those in our system so that you can go in and you can do an update about how you're going with that. And if you like, when you open it up to say here's my update, it'll say, "Hey, I found these things from your operations plan that relate to this park, that relate to the topic that you're talking about. Do you want to connect these and show them as evidence? And in that way, we can continue to build more evidence to underpin those plans.

Let's dig into this part here, let's have a look at our assessments, so if I go into

our assessment here, it's going to come up with a whole bunch of questions. I'm going to jump straight to--actually, let's have a look at the real system. Here's the real system. So, does anybody know of a particular national park in New South Wales...should we maybe do Cape Byron, just up the road here? So, if we go and click on 'assessment' here, we're going to have a look at our attributes information, our context information and management. So let's have a look at the attributes, let's have a look at Cape Byron. So this is just up the road, it's been green listed, and the first thing that we do is that we've connected a few different bits together, so it goes and shows your pictures, 'cause everybody loves a picture, who doesn't love a picture? The first thing you do when you open it, you see a picture and you go, "Hey, that's my park, I'm going to make sure this is good." And when I describe that, I'm not just being cheeky. There is a reality that all of us feel a connection to what we do, and if we have that connection, then we'll do a better job. A lot of what our State of the Parks has been is being about change, culture change, getting a group of us national parks to agree towards doing those sorts of things.

And then you can go and fill in all of that information about attributes: when it was gazetted, how big the park is, whether or not it's got agreements in place; it's all a little bit boring, though, so if we go back to...here in our contexter(?), we start to collect information that gives us a baseline to answer Marc's questions. Marc wanted to know: What are the values? What are the threats? What's the size of the risk? Is it important? Is it likely to impact upon your park? And so, some of it's just straight up and down easy information. Let's have a look at what plans exist for this park. There are a lot of plans, we've got a plan of management, a cultural heritage plan, a weed management plan, another plan of management...why have we got two plans of management? Oh, this was an amendment. But you can see going through that, that they've got quite a bit of stuff available. And any of them that are hyperlinked here, they can go and have a look at those plans. So it starts to make it a resource for people.

Q: Is it open to the public?

A: No.

C: No wonder, we tried to link to the web, and we couldn't find information at all.

A: Indeed, I'm sorry, no it's not open to the public. One of the things that we've had over the last few years is several reviews, by government, by other people,

and every time they come back again they go, "WOW, why isn't this publicly available?" And so we go, "No problem, let's do all of this stuff to get ready to be publicly available and here are the results." And they go, "Hold on a moment, I don't know if I like those results, I don't know if I want people to have that information."

C: That's the tension(?) I was talking about before, when transparency and openness and concern about...

So, look, you can see that you've got quite a lot in there and we also ask people about what's the influence on management, and whether or not the plan is adequate for what we needed to do. We actually made that adequacy question optional, it depends on who really wants to do it, who doesn't; we don't have to have that bit of information, but a lot of managers said they wanted to collect it. So we said, okay, we'll collect it, but for those of you that say it's already too long, we'll make it optional, you don't have to do it. What it means, though, is that at the end of the assessment, we can collect all of that data, we can say, let's look at all of the plans of management from across the state. And any plans of management that say 'the influence on management is minor,' or 'it's got no influence,' we're going to prioritize reviewing that plan.

Alright, so it's great to sort of say, "Here are the plans," but let's have a look at the next thing, which is values. So, the next question asks, "What are the important values in this park?" And you can see that, for the park just up the road here, it's not huge, it's not a big park, but it's got a lot of important things that make it special. Biodiversity, cultural heritage, it has an economic benefit or value to the community, it brings a lot of tourism, a lot of money. That's an important value for the reserve in reality. We also have lots of visitation to the park, so you can go in and you can add the details of all of these; you can see that there are common headings here, though. So in bold, those are the big categories that we use. So you can write whatever you like in detail, but you have to pick a category.

Q: May I ask how all these values come out, through what kind of process these values come out, and these values are for all parks, so for each park you just pick out which values are your priority values, right? For all parks?

A: We can do. So for all parks to have to fill them in, I've just quickly changed

reserves here, I've gone to one of our parks out west, and you can see that they've put less in, and that they've written less, so they all have to do that. They go to their plans of management, they go to those statements of management intent; when the reserve was gazetted, there would've been some things that described what was important about that park. So, they put it in there, and captured it by that. You've asked about priority, that's exactly right. With us here, whether it's a top 5 priority value, only pick the top 5. The first time when we rolled it out in 2005 and 2007, we said you could only pick five, the system won't let you write any more in. Only five, tell us your top five, and lots of people said, "We want to be able to write more. Our park is really important to us, we want to be able to write a whole lot more. So for example, Kosciuszko National Park, he has quite a lot as well. And you can see that they actually wanted to write an awful lot, they have a very different management requirement down there, so they put quite a lot of \* in.

C: One of the benefits of that is that this is constantly bringing a \* of managers, and understanding why it's important. So, they have to think that through and pick which are the top 5 out of that list. We talk about a lot of planning and management being values-based, so making your decisions around values. Something like this makes it very conscious to managers why the area is important, which often otherwise they can forget. You go to many parks and you ask the manager why is the park important, and they struggle to answer. Something like this actually makes it very clear.

It was very interesting for us when we started looking at doing a green list, because the green list says that you are effectively managing your values to achieve the outcomes. But it's not about everything, it can't be about everything, but what are the most important values that you can't afford to lose? It's why that park is special. So we allow our staff to write all of the things there, but we do ask them to identify the most important ones.

Q: What would also get them to write the significance, is it significant locally, or is it significant for all of New South Wales?

A: Absolutely, so regional, state, national, then you go international. Byron Bay is of international significance as a central meeting place for the local community. The beaches and adjoined recreation areas are a popular setting. We get 1.2 million visits-

C: It's more than that now, it's at least 1.5.

A: 1.5 million people, no wonder I had problems with traffic \*. And that's just one of our parks.

So it's great to identify the values, but what comes next is going to be about threats. If we scroll to the next page here, the next question is: What are the threats that you've got to these values? And regrettably, I can't edit the system at the moment because it's closed from last time. But we get people to identify what the threat is here, and it's only a threat if it's going to impact upon a value. So, in the edit tool when you're filling this in, it gives you a list of all of the values you said on the previous page, and it says, "If this is a threat, tell me what it's impacting upon. Because if it's not impacting upon any of these, it's inconvenient, but it's not a threat." So we've created a really clear linkage between threats and values. We're using best practice common sense; managers are some of the smartest people I know. They know what's going on in their parks, so we're asking them to build those connections.

Q: Why is it a connection between threat and value, but not threat and objective?

A: For the moment, when we've been building the system, we've driven it by a values-based component, whereas the objective is how we're choosing to implement that value, so you're making choices around what you'll do for that value and the objective, but we don't have objectives for every part.

C: For my personal opinion, objective is something you can measure the value of. So if you connect directly between value and [the threat], it's a little illogical.

A: Absolutely, I think it could be interesting to explore it further, though I think before you link it to the objective, you would still need to know what the value was. Yours is an interesting point for me, that we've got values, we've got threats, but what about what we're trying to do in the middle and how you influence that.

C: Because some of the threats, you can only find and identify from the objective, but not from the \*\*

A: Well, I'll continue that one over lunch if I could because I'd like to explore that one further.

So we've listed the threats here, the common categories. The bits in bold, again, are major category groupings that they've linked them together by, they've described what's going on there. We've also asked them to identify the extent and severity, but also their confidence. So the reality is I might not know exactly what's going on there, or be sure of it; my confidence may be low, in some cases it may be high. But there's quite a lot of connections going on here, climate change is impacting visitation, biodiversity, cultural heritage, economic values; that's quite a lot of things that we're building connections to, and they may not all be the same. We then got really mean, because it's always fun to keep managers on their toes, so after they built all of these linkages together, the next thing we said is, "We want you to actually tell us, for this value that you said was being impacted by this threat, we now want you to tell us what the likelihood and consequences are, so we can figure out risk, and in that way we can begin to make decisions about what's the most pressing thing. If something is an extreme risk, we are more likely to want to target that. And if it's a lower risk, and if I just sort them, for here, for our Byron Bay National Park just down the road here, we can see that climate change and erosion are likely to have an impact upon aboriginal cultural heritage, lots of middens along the coastal areas are going to be washed away.

Q: And what are these?

A: Lots of shells; aboriginal people, historically, when they spent lots of time on beaches, they would have a big pile of shells that would become an important site where they could do that. As sea level rises, it gets washed away. So, if that's an important value for that park, if sea level rise is coming, it's under extreme risk.

