

Stockland Development Pty Ltd

**Caloundra South**

Litoria olongburensis Contingency &  
Offset Strategy

224519-00-OCS-REP

Rev 005 4 May 2016

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 244519-00

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# Document Verification

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# Document Verification

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## List of abbreviations

ACR	Annual Compliance Report
Caloundra South	Caloundra South Master Planned Development
CEMP	Construction Environmental Management Plan
CIA	Conservation Infrastructure Agreement
DotE	Commonwealth Department of the Environment
EPBC Act	<i>Environment and Protection Biodiversity Act 1999</i>
EPP	Environmental Protection Plan
EPZ	Environmental Protection Zone
ERP	Environmental Rehabilitation Plan
HMU	Habitat Management Unit
MEDQ	Minister for Economic Development Queensland
MNES	Matters of National Environmental Significance
PCEMP	Precinct Environmental Management Plan
PDA	Priority Development Area
PER	Public Environment Report
SCC	Sunshine Coast Council
ULDA	Urban Land Development Authority
VMRP	Vegetation Management and Rehabilitation Plan
WSF	Wallum Sedge Frog
WSF Strategy	Litoria olongburensis Contingency & Offset Strategy
WSFMP	Wallum Sedge Frog Management Plan

## Executive Summary

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This *Litoria longburensis* (Wallum Sedge Frog) Contingency and Offset Strategy (WSF Strategy) has been prepared by the Proponent (Stockland) of the Caloundra South Master Plan development. It has been prepared to fulfil the requirements of Condition 9 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Approval Decision (REF 2011/5987) and will be submitted to the Commonwealth Department of the Environment (DotE). This WSF Strategy will be triggered and implemented if patches of the 152ha of created compensatory habitat for the WSF do not meet the success criteria as defined in the latest approved Wallum Sedge Frog Management Plan (WSFMP). It has been prepared to meet the principles of the current EPBC Act Environmental Offset Policy (October 2012).

The Subject Site and action that this WSF Strategy covers is the Caloundra South Priority Development Area (PDA) and the master planned community development. The action was granted an approval under the EPBC Act on 6 June 2013, subject to conditions and subsequently varied approval on 15 April 2014 (EPBC Act Approval). Several conditions of the EPBC Act Approval relate to the management, monitoring and mitigation measures for the WSF and its habitat.

A Wallum Sedge Frog Management Plan (WSFMP) has been prepared and the latest version approved by DotE in April 2015. The WSFMP sets out the mitigation strategy for WSF on the Subject Site which is comprised of the conservation of existing key habitats to be retained within the waterway corridors and the creation of 152ha of commendatory WSF habitat and enhancement of existing WSF habitat along the waterway corridors. The WSFMP also defines success criteria, that includes measures of WSF presence, habitat quality and water chemistry for areas of created compensatory habitat.

In the event that patches of created compensatory habitat do not meet the success criteria after a monitoring and maintenance period, this WSF Strategy will apply. The approach to offsets on the Subject Site is to deliver offsets within the Environmental Protection Zone (EPZ) of the Subject Site. These offsets will include the restoration of low quality WSF habitat and the creation of additional areas of WSF habitat, prior to the offset requirement being triggered. The delivery of these offsets will be staged and linked to the required ecological restoration of the EPZ as the development progresses.

The commitments for delivering offsets (the creation and enhancement of WSF habitat within the EPZ) will deliver an overall conservation outcome for the species and be additional to what is required under existing approvals or commitments. The strategy meets the principles of the EPBC Act Environmental Offsets Policy as there are currently no approval or legislative requirements for the Proponent to improve or expand the extent of WSF habitat in the EPZ area. The implementation and delivery of the WSF Strategy will be subject to rigorous and scientific monitoring, with reporting on the success criteria and progress of any offsets open and transparent.

# 1 Introduction

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## 1.1 Background and context

The Caloundra South Master Planned Development (Caloundra South) was referred (REF 2011/5987) to the Commonwealth Department of Environment (DotE) in June 2011 to determine if it would require approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to potential significant impacts to matters of national environmental significance (MNES). The Environment Minister determined that Caloundra South had the potential to result in significant impacts on MNES, including the Pumicestone Passage section of the Moreton Bay Ramsar wetland and the vulnerable Wallum Sedge Frog (WSF) *Litoria olongburensis*. The mechanism for assessment of the action was a Public Environment Report (PER), which was finalised in November 2012.

The Minister granted an approval for Caloundra South, subject to conditions, on 6 June 2013 and subsequently varied that approval on 15 April 2014 (EPBC Act Approval). Several conditions of the EPBC Act Approval relate to the management, monitoring and mitigation measures for the WSF and its habitat and generally include the following:

- preparation and approval of a Wallum Sedge Frog Management Plan (WSFMP) to monitor and manage the WSF population at the site, including the key performance indicators for created compensatory habitat; and
- preparation and submission of a detailed *Litoria olongburensis* Contingency and Offset Strategy (WSF Strategy) that will be implemented if the created compensatory habitat does not meet the defined success criteria.