So, you can begin to see how we're linking some of these things together. We're saying values, threats, risk levels...I'm going to stop it there, and have a quick last look at management, and then I'll show you some results, and how we're bringing some of this together. So I mentioned that we have a small number of pages, so much less than the 30 we had back in the beginning, Marc, we used to scare people. And so, for example, if I were to come here and look at



natural heritage...we have all of these questions that we're going to ask in here and I'm going to show you what these look like: We ask whether or not they have enough information to manage their park, what their approach to management is, how effective that management has been in that park, again, for this topic which is natural heritage, and we ask them what the condition is. We get them to tell us what evidence they used, so they may have a whole heap of monitoring data, they might have a PhD thesis on erosion rates of local geology, they may have visitor surveys, which will have less impact here, but some of it may be quantitative data sitting within a qualitative framework so that we can compare and cross (across?) everything.

Now, one of the challenges I had, and I'll show you what those look like as we unpack it, staff can opt out of the question, they can say, "Natural heritage is not a value for this park." The system goes back and checks what values you listed, and if it says anything that's natural heritage, it won't let you opt out. There are, I think, 6 or 7 parks in New South Wales that could opt out of that question, not many. When we look at sufficiency of information here, it's a really straightforward assessment. What information is available to support planning and decision-making? Do you have comprehensive information? Do you have everything you could possibly need? Do you have key information, but there are some gaps? Do you have basic information? ("I can do my job, but gee, I wish I knew more.") And then, there is insufficient information, "I don't know enough." And if we take that from every reserve across the state, we can start to identify trends and gaps in information that we don't know, and we can start to plug that.

It's nice to tick a box, but we make you justify your answer, you have to tell us why you said that. And this is where I said to my team, "If Marc filled this in and there are only 50 characters here, my team's going to ring up and say, "Tell me a little bit more." So if I were to say this, I \*\* "Great, thank you," and we can move on. And \*\* "Wow, you guys are helpful," rather than getting me in trouble for not doing my homework.

Q: What in proportion of assessment do you have to do that all? So how much is already sufficient \*\*...

A: I think probably 90, over 90% is good, but it's about improving the quality of that remaining 10%.

Q: Have you found that if you go back to them and ask for more than one, that next time they do it, it's okay? Or is there a learning process?

A: I imagine there would be, but I can't give you a definitive answer. As you can see, they can write quite a lot, too, we give them a lot of space to be able to get those answers. We ask them about their approach to management, so what is the overall approach, are you implementing a comprehensive planned approach? I have my plan of management, I have my values, I have my objectives, I know what the threats are and here's what they do, and it's all under control, and I have all the money I need and all the staff I need, and yes, not many people tick that box.

I'm implementing a planned approach, but it's constrained, it's limited in scope or capacity. And if there is a limitation, we get them to tell us, from a dropdown list here, what some of those reasons are. It may be limited resources, not enough time, not enough information. This park, it might be a case that's saying my overall approach is reactive management. When there's a problem, I go and do something about it, but the rest of the time I leave it alone. It's okay, and that's a perfectly legitimate and okay approach. In other cases, there might be a little \*, and that's not always good. I did have somebody doing our assessment in 2013, and they turned around to me and said, "Andrew, I cannot possibly answer this, I haven't visited the reserve in six years, and so I can't answer your assessment." And my response was, "Go out and visit the park. Use it as an excuse to go out there." And so they did, which was good.

We ask for the effective management, so negative impacts of problem things...good, there is a bunch of them, they're negligible. Fine, don't worry about it, all cool. Are impacts diminishing? The work that we're doing is making things get better. If they are stable, then nothing's changing, it's okay, everything's fine, it's not getting worse, it's not really getting better, but it might be in really good condition already, so its impacts are stable. And the last one is impacts are increasing, so this might be important, I don't even know, I don't have enough information to assess it, that's a bit of a problem as well. In each of these three here, we would consider the park to be deemed effectively managed. Impacts are stable or getting better, they're not getting worse. It's an interesting line to take, and there are so many ways that you could measure some of this, but keeping them stable is important. And then for all of that, we

then say, "Tell us what condition they're in." And everybody has lots of definitions around this, we went round in circles over and over and over, but the reality is, 'excellent,' 'good,' 'fair,' 'poor,' people generally understand that.

Q: Do you have definitions of \*\*

A: Not only do we have information in the help line here, but if you want to go and click on this help button here, it'll give you the definition and explanation for every single word as you go through here. So when people say, "Well hang on, is it all consistent and fair?" We've rolled out training, we've given them guidelines, we've linked them into the survey tool, we've explicitly told them what it means; our view is if you interpret it wrong, that's not our fault, we will be clear about it.

And if you hover over here, normally we would come out with some examples of the kind of answers that we might like to provide. Finishing off this page, just to give you a closing theme, I've talked about efforts to support professional experience, research planning, document specialist opinion, community opinion, corporate data, survey monitoring, and other documentation. Research makes up about 40% of our assessments for natural heritage, research surveying and monitoring. So that's a fair bit of quantitative value underpinned, professional experience makes up nearly 100%, because people have been putting an index so they can contribute quite a lot.

I have different people who have had different views on that. My view is, when you go and see a doctor, and you sit down and you see your doctor and you say, "I'm feeling really...I'm not feeling so good," and they're not sure about how you're feeling. Your doctor looks at you and says, "So, you just need to go home, you need to have a rest, I've seen five of your case this week, two days bedrest you'll be fine. And you go home, two days bed rest, and you are fine, and that's great. In other cases the doctor goes, "Ooh, not really too sure I like how you're looking there, I'm going to get some tests done. Might take a bit of blood, take a swab, get a couple of things checked, and find out the results. And you might call that research or monitoring, so sometimes we need research and monitoring, sometimes professional experience is spot-on. We employ specialists in ranges, to be able to tell us what's going on in that park. Their professional advice is completely legitimate, and does give us a really good sense of what's going on, as well. And just to reinforce that, Marc went and got his PhD student to go and do some research where she went and put quadrants

down on the ground, and she asked the staff for their opinion. And generally speaking there wasn't that much of a difference between the results. So there's a time and a place for all sorts of different data.

Now, for the last thing I'm going to show you before we start looking at some results, although we're going to take a break at the end of this next slide, is how you make use of all of this. Incidentally, we've got these little tabs over here that show your results from previous surveys, so you can copy and paste your answers from last time if you would like. We also have this information tab here, where it can link back to other data from your assessment and to other databases, including as an example here, looking at operational plan of actions, so I talked about this earlier, where this is your annual list of things that that you will be doing, it goes back into the system, it goes and (grabs/brands?) all of the actions that you have undertaken, to help give you a sense of the evidence that underpins the work that you've done. So, for example, for this reserve, we have a number of actions where they said, "Here is what we're going to go and do, and I'll have some reporting in there in due course. So we haven't got those in there just yet.

The very last thing is that it's kind of cool to go through and do all of these assessments, but what we found is that everyone got lost at looking [sic] all the detail. How do you roll it up? So we started to do that, so our newer addition to this is that we talked about information sufficiency approach to effective management and condition, and then we asked all of these questions. Red is bad, green is good, here is [sic] your answers that you can begin to look at for natural heritage. So we can see that the natural heritage in this park, the results, probably pretty good, and the equals sign there means the answer is the same as their last assessment. So this is the same as last time, this one has gotten a little bit worse, so for historic heritage here, we used to have a comprehensive planned approach, everything was perfect, now we've got some gaps. So we can quickly and readily say \*\*, and so it gives managers a quick tool to be able to see all of the results in one place. We had a go at trying to create an indicator, it's harder than it looks. What we ended up doing was hiding this, we didn't roll it out for our staff, we found it didn't work. But, the idea is that we'll keep trying for some of that. But at the end of it we said, "Look at all of those assessment bits, what's the story? What is your overall summary evaluation?" And so we can have monitoring of survey work that informs our assessment, and from our assessment, seeing all of those results, we can do an evaluation of how that

park is going. And then that starts to give us a sense of what's important or not about that park, and we can then start talking about recommendations about things that we should do. So, for example for natural heritage, we need to do some monitoring and survey work in this particular park, because we've got some camps there.

State of the Parks does not replace the need for monitoring or research or survey work, but it allows you to bring all that stuff together into one consistent framework, so you can start to create meaning at a different scale. That's its value, it is a part of the puzzle, it is not a substitute for monitoring, you still need to do those sorts of things. You still need to write objectives, you need to have indicators, you need to monitor for them. But how do you roll it up to make sense of it? That's what this starts to do.

So with that in mind, I'm going to get you to pause for five minutes, give everybody a chance just to stand up, get a bit of oxygen into you, now it can be a bit much listening to all of this, have a drink of water, and while you're doing it, I would like you, using your smartphone, to help me out. So before we start looking at our results, I want you to go to this website and type in that code. And then you're going to see that there are 8 threats to our parks here in NSW. I would like you to put them in order; what do you think are the most common threat? Do you think weeds are? Do you think fire is? What do you think is the most common threat, and what do you think is the least common threat across 800+ parks? It won't show your particular result, it will show the room's result, what do we think together are the most common ones? So you've got five minutes, stand up, have a drink of water, but if you go onto your phone, go to your browser, go to [menti.com](https://www.menti.com), and it will say give me a PIN, and you type in that number, and you can start putting them in order.

\* - one inaudible word

\*\* - multiple inaudible words

(?) - uncertain

Q: question from the audience

A: speaker's answer

C: comment from the audience

(S, M will be used for parts in which Sherri and Marc speak alternately)

For five years, we've been developing a new management framework based around the IUCN guidelines of productive management. One of the reasons why we can try to change the way we do these things is about ten years ago, we were audited by the Treasury department. One of the things they asked us was that, "We give you all this money, what kind of positive outcomes are we seeing on the ground?" And we couldn't answer because..

C: because they're giving you so much money.

Yeah! but they wanted to see results, and we had no way of showing that what we were spending the money on actually had a positive result [sic] or what was happening. So we couldn't actually explain what was happening with our parks as far as the condition of them. So, the planning area was audited, and then our fire area, fire management area was audited, and our test management area was audited, and they all found the same question was we couldn't answer what - what we were doing here. So, we all got together and we started to develop this new framework which we call the value based management framework, so it really focuses on our values, what their conditions are, and what we need to do to manage them.

So, to start off, Queensland - it's a large state, and we are responsible for over a thousand protected areas and forests and reserves. Even though it only makes a small percentage of our state, they're very diverse; we have everything from marine parks, we've got islands in our Great Barrier Reef, we've got inland areas that are quite remote and dry, then we've got tropical rainforests, and all different questions that from over the state, which makes the parks really different. And how do we manage that?



So the question is, what is values based management framework? VBMF - we in the government love our acronyms so we call it VBMF. So we developed this system and we start by planning and you can probably see some of the linkages to some of the IUCN, the management sort of framework. So what we do is we start off with planning and we're assessing our parks for what their key values are, and we look at their condition and their trend, and what are threatening them, and we develop strategic management directions around that. Through that process we prioritize those management directions, and this is the kind of stuff that gets put in our management plans and statements. We feed that down into our work programs and that's how we do that, and monitoring - that was one of the big things we were missing was how do we monitor all these things. This is where I'll show our monitoring framework that we've developed, but we've introduced these health checks which is - we'll go into a lot more detail later and we'll even go out this afternoon and you'll all get one to try. But it's a baseline monitoring term - we can get our rangers out on our parks to see the values, know what they are, know what condition they're in, and then we can do that every year. And that provides us with information to know what condition they're in and what's threatening them and what we can do with that. Our evaluation program is...did Andrew take you through?

M: When they went through the State of the Parks, yeah.

S: Yeah, so this is...we're a little bit behind New South Wales and the ministry of guards (? 4:31) but we're developing an evaluation program now to assess that. So on Friday morning, we've got Emma, Georgio, and Lianne Tugman(? 4:41) from my team coming in - and they can explain that stuff to you better.

But at the end of the day what we want to do is we want to manage and protect those things that matter the most, so rather than trying to protect everything and manage everything and getting confused what we should do, we've identified our key values in our parks. We'll use that to strategically direct those management directions, and we've also got to make sure we ensure we undertake our custodial obligations, so for example, for fire, our obligation to protect life and property for example, or something about cultural obligations for our First Nations.

We've introduced a whole new \*\* (? 5:26) of setting our levels of service for our

parks; I'll talk about this a bit more in detail, but we've evaluated all our parks and we've set a level of service for each of our parks and we know where we can prioritize our management. And build [sic] systems that support this adaptive management, that's things like our health checks. Accountability and transparency, so when we start doing our reporting, we are producing our first State of the Parks report, but you'll see in our management plans now we're very clear about what the condition of our parks are, we actually spell that out in the management plans now. Of course, as adaptive management, we should strive to improve that three structured learning (? 6:13), and being able to redo that.

For the last couple of years especially, we've really had a big emphasis on working with our First Nations people. We're lucky enough we've now got our first minister, the first we've had that is a traditional owner. She's from Stradbroke Island and there's been a really big push for this. And it's been great because we are starting to do things like introduce traditional fire practices back into the park management, we've been out to get our First Nations people back on country, which is making their communities healthier, and it's really been good. We were able to produce our very first management plan which was done jointly with Daintree National Park in North Queensland and with the \* (7:12) and it was a long process, but it was so beneficial, and we're very happy to have done that and what was really good about it was that the key values that we were identifying aligned very well with what they identify as key values. And so it all worked really nicely, and I've got the plan here if you'd like to take a look, but it's also online, and I can send you that link as well. They're now working a lot on our fire and pest strategies up there, they're starting to bring in some of the traditional fire practices back up there, and we've actually been able to identify their cultural landscape and their values, and meld it all together. And they're being fantastic; so we're doing that sort of all over our state.

So the first step what we do is this is our plan here, where we actually got to identify key values for our park, and so we identify natural, cultural, and social values for our parks, and we've got those four categories, and then what we do is we run these values assessment workshops, like Will was saying where we have a variety of people. All our key values that we identify goes through a very thorough process. We run a workshop and we use criteria to assess their condition, and sometimes that may be just a best guess from the rangers because we really haven't been out there, sometimes we've already done

health checks or some kind of monitoring, or sometimes we've even got scientific information that can give us an indication of what condition it's in, they identify the trend, and then we go through a process of identifying what the current threats are, and then we also assess those, and then that helps us give us our strategic management direction for how we're going to manage these things. So what we've done is for the condition, we've based it on the standard approach, this is like the IUCN outlook report and standard, four categories, our trend, and again what we do is we put a confidence on that, because we could say something is in good condition, but our confidence in it might be low, which can't help but indicate that we may need to do some monitoring.

(10:14) I didn't print everything out for you, but what I'll do is I'll give Mark some files, so I can give you the presentations ...a guide and everything, and of course if you have some questions later, even when you go back home, feel free to call me I'll give you my details. So I thought, well, have a look, this is Lamington National Park so we've got a draft management plan and like I said we're working with our First Nations people at the moment, so it's still in draft form, but this is just an example of what gets put into a management plan. one of our big key values here is the walking experience, so we talk about how walking trails and the experience for visitors. It's not just a social value but it's also a cultural value, so our walking tracks here (? 11:07), which Will was saying was one of the first developed. Culturally they're very important, and a lot of them are built by people post-war, so there's a lot of history there.

So we did an assessment and you can see that it's good with some concern, but currently it's deteriorating, and a lot of it is put down to some of the big storms we've had lately, and sometimes it can be that we just can't get access to some areas, and there's a lot of work to be done about that. And some of the tracks as well, they weren't necessarily placed in the right areas so there's a lot of landslips, but you can see also that it's only inferred, so we need to do some health checks on those to see that. Our cool temperate forest is one of the most significant rainforests up here, that's the Cloud Forest, and you can see that that's in good condition, and we desire to keep that in good condition, and the trend at the moment is about stable. Unfortunately that's one of those key values that is very vulnerable to climate change. We've already seen changes there as it's been warmer and drier, that cloud cover's lifting and we're seeing changes already. So, something we're working on now about how we

incorporate climate change into our planning, which is one of my favorite topics.

So, key values and values assessments is one part of it, the other part is what we've introduced as these levels of service. So, we've done a very large assessment of all our parks, and we've had set criteria, and we've set our parks against these 8 criteria, and we've given them the levels of service, \*\* (? 13:04) levels of service, everything from 'acceptable' which is good base management, right through to 'exceptional'. So Lamington up there, it's an exceptional park. But what we've done is given them a level of service against all this criteria. For example, there's a park out west, a very good example, Currawinya National Park. It's only unacceptable for fire management, because there virtually is no fire management issues out there, there's no neighbors, it's not a lot of effort that gets put in. But their pest management presents very large goat problems and pig problems in their springs and it's a Ramsar lake area, it's an 'exceptional' for pest management.