The full details of those conditions of the EPBC Act Approval which are relevant to the management and monitoring of the WSF and its habitat are contained in Section 2.1 of this document.

Condition 9 of the approval decision further requires that within one year of the commencement of the action, the person undertaking the action must prepare and submit to DotE a detailed WSF Strategy that will be implemented if the created compensatory habitat does not meet the key performance indicators defined in the WSFMP. This report has been prepared to demonstrate compliance with this condition.

## 1.2 Purpose

This WSF Strategy has been prepared in accordance with Condition 9 of the EPBC Act Approval and will be applicable if patches of the 152ha of created compensatory habitat for the WSF does not meet the key performance indicators as defined in the WSFMP. The WSF Strategy contains the following, which have been detailed in Section 7.4 of the approved WSFMP:



- The relevant offset policy context and requirements;
- The key performance indicators identified for compensatory habitat creation;
- The potential threats and risks to successful compensatory WSF habitat creation;
- A reiteration of the conservation outcome sought (i.e. the offset must achieve a conservation gain and be additional);
- The scenarios to be considered where offset may be required;
- The methodology for calculating offset, particularly if only part of the compensatory habitat created is not successful;
- The potential options for direct offsets including their location and the mechanisms for how tenure and conservation in perpetuity will be secured;
- The nature of the governance arrangements for the offset;
- The role of other compensatory measures; and
- How the offset will be monitored for success and reported on for compliance purposes.

### **1.3 The Subject Site and the Caloundra South Master Plan**

The Subject Site referred to in this WSF Strategy is the Caloundra South Priority Development Area (PDA) and the area subject to the EPBC Act approval (REF 2011/5987). The Subject Site was previously managed as a pine plantation by previous landowners, however, it is now largely cleared and used for cattle grazing. The pre-existing pine plantation has been cleared from the site and as a consequence the site hydrology has been significantly altered, remnant vegetation is fragmented and fire regimes have been changed.

Remnant vegetation has been retained along the waterway corridors of Bells Creek (North and South) and Lamerough Creek and is in a moderate to poor condition, being fragmented and subject to edge effects. A remnant Blackbutt forest and other small remnant patches are located in the eastern portion of the site. There are areas of regrowth and remnant wallum and sedgeland that support the WSF on the Subject Site, although these areas are likely a result of the current management regime of chopper rolling to control pine wildings.

The Caloundra South Master Plan has been designed to provide for the protection of matters of significance at both a local and State level as well as MNES under the EPBC Act. For the WSF, land use zones that are designed to deliver conservation outcomes by retaining existing vegetation and providing sites for compensatory habitat creation and restoring connectivity are located in the Riparian Corridor, Frog Zone and Frog Buffer.. The main areas for the delivery of WSF created compensatory habitat is within the Frog Zone and Frog Buffer. The Riparian Corridor may contain frog habitat should suitable vegetation, water chemistry and hydroperiod site conditions exist.

Approximately 400ha of largely degraded and former pine forestry land has been designated as an Environmental Protection Zone (EPZ) along the eastern portion of the master plan area. This area is to be protected and restored for general biodiversity conservation and landscape ecology functions. There are no requirements to create or restore WSF habitat in the EPZ, but there are areas of existing WSF habitat that is fragmented and is of varying quality. There are opportunities to restore some of these areas and to re-create WSF frog habitat in the EPZ. As detailed further in this strategy, suitable areas of the EPZ will be subject to WSF creation and restoration that will be delivered and secured as offset sites.

The conservation areas are shown in Figure 1.

Master Plan Precincts

**Conservation Areas:**

- Creek Corridor
- Riparian Zone
- Frog Zone
- Frog Buffer
- Lifestyle
- Environmental Protection Zone
- Major Recreation Park
- Environmental Education Facility

Issue	Date	By	Checked	App'd	MD
19	15/12/2015	GJK	MD		MD

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Coordinates System: GDA 1994 MGA Zone 56