So what we can do now is start directing our management towards those areas. And as part of our values assessment, what we do is then we run through a set of questions and we go, "Alright, well you are supposed to be an exceptional park for pest management, and we run through the questions, "Where are you currently now?" Well, you're only a medium, so what do we do to get up to that point? You know, it might be that we haven't got enough knowledge on pest management, we haven't gotten access to enough equipment, or we don't have enough resources guided towards that, and that also leads in to our health checks and our condition. If our condition is still deteriorating, then we're not meeting our levels of service maybe, for pest management. So we've done that for every park across the state, they've got a set desired levels of service, some of our areas, our pest and our fire team and even our asset team now are using this to help direct funding to those parks, so if that park is an exceptional park for pest management, they will get more focus on the funding rather than the acceptable park.

M: This is in my experience, sort of ground breaking. For parks, NSW is looking at this system and seeking to introduce it as well, but Queensland has probably gone further. NSW has gone further than Queensland in terms of doing State of the Parks reporting, but in this area Queensland is leading. And it's something that I think is in part a response to understanding that our resources for park management are limited, and are likely to always be limited. So, what I'm

staying is we've got our limited resources, let us have a structured system for deciding what's important and what we need to deliver for the park. So if it's a park with high visitation, then we would say it was an exceptional park in terms of visitation. The level of service in managing this should be exceptional, we should be doing everything that we possibly can. It doesn't get many visitors if it's not important, then it's not just a question of how much development, it's about, I guess, how much effort, what standard you want to put in the management. Instead of saying we should be doing everything we can everywhere, given the reality that that's not possible because resources have been strained, how do we do things in a way which looks back to the values framework, which means we protect the most important values? I think it's not something you see in a lot of places, but I think it's going to be a merging approach to the way in which we deal with park management.

Q: Just to clarify, I agree, I think that's really wonderful, but I don't understand the bottom half of the slide, is that evaluating existing condition, or is that projecting into desired condition?

A: So what we did first; it does both, so we have current levels of service, where we're actually at, and what we think the park should be. So the desired levels of service is set for all our parks with some criteria. For example when we set our desired levels of service for fire management, we looked at criteria like what kind of vegetation does it include, like Lamington's got eucalypt forests, which is really dependent on fire, the Currawinya example, it's all mulga which doesn't require any fire. So we looked at the type of vegetation, how close are these to suburbs, so we've got special zones, that we need to make sure we've maintained, so it looked at some of that sort of stuff, accessibility, and so it was a whole heap of criteria, our pest management was about what kind of natural values we can get affected by, pests, and what kind of pest problems they have on those parks

Q: So if, for instance, you have the five levels, so in terms of pest management, if the ranking is exceptional, what does that mean? It means the current level of management is excellent, no more—

A (S): No, it should be, and what we're saying is if the design is exceptional, it should be getting this kind of resourcing and this kind of focus. And what we do then in a workshop is we go through some questions, to see where we are. And

they might be there and they might be getting the right resources and they might be hitting their target, and in some cases, they're currently only a medium, so there's big gaps in what we need to be putting in our management plan, management directions about increasing them to make sure that we're hitting that.

M: And in bidding for funding as Will explained, it gets a small budget to just run the park and keep it going, but it has to bid for funding. And other parks are bidding for funding, which as well is limited. But if he is bidding for money, so he says, "I need to maintain the walking tracks, I need \* (19:26), we need to do a redevelopment of these parks and we need half a million dollars in this year to do that. And the park down the road, it's an exceptional park for visitor management because of the values of that track and the level of use. The park down the road, which may be rated only as, say, medium or high for visitor management as the desired level of service, because it's not as significant, and then look at the two, they're gonna use the desired levels of service that help them decide how to allocate available funds. Will's more likely to get what he's asked for than a park, which may still, if its levels of service are high, but it's only currently at medium, it's going to be different from it's exceptional, and it's \* (20:27) high or medium. So it helps allocate resources, and it means that you're setting a standard of management that matches the values. So with a green list, we were saying it's not perfection, it's setting a standard, in that case we're setting a standard which is sort of global, this is a way to refine that at a much finer scale, which you can do because you're dealing with the values of an individual site.

Q: You have identified 8 different management things, how did you come up with these 8? That would be all across the Queensland, they need to rate their situation under these 8 management things?

A (S): So, the elements that we picked were based on...we, as a planning team, workshopped what we thought would be appropriate, and then based on sort of our groupings of—

C: No, no, what I mean is they do have 8 different management things, how did they come up with these 8?

S: I guess we developed knowing what is [sic] the biggest groups that manage



our parks, so we do have a big fire management area and fire is a major issue and we've got a fire team, so fire was an obvious one, and so with pests, and natural, visitor, and cultural, it was intuitive, I guess, that we know that those groups, because we looked at our systems and we looked at how we managed our parks and we developed those intuitively. We're still testing it...

C: So I suppose that the answer is 8 is not the magic number.

S: No, it's not a magic number. I would suggest if anyone was going to go down this track, were to look at their systems, look at their parks, I think there's natural groupings? But we're still evaluating this too, this is all new, so one of the things for example, these two here, these are actually averages of these, and what we're finding is this is not really too relevant, so we're doing a review at the moment and we actually are probably thinking about removing one. So it was a matter of coming up with what we thought were the appropriate ones, and seeing how it worked.

C: Yeah because that field management capacity is more like the daily operation, really, and the nature value management is probably more active actions of the park...

S: So the idea of field management was do they have enough resources and they're doing it, and the operational planning and support was, are they getting enough support from the head office? So what we're finding is we may just have one that sort of covers that generally, so we are making some changes. Originally we had an indigenous one as well, and obviously through working with First Nations more now, we found that was sometimes quite offensive to have to give them a level of service. They said, "Well, we don't want levels of service," you know, because for them, all of their country is important, they're all equal, and so we've removed that one. So it was having a set that we felt fit right, and then reviewing it as we were going along. But for us it was natural to have fire, to have our pest team, our natural values, and so we've got natural, social, cultural, when we say historic cultural, this is not First Nations, that's our European or shared culture. The community of partnerships one is around working with third-party people, we've got a lot of barriers, we've got leases, trustees, things like that, about those commercial and those third parties, and that's still a very weak area that we're trying to develop. So this is still all a work in progress, and I think when we talk about adaptive management, it's not

about just adaptive management on the ground, but I think you've got to be adaptive in your whole framework and your procedures that work. Especially in Australia, we have elections every 3 or 4 years, we have a change of government, we've got to be able to adapt as well for that, it's about adapting your governance as well. I have some more information on that if you want to read the criteria.

So what we've said, we've given all our parks these overall levels of service and we've been able to identify what are our most important parks. What we did is that we found and we came up with the top 10 iconic (? 25:49) parks, and you can see Lamington on there. In general they have exceptional for just about all of those elements, for fire, for pests, for visitors, and especially for natural values, we've got criteria like world heritage, they're Ramsar (? 26:09), the internationally significant species. But what we've done is we've produced the map as well, and I don't want to print too much because I know you've got to carry stuff, but you can pass them around...

(27:20) But, we've also come up with a list of priority parks as well, so this is our next level down that we really need to focus on as well, but that way we can prioritize our parks overall where we're going to spend our money and focus our management. So the whole framework we set up, you asked a question earlier how we get this stuff from the management plan implemented on the ground. So when we've done our values assessment and our levels of service assessment, we put those broad strategic management directions into a management plan. We used to have management plans with a whole lot of detail, set tasks, and then for ten years, they don't really work for adaptive management, so something needs to be changed, and it's very hard to change it. So what we've done is poured a lot more of that detail now into thematic strategies, so fire thematic strategy, or a pest, or a visitor thematic strategy, or a historical one...Our thematic strategy sets our objectives, so I've got some examples we can have a look at, I've got the draft of Lamington that you can have a look at, so our strategic management direction might be something like we're going to maintain this key value in this condition by certain fire management or whatever, but our thematic strategy sets our targets about what we're going to do and when and how we're going to achieve it.

(29:00) We're very lucky that especially for fire and pests, we've got really good systems that are all built around this framework, which is what's making it work

so well. So in our plain system which is for fires and pests, we can put in what our key values are, what those strategic management directions are and objectives, and that's when they start writing their actions. So if they're going to reduce this weed by 20% in the next 5 years, that gets put into that system and then they can put all their actions, and it's an approval system, they can get that approved, they can print it out and that's what the guys on the ground. It feeds all the way down from our management plan through our systems. This is something that we never used to do, and it seems to be working quite well, we're still evaluating it.

Q: How long have you introduced this kind of system?

A: We've been developing the VBMF for about 5-6 years, we started off about 6 or 7 years ago, we had a whole new change in our fire system, we had old style fire system, and then they built the new system around key values, and then we started to do our work, and then they developed the pest system. So you can't actually put in a proposal to do a fire or a pest sort of management action until you have your key values, so we know that people aren't just wanting to go and spray this weed or reduce this or do whatever without it being linked back to a key value and its condition and what the threat that's been identified.

Q: So what's the difference between the new, current system, and the old system, and why did you change your system?

A: The old system was what I considered to be threat-based. They didn't think about the values, they just know, "We've got pigs here, and we're going to do that." And they were doing ad hoc threat focused work, they weren't focused on the key values. And this is values focused, which is a big difference. And it's a big state, a lot of parks and regions as well are just doing what they sort of thought was right without having a whole state focus, and so it sort of brought a lot of them in line now, so it's more that it's just what's in the management plan. It used to be if you had a management plan written, a ranger or a park origin (? 31:41) could just put that on the shelf, and they weren't necessarily even looking at it. And that was the case in many places. Now, they can't undertake fire and pest management with having that information and putting that in the system.

Q: So what's the driving force to change?

A: The driving force was the order of the general's report, we couldn't report on what the outcomes were, so that was the big driving force. I think the big thing about this is that the reason why it's working so well is we've got high-level support for this. We've got a big push— it was the order of the general's report that really pushed them into gear. So when they had treasury going, we give you this money, and you can't tell us what you're doing with it due to any positive outcomes, because we constantly go back to treasury like everyone and go, "We need more money." And they said, "Well what are you going to use it for?" And we're like, well, we couldn't prove what we were doing. But now we've got everything transparent and clear, and it's all documented, so now that we're going back, we can say, "We need this money because 80% of our key values is only in 'good' or 'some concern' condition.

M: Very similar to NSW and also driven by order of \* (33:05), and some other things we did a report of them on that, I think it's part of this view of a shift towards really having values drive management, rather than having issues drive management. And being clear about...so, the agent who's got to report to the government on what they spend, and they can report even pretty well on what they spent it on. What they couldn't report on is what effect did it have. So you could say we spent 10 million dollars on weeds, but you couldn't say what impact you had, you might even be able to say we spent 10 million on weeds and we treated a hundred thousand hectares of weeds, but what was the result of that? Why did you do it? Whereas if you take a values framework, you could say, "We need to do this because weeds are reducing this value, this is what's important, that's why we have it. And we want to be able to report on what was the effect of expenditure in terms of that value. So it's shifting, instead of the planning being driven by with what issues to address, and we'll just go and address them regardless, it's saying we need to understand our values, then we can understand what are the things, what condition we want those values to be in, we can understand what are the things that are affecting it, and we can direct our management towards removing or addressing those problems, but with a view that will change or maintain the condition of values. That's a lot more attractive to the Treasury and bureaucrats who want to know, "What are we getting for our trouble?"

C: You know, the transparency is sounding like a knife used to \* (35:02) especially in a democratic society, do you meet some of the challenge when you

change the system, I mean for some of the top level of bureaucracy system, they don't want complete transparency for their work.

M: No, they do, generally in government, they want a level of transparency around something, so sure, like the problem we had with releasing the State of the Parks results, they want to tell a good story, but internally within government, going back to the early 80s, was a push from central areas of government for greater accountability from agencies in terms of performance reporting. There was a lot of stuff about changing reporting from activity reporting, sort of telling the government what you did, to performance reporting, to tell the government what impacts it had. A lot of that drove these pressures to change.

S: The things that we used to report on was how many pigs we shot or how many areas we sprayed or how many hectares we burnt. We even had targets about having to burn so many areas. But we couldn't even identify if one was having an impact, but what we started to identify by this was also things that we were doing that actually weren't having a positive effect. For example we had an area, and they had this weed, and they'd go back every year and they'd spray it. They'd come back the next year and spray it again, because that's what they always did, just spray that area, and it just got put into the work program every year. And what we did is they went out to evaluate it, and actually looked at it and assessed it as what is it impacting. And they actually changed their management and then had to realize that they were using something wrong and they were doing it in the wrong season. So, just by that outcome, the best example, and I didn't bring it with me, we've got a park called Boodjamulla, and it's a really big fire issue. It's all these grasslands, and they have wildfire after wildfire, and they were losing big areas of grassland, and it was costing, to a remote park, a lot of money to go and deal with these wildfires. So they went out and evaluated it using values and reevaluating how they did fire management, and they changed their whole fire management system. And the recent results they've got is the last two wildfires that were coming from outside, because it's all grazing area, come in. It actually ended up stopping at the park boundary because they'd changed their fire management in the park, and actually found that they saved, in the last two years, about 200 thousand dollars in responding to wildfires, just because they changed the way they did fire. So it wasn't just about the values, it was about saving funding and lives, because when you start fighting wildfires, it becomes a dangerous situation. I

didn't bring that with me, but that's the perfect example of doing this.

Q: Was there any law to for the Congress to approve for climate change?

A: No, because like Marc was saying before, it sits with the Queensland government. Of course we had to put that up to our Director General, and they had to sign off on it, but it sits with our government about how we do this and how we manage stuff.

Q: Can you kind of briefly tell us what's the general profile for the planning team or management team in past decades? I'm quite curious, especially for this new idea, sometimes the human resources and the people are very important. You hold the planning team workshops the past few years, so in order to let the people on the ground accept this new trend, it's not easy work.

A: I think the planning team; we understood it, and we got it, and we developed it. My job over the last 2.5-3 years, I traveled around the state literally rolling this out and trying to sell it. So my job, I felt like a salesman, where I had to sell this to our regions; the regions were told by our Director General that this is the new system, but as to sell it on ground, I traveled around just selling it to our rangers in charge and our senior rangers, and running the workshops with them, and teaching them and getting them to understand the benefits about how to do it; it took, I would say, a good part of two years to really get traction on the ground. Now, most of our rangers won't do without it, and all they want is values assessments.

M: When I started with parks in 1978, management plans were written by a management planner who sat in the head office. And most management plans were about this thick, and mostly documented information about the park, and then some strategies. They were given to the park rangers, they had some influence budget but not a lot, and it mostly got put on the shelf for the park manager. Within a year or two, they took a long time to develop, so any one management plan would take, well, I was actually in charge for a planning team for awhile in Point \* (41:53) in North Queensland, and the \* (41:54) plan took, I think, 8 years. So there was a reaction against that, people said this is not a good way to plan, and then they went to things where this was the management plan, was literally one sheet of A4 paper, produced pretty quickly but they didn't tell you very much, and park staff were unhappy. It was sort of a

waste of time, and it meant the requirement had a lot of management plans, but they didn't do anything.

S: Under our legislation, every park must have a management plan or management statement.

M: So we've gone from really heavy, thick, useless management plans to really light, thin, useless management plans. There were some good plans in there, some of the work they did on evaluation, one of the things in New South Wales in the State of the Parks, in one of the things to come out of that was the parks that had recently produced management plans, or plans that were in preparation, were doing better in terms of a whole lot of areas of management than parks that had old plans, or parks that didn't have a plan at all. So there's some evidence that planning helps, because what if people were to just say, "Forget planning, it's a waste of time, just let us do stuff." It was a recognition that planning does work, but the planning systems we had weren't working well. So NSW changed theirs, together with some colleagues I did a review of their management planning system about 15 years ago, and we argued strongly that they had an issues-based plan, we said, "You gotta change to a values-based plan, so they changed their plan, Queensland has done the same, and they were driven at the same time when we had their order of generals, do you know what I mean by an order of the general? It's an independent statutory office, it doesn't report to a minister, it sits next to government and reports directly to Parliament. So Minister Carl told them what to write, and they get reviewed, and they used to do reviews mostly about private dealings, about, "Did you spend the money legally?" More and more, they do now performance audits, and they say, "Is the public getting value for money?" And they look at something like planning or the management of parks, and they will make recommendations, and they have a very strong focus on an outcomes focus, and reporting on results rather than reporting on activity. All of these things have come together.

Q: Do you still keep some kind of historical document for this kind of one sheet...

A: Yeah, I carried them around for years, when I left national parks to go to uni, I thought, well, all of this stuff is really interesting and I took lots of stuff with me. And I was at uni for 25 years, when I retired, or when I moved campuses, I had



to get rid of some stuff, I got rid of a lot. I looked at all of this stuff I brought, I thought, "I haven't looked at this in ten years," and I put it all in the bin.

S: We still actually have some historical stuff because when we were in an office at \* that had been there for a long time, we actually managed to keep hold of some...