Job No: 244519-00 Figure No: 001

Client: Stockland

Job Title: Aura Wallum Sedge Frog Contingency and Offset Strategy

Drawing Title: Caloundra South Master Plan Conservation Areas

Scale at A3: 1:22,000 Final

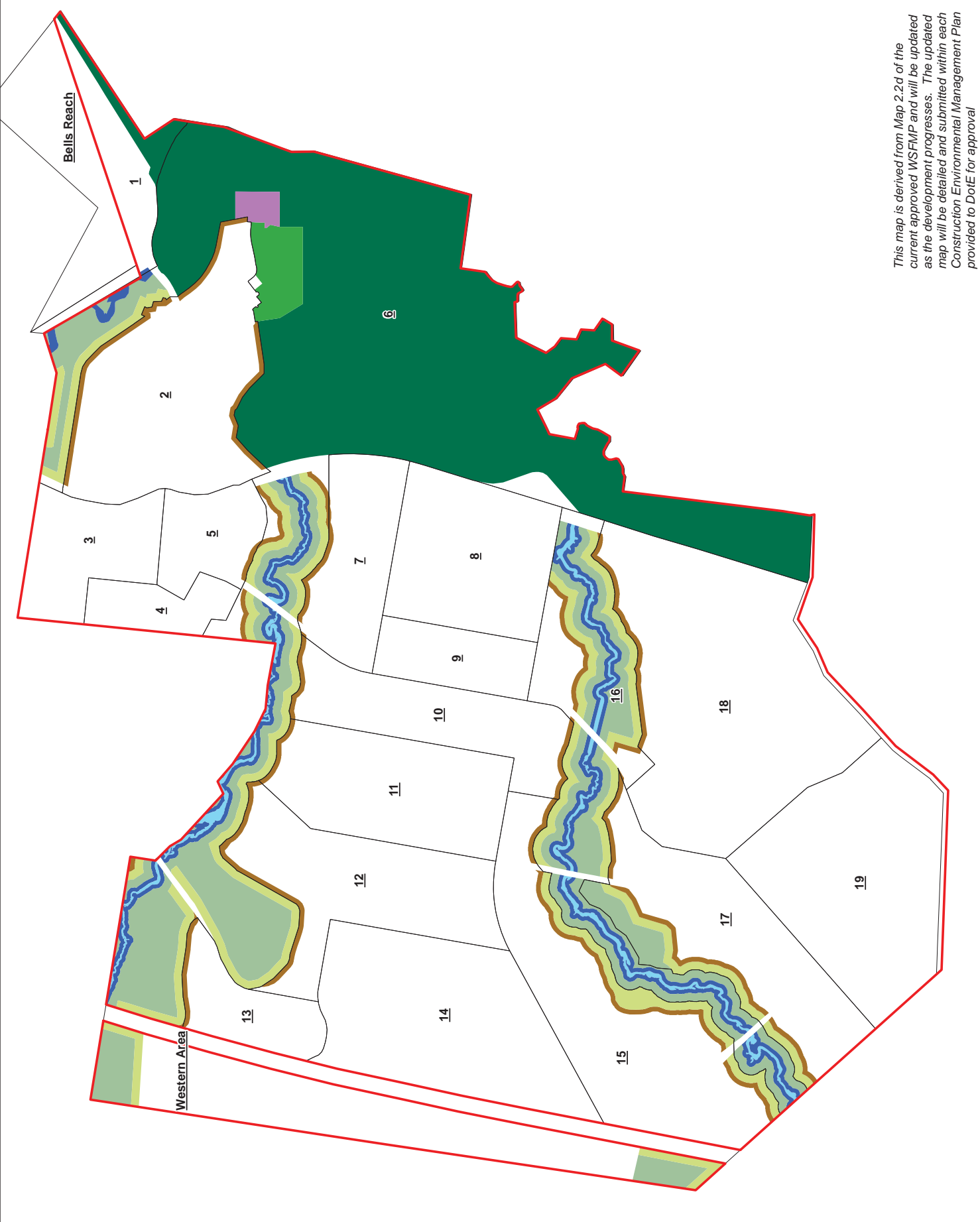
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Job No: 244519-00 Figure No: 001

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This map is derived from Map 2.2.d of the current approved WSFMP and will be updated as the development progresses. The updated map will be detailed and submitted within each Construction Environmental Management Plan provided to DoE for approval

## 1.4 EPBC Act Environmental Offset Policy

Condition 9 of the EPBC Act Approval requires that the offsets proposed in the WSF Strategy be in accordance with the EPBC Act Environmental Offsets Policy (October 2012). Table 1 below sets out each of the overarching principles in the EPBC Act Environmental Offsets Policy and the sections of the WSF Strategy which address those principles.

Table 1: Principles of the EPBC Act Environmental Offset Policy and where they are addressed in this WSF Strategy.

	<b>Offset principle</b>	<b>Relevant Section in WSF Strategy</b>
7.1	Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action;	Section 3 and 4
7.2	Be built around direct offsets but may include other compensatory measures;	Section 3 and 4
7.3	Be in proportion to the level of statutory protection that applies to the protected matter.	Section 3 and 4
7.4	Be of a size and scale proportionate to the residual impacts on the protected matter;	Section 4
7.5	Effectively account for and manage the risks of the offset not succeeding	Section 3 and 4
7.6	Be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs (this does not preclude the recognition of state or territory offsets that may be suitable as offsets under the EPBC Act for the same action);	Section 4
7.7	Be efficient, effective, timely, transparent, scientifically robust and reasonable	Section 3, 4, & 5
7.8	Have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.	Section 5

## 2 Legislation and policy context

The WSF population and its habitat on the Subject Site will be managed and monitored through mechanisms required under both Commonwealth and State legislation and policy. For this reason a summary of all relevant mechanisms has been provided in this section to demonstrate the full extent of management on the Subject Site.

### 2.1 *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*

The conditions of the EPBC Act Approval