(46:00) The thing is, we're starting to get a bit more push about why haven't we got approved management plans, and with First Nations it's taking longer, but the thing with this process is, we can have the draft management plan sitting there for a long time, but the stuff in this is already being done on the ground, because of the way it's built into our systems. So, this Lamington one's been drafted for a few years now. That is our management plan now for Lamington, which is an exceptional park, and it just...it is broad, it is strategic, and again it's very transparent about the condition and what, strategic management direction, for example, is minimizing packs of major visitor and recreation events in cool temperate forests. So it doesn't tell you exactly what, when, and how, because in adaptive management, things could change. So we keep it very strategic and just about management in the plan, because that's the document that has to go through a \* (47:10) process to be signed off by the minister, and it's very difficult to change. There was a whole heap of information in those old management plans that made them thick, but it's all the background information that hardly ever changes; what values are on the park, what weeds are on the park, all that old historical information, we put that into a separate resource information document that hardly ever has to be changed or looked at. And then we've got strategies, and this is where I reckon the magic happens, because these are only signed off by our regional directors, and so if they find a new threat, or something happens, they can change that really easily, they can put that back through their fire system or their pest system, and they can change it in an instant, and then get out there and do that work. But the good thing about these, so this is the fire strategy, those strategic management directions that come out of the plan are brought directly into here, and then they set their objectives, so it all feeds through. So we have a statutory document which gives us the basics, but all the flexibility lies in our strategies.

Q: So when you prepare for the green list project, do you also fit this into the green list project?

A (S): Yes, so all this documentation is what we're using for evidence.

M: So they look at the indicators, and then this is the evidence. So the indicator says, "Do you have a clear understanding of the values of the park?" That's one indicator. So here's evidence that they do, because in the management plan, the values are documented and they feed through into other links. So another indicator is management undertaken to address threats to values. So they can look at the strategies and show how those things--

C: Actually, what we can do in Taiwan is prepare for the evidence.

S: And there's a session this afternoon, I'm going to show you our draft documents for the green list and how we've responded to some of that, we haven't gotten to that point where it's been assessed yet, but this is how we've done it. So this is like a package, and all these documents are the ones that provides us with adaptive measures. So when we do a health check, which is done on all our key values, we can identify and we can change these quite easily, and that to me is key to adaptive management.

M: Because it couldn't be changed, people said, "Well, they're no longer relevant, 'cause things have changed," so then they ignore the whole plan. Now, this way of writing it up means that you've got the statutory bases, but you've got a living plan that works.

And so that's our planning package, that's how we do it.

C: Seems that you start the system only 5 or 6 years ago, do you have this kind of problem, you don't have some evidence, you just call a workshop to decide the indicator, how can you deal with that kind of indicator? In the very beginning we had experience sharing and have some common ground to decide the indicator?

S: So, is that you talking about...if it's working?

C: Some of the indicators, it seems that it's quite a new system, maybe some of the indicators, you don't have concrete scientific evidence.

S: There's two ways we're working on it, one is our health checks, which is the

condition of our values, which we've already started to roll out, and we're seeing some of those results, and we're incorporating back into our strategies, but the other one is the valuation of the whole system. And that's being developed now, so NSW parks, we may be able to look at it if, as far as levels and service and stuff, that they're ahead in their management effectiveness. So you'll get more information about that on Friday from the team that's working on that, they are sending indicators on all those aspects to see if the system's working, if we're achieving what we set out to achieve, so that's a work in progress.

C: So you make very clear the relevance, the relationship between the condition, the work that you've done.

S: Yes, so with the health check, under a standard process that we've set, in five years we'll do another values assessment on that park. Every five years we do assessment, we take all the health check information, and we reassess them all. Are our strategic management directions still correct? But, what's really good about this system is if a health check comes up that there's something going wrong, we can do a values assessment in 12 month's time without having to wait for 5 years, and we just reevaluate and have a look. And then we can adjust our strategies, so it's the health checks that were the thing that we never had before, we had protected areas that rangers had never even been on ever, we ask what condition you've got an important ecosystem here, and we've never been there. So now, with health checks, they have to go at least and have a look at that value.

Q: So that means that in your planning process, there is urgent call for change of the management plan?

A: Yes, and we only got that change because our higher level management has said it has to be done, and now health checks, if you were to ask a ranger five years ago to go out and monitor something, that was not their priority. Their priority is working on the walking tracks or doing fire or responding to a neighbor's complaint or whatever. Monitoring was very low on their list, but now because our Director General has said, "No, this has to be done," it's all in their work programs now.

Q: But you have only ten directors and rangers, with zillions of things to do, do

they have time to do that, or do they contract it out?

A: Well health checks, and I'll go into more detail, but health checks primarily decide their very quick system. We're not putting out plots, we're not measuring stuff, it's a visual assessment, but set with some really clear criteria. So it is designed, and you'll get a paper copy but they've got it on a map, or you can do it on your phone. So they can walk out when they're doing the walking trail management, there we are, in that key value, they can go, "Oh we're out here and it's due, so we'll just do it.

Q: So it's not too time consuming?

A: No, it's not time consuming, and we've got one natural, one cultural, and one visitor health check, and the criteria is the same, and you can do that on any natural. So once they've been doing it, they don't even need the documentation, they can just do it.

Q: And they can do it on a phone, instead of, they don't need to key in when they get back and all that...

A: Yes, nope, it all just gets uploaded.

Q: Who initiates this kind of project?

A: It would've been, I would say, our higher level management, because of that order of the general's report initiated. We had to develop it, we had to provide the answer...

Q: You just carry out instruction, or strategy?

A: Yeah, we had some officers like Chris Mitchell, who was trying to do this for a long time, and we thought about, I would say 10 years before that, we were doing these things called Parkfolio which was in a sense the same thing, but there was no support so it never got traction, and it wasn't until we had higher-level support that it actually got traction. And we actually changed our physical databases and systems and got it incorporated.

Q: So in this case, who can support you to carry out this project?

A: We've got funding, we get funding every year just to continue to developing this, and assessing this, and rolling it out.

Q: So the funding is from head office?

A: It's from cabinet money, so from Treasury, we get money every year.

Q: Big money?

A: For people in my position in head office, we're just permanent staff, but we've paid the six planners every year, and to do the evaluation every year, we've got 2.5 million to do that.

C: That's big money!

A: It is, it's one of the best, I've been in planning awhile and I've never seen it funded like this...I've never seen support for planning like this.

Q: Coming down to a more practical level, if you didn't get this type of support, to the extent, is it still doable?

A: I think it's even more about...I don't know how you're country's set up but for us, even the regions, I think that would eventually start seeing that, but the fact they can't do a fire or pest proposal without this information is what's helped push it along, so it's not just about there being high-level support, but it's about embedding it into our systems.

Q: I know, but I'm just thinking that if there's not enough funding, can the existing system and existing personnel still do at least part of it?

A: Yeah, absolutely, that work that we were doing, I don't know—

Q: The reason is, we may not have that kind of funding, but can we still do something about it?

A: To start with, just changing how you do your plans, the culture...

(59:04) Q: How many people can you hire to carry out this project?

A: At the moment, we've got 10 or 11 planners across the state, and some are funded by us and some are funded by the region. We've got 6 regions and each region also has their own pocket of money—

Q: These are contract workers, not permanent staff?

A: No, these are permanent staff, so the planners, most of them do have some standing position, so they actually have permanent other roles, but they're all acting in these planning roles. And then we've got our head office that are permanently planning, but there's no need to do management plans, these strategies, so the regions that they've all got their own pest teams and they've got their own fire teams, and so forth, they used to do pest strategies anyway, so a lot of the thematic work is actually carried out by non-planners, they're actually carried out by the pest teams or the fire teams, so we've got an ecological assessment unit that does it all, because we actually have a monitoring strategy in the park, too. So a lot of that other work is actually carried out by other staff that are not planners. That again gives them \* (1:00:18), they understand what is happening and then they know what they're doing when they actually go out to do a burn, because they wrote the plan. We've given a lot more of the responsibility, instead of just having people in head offices write plans, we've given a lot of it back to the region, but just directed them how to do it.

Q: How often do you try to get support from academic or NGO from outside?

A: Not enough, I don't think. One of the things we've got is an ecological assessment unit, which are our own scientists, and what they're doing from these is they're identifying the areas of research on parks in Queensland that will inform our management. And they've got a database, and she's working now to help inform universities to say, "Look, we need work done here," and then that's helpful for the universities as well, because then they can prove funding and say, "We need this money for these projects."

Q: Who do they get the funding from? Not from you?

A: Not from us, no. But at least instead of having...it's always been in the past

we'll have researches applying for research permits on what they want to research, but it hasn't helped out park management, because we haven't been able to tell them what we need answers for. And so we're trying to turn that around, where at least we can inform them, and if they want to research something, we might be able to even direct them to--, say, "If you're going to do that, we need these answers as well." It's slowly, that one's slow. But NGOs, we probably don't do too much because one of the NGOs is one's that have their own protected areas, and I don't think there's a whole lot of collaboration there, not enough anyway.

Q: But your idea is quite good, to tell the academics what you need, what you'd like to develop, maybe they can try to find the funding outside.

A: Exactly, and I think it would help their funding bids if they know that the government's saying well, we need these questions; the one thing we do have, is we—he was a past parks person but he works at University of Queensland. He brings his students here to Lamington to do projects, and he's teaching them how to do health checks and he's actually doing some of the health checks. But the health checks can be done by bushwalkers or local natural groups, so they're designed to be done by other people as well.

Q: So is there any double checking to verify that the health check is accurate?

A: Our ecological assessment unit, they all run through them and they just...quality assure.

Q: I'm curious about the process of combination of the key values. It's because these values are the core and very important top guidelines, we have for every park. So who has been involved in the determination of values? And do you have any debate between the people, and it's who speaks louder whose values become the core values?

A: We've actually got some set criteria and procedures. The Queensland Herbarium uses broad vegetation management groups, which is a certain way that they name their ecosystems and talk about their significance. So we use those for our ecosystems, we use those as bases, and we have a group in our head office that can analyze information about the representative of those particular ecosystems on different parks. So for example if an ecosystem, 90% of



that, whether it's threatened or not, is on that park, and it's really important that we protect it in that park, that information comes out in the analysis. So we have that for all our values, we have other criteria for historic, for example we have other criteria for historic, for example, we have a Queensland heritage register, so we've got legislation that if an item is on the register, it's significant. So if it's on that, it automatically becomes a key value. So there's a whole lot of criteria, and what we do is we will run a workshop, and everyone will bring in experts on those certain values, and so we'll have a consensus on that. But it also goes to our ecological assessment unit to make sure, so there's a whole expert. And of course they're for our top-end parks, for acceptable parks, there might be one key value, we know it's only just one ecosystem, and you only need a ranger to sort of say, yeah that one, because it's an acceptable park. But for a park like Lamington, the process we went through was those sort of processes; we ran a workshop, I had a whole suite of experts come in with maps, talking about key values were, and then we ran it through, we've got a steering committee, because it's a World Heritage park, they look at the key values as well, we work with our First Nations, \*\* (1:05:58) or they might have other cultural values, the King Parrot you saw this morning, for some of you that saw them, you'll see them everywhere, they're a totem for here. Even though it might be a relatively common species in southern Queensland, that's a very significant value for them. So then we look at all that, so a park of this level, it goes through quite a process.

Q: How long normally for this discussion of the key values?

A: Well, depending on accessibility for First Nations, it could take a few months, if you want to do it properly for an exceptional park. But the good thing is, our key values get reevaluated as well because things changed, hopefully this doesn't really happen a lot but you may lose a species or something. We had a couple of significant species here, we had the Hastings River Mouse, and the Bristlebird, and they lived in these areas. We've been monitoring those, they're not appearing anymore. So they're still working out what the factors are, but if we do an evaluation in 5 more years, those areas might not be a key value anymore. Climate change, we'd lose our cool temperate forests in some parts; Springbrook, the next park over, which is World Heritage as well, they've only got 3 hectares, it's really low out, there's not much, we know that it's going to be lost. Somewhere along the line we may not make that a key value anymore. Or we may discover something new and go, "Woah, this is going to be a key

value.”

M: What Sherri did for her PhD is have a look at how do you account for climate change into planning and management for protected areas. But the health checks, the people who developed that system have written it up and it's being published. One of the things I did for IUCN is edit the scientific journal of parks, and the paper will be on health check system will be published in the November issue. So my first job when I get back to my office is to finish typesetting the paper....Coming out of that February workshop, we had on thresholds, so...

Q: Once that's published, can you send us a PDF?

A: It's an access journal but it's also free to publish it, unlike other OpenAccess journals where they'll charge a fee.

Q: May I ask when you start to implement the health check system, did you meet any challenges from different sectors, or in your organization?

A (S): I think the most resistance we got was from rangers on the ground about doing it, because the first thing they thought was, oh, more work. And we still get that resistance, I guess we've probably got the odd person who still thinks it's about producing those results from the health checks, we do have values out there that we've assessed that are not in good condition, and they don't want to make that sort of information public. But generally, they've been accepted, but it's also been a work in progress to get that, it's taken some time. But it was about getting it just as part of their standard work, and getting them used to something new. And we had a lot of rangers that, well that's why they became rangers, they want to do natural resource work. So we've had some people going, “Yeah!” and then other people going, “Well no, because I've still got to go clean toilets,” or something.

Q: Will said that they've just done, over the last couple of days, health checks around here, it didn't seem too resistant of them...

A: No, Will's pretty good with them. And a lot of our regions are like this too, so Will's not just doing them on his own, all the regions have natural resource rangers as well that sit in their regional offices, and they provide support. In southwest Queensland, they've got a lady named Jess, and she comes out and

she'll be helping them.

Q: Do you consider the value of education separately, or included in the items under the social value?

A: It's definitely included everywhere, you mean education of...

Q: The value of education for the park

A: Of the rangers or of the public?

Q: No, I mean your health checking system

A: Oh, using that as an education tool?

Q: No, I mean for the value you identify, is there an independent item for value of education?

A: We do have one, and we've used it in a couple of various, you mean a category? For a key value? Yes, we've identified that in some places, we've got some educational centers, and we've identified that as a value. So I think on Great Keppel Island there's an education center where kids come, and we've identified that as a value. So in some areas, it's not for every park, but where there is a really big focus; St. Helena Island, which is just off of Brisbane, it's all historic, it used to be all convicts and old buildings, but we have commercial operators. And you ask any child that grew up in and around Brisbane, they'll have been there with school, because they go there for education. So we've identified that as an educational value as well. So, things that we think about managing there is ensuring that the information that the operators are giving are correct, and those sort of things, the right historical information, so that we identify as a key value.

Q: In addition to the value of education, what do you do to the topic or to the unit for capacity building, your people, what do you do? And for the capacity building of schoolteachers, what do you do?

A: As part of the system? Or just however we do that? I'm not quite sure how we do that. I think that's probably more...I don't think we have a huge amount

of input into the education system and the curriculum, but they would use our parks and our resources. So for example, all the school groups going to St. Helena, we ensure that they've got all the right information. But we've got other units in our department that look after that stuff, so I'm not really too aware of how we do that.

Q: But it's good, you put information into your curriculum so that schoolteachers can follow the curriculum and bring kids to come here.

A: And we do that, but that's not our unit, so I'm not sure.

Q: Is that an important aspect of the national park's work? The curriculum and public education?

A: There is a group, but I don't think it's high importance, it's not as important as things like fire and pest management and that sort of stuff, but I mean we have a unit that works with them, and does a lot of stuff. So I'm sure the tools that our internet information, and our men they run all our social media stuff, but they also work with all those groups as a whole.

Q: I think some of the questions relate, because it's highly emphasized in some areas to be curious whether you're doing the same thing or not.

A: And I think it probably depends on the park, so there are some parks, there's an education center in this area, and that's next to a park, so the locals of that region would then work with them. The St. Helena one, for example, they work very closely with the commercial operators in the schools to make sure there are connections there, but the problem is more specific on the park—

Q: Do these operators come into the park and demand more emphasis?

A: I don't know, because I don't work in that area

M: But the Education Department has an environmental education section, and they rather they run environmental field study centers, but the teachers there with expertise and they will be the people that went through curriculum development in those schools because of them, and there is a series of environmental education throughout the state.

Q: Do they also deal with PR, because part of the emphasis will be—

A: No, that's the actual department of education, so it's a different ministry. So there is, for the international parks, an area that's responsible for education and communication, I'm not sure what it's called now. So they would produce these things, they would do \* (1:17:40).

And you stopped at Flays yesterday, didn't you? So Flays, is one of those, they have school groups through all the time, and they also run holiday-based activities, and we've got another one out at a place called \* (1:17:56) which is just out near Brisbane--

C: The interesting thing is, many of the agencies in Taiwan will face the pressure that, okay, they are doing an excellent job like Flays, why are you not doing it? You should put more (emphasis? efforts? 1:18:18) Why is it that they are always on the news? You should be on the news, you should be accomplishing this and that, and bring us good things. So I think there's a... it's a different kind of cultural pressure.

(1:18:36) S: These areas are the ones that emphasize this one and these ones...

C: Public education is fantastic, however the PR angle behind that is very important in our system.

A (M): Parks in Queensland have had less emphasis on park interpretation by interpreters, so the United States has been where a lot more of the staff would be interpreters that run guided walks and so on. Here, a lot of that's been done by volunteers, so Will was saying a lot of their public contact on weekends, so if you come here on the weekend, you generally will not see a ranger. They're not working on the weekend, because they're \*\* (1:19:22); Lamington, hasn't for years had a ranger on weekends. So \* (1:19:29) you can use volunteers for public contact. When I first joined the parks, my first job at the parks was as an interpreter. I was actually based on the park, it was the first time they ever put an interpreter on the park \*\* (1:19:41), and it's hardly been done since.

(1:19:50) Officers that sit in the actual region, but they won't sit on the park

(1:19:59) Q: You also brought up a very important aspect for us to push a little bit further. Because on weekends if there are no rangers but something happens, what happens? Who's going to handle it?

A (S): Do you mean in an emergency? This is the strange thing, with Queensland police and rescue service. They're the first people who are called if there is a rescue on the park, generally the rangers or Parks and Wildlife are one of the last to know, because it actually sits with another jurisdiction.

Q: So you're not under pressure by the public or whoever? That's just later when the congressmen say, "How come you..."

A (S): This is really sad news, but Burrewarra, one of our parks up north, two people died just this last week.

Q: On the weekend?

A: No, it might have been just the last couple of days. They presume they fell off the waterfall. But when you look at the news, it's about the emergency services and Queensland Police. So even when our rangers find...there's a place in Springbrook which is unfortunately a common place for people to end their life, and when the Parks and Wildlife Service person knows that might be the case, first people they call are the police, and then they get involved, and they may assist with the rescue, but they're not the primary people, which is how it's done in Queensland.

C: And you're fortunate!

A: Yes, but safety is a really big emphasis here, we have policy of being out to make restricted access areas. There's waterfalls in Springbrook, and it's a restricted access area, and if they're caught they do get fined for being in those areas.

C: See, if this happened in Taiwan, you'd see the superintendent of that park in the national evening news

A: Ah, no you won't see that here.

C: And, there will be all kinds of questioning in the next days, legislative meetings...

M: When I worked in marine parks, I was the contact person for oil spills, so if a ship ran into the rig, maritime safety and others also got involved, but as marine

park officers we were responsible for that, so I always kept a signed updated leave form in my desk, so that if I heard there had been a collision of a boat with a reef, I could quickly fill in the dates, leave it in my 'out' tray, and run away!

S: Well I can assure you now, at the beginning of this year, I did a week's worth of training with Damian here, field management training for the Great Barrier Reef. We got an insight, we went and had a look at the new tracking system that they're using for the shipping in the Great Barrier Reef now, and it doesn't really rely—they track every single ship, and they've got a whole team of people, so that even that stuff doesn't really sit with us anymore. We've got an incredible system now, it's amazing. And for the biggest ships, when they are a certain size or have certain contents, there are actually chopper pilots and trained pilots on the ship that help them go through.

M: If the ship deviates more than a hundred meters or so off its course, alarms are going off.

S: They have a room of 6 to 8 people with screens, and they're watching and monitoring this stuff 24/7.

M: Because if a big boat hits a reef, I mean I'm joking about the leave form, but if we have a major spill on the Great Barrier Reef, there's just about nothing you can do. The thing that prompted the inspection of the system, we had a vessel called the Shen Neng (? 1:24:34) that ran onto a rig. And luckily the oil spill was relatively small, but the remediations of that rig has cost millions and millions of dollars. Also doing the same with fishing now, so every fishing boat has been over (1:24:46), and they're all monitored.

That was another room I got to go in and look at, and I felt like I was with the FBI because they don't just monitor all the tracking systems, but they actually do personality profiles, who knows who and whatever, because we've got a series of green zones, and if you're caught chipping— and they showed us this footage, they had a drone come in, it was just a recreational fisherman, and this drone came in, you wouldn't even have seen the drone, but you could make out him fishing, the license plate on the boat, wow.

Q: Did you have to get special approval to come into the room?

A (S): We weren't allowed to have our mobile phones or anything. It felt like I



was with the FBI, it was amazing, so to know that they're managing their stuff there in the Great Barrier Reef is amazing.

M: We had special approval to go in, because I've done the thing called the Outlook Report which evaluates the management of the Great Barrier Reef Marine Park, so I've done a component of that since 2009. So we got approval to go into this security room, and they showed us this footage of what they call Mr. Buckethead, so basically tracking illegal fishermen. And they have aerial surveillance and they have video cameras with computer stabilized lenses, ultra-telephoto lenses, so they can take photographs of people before they even know there's an aeroplane in the area. And they lock in on the person in there, and the registration number to get the details. So they showed us this footage of this guy they've caught twice, and they call him Mr. Buckethead, he's a commercial fisherman; commercial fishermen have often not been long out of jail. Anyway, he's fishing there with his dory, and then they've been locking in on his image, and suddenly he realizes an aeroplane in the air, so he gets his fishing bucket and puts the bucket on this head, starts his motor, and starts to motor out into the green zone, but with his registration number showing; we call him Mr. Buckethead.

Q: Does he really get fined?

A (S): Yeah, they are really strict on compliance in the Great Barrier region.

M: We used to try and do it ourselves, and wasted a lot of money one time I worked in (? 1:27:30) marine parks, and then we realized we were spending millions of dollars a year on aero surveillance, and not doing actually very much good. So what they did was they brought in federal police and said, "You tell us how to catch baddies." And a lot of this is about profiling, so they know, and they do modeling. I had a PhD student who worked on this looked at all of their offense, all of the data that got on offense, so he can say, "Alright, it's Saturday and the wind is 25 knots from the southeast, so the areas where illegal fishing will happen are here, here, and here. But if it's 15 knots and from the north, then this is where illegal fishing will happen. So they target, they know how, weather and time of the year and time of the day affects where people go, and they can target their enforcement all driven by models using big data around us, very sophisticated. We did an evaluation of the Galapagos Marine Park and they took us in and they said, "This is what we learned from the Great Barrier Reef" and we've invested all of this money and they have exactly the same system

running, and then I said, "Good, good, so how's that going?" And they said, "Oh, \*\* (1:28:59) record of the overseas fishing, so what happened they said, "Oh, well, because of poor maintenance, none of our patrol boats are working, so we just watch them." They spent millions on their surveillance system, but they don't maintain it.

The good thing about the Great Barrier Reef and their system, though, they had some researchers looking at the green zones compared to outside the green zones, and they're seeing really positive effects of the green zones.

Q: The green zones are where you can't fish?

A: Yeah, and they're actually showing that they're actually working.

Q: Can you go watch the coral reefs within the green zone, is that open to tourism? Only harvesting is prohibited?

A: Yes, there's certain recreational opportunities you can do there. So every area's got a map of what their zone, and I think there's about 4 or 5 different zones. So there's zones where they can do commercial fishing, there's other zones that you can do recreational fishing, but then we've got laws around what fish, how many fish...

Q: But you were just talking about taking tourists out.

A: Yeah, but they might even have \*\* (1:30:21) manage even commercial tourist operations in those areas. But they might have areas that are just needing to be left alone completely, but we have a permit system, so when a commercial operator for example wants to take an operation somewhere, they have to apply as a permit, and then we have people who assess that and go, "Is that appropriate or not? Is it in line with the management plan?"

C: It seems the green list can also be an issue in my country, Taiwan. Right now it's in a section of conservation, they will think it is very key to move this kind of issue to the planning section of the park administration. Green list and management is \* (1:31:35) issue, right now it's the responsibility of the conservation section, but I think it would be a good thing to move it to the planning section.

C: He means in Taiwan, all of this evaluation or management plan things, I mean the evaluation green list, this project in Taiwan is based on the conservation

sector, people who were in charge of the conservation division. But these things are related to the whole planning system.

Sherri: So if your plan does not sit in the conservation...

C: In terms of job division, there is a conservation division, there is a planning division. So the plans are sort of organized and overseen by the planning division. But the conservation and the green list is now the responsibility of the conservation division. So the question is, should that be moved to the planning division?

A: I'm not sure, because I guess our planning sits in our conservation. We've got a division called Park Services, and that looks after all those areas, and we sit in there already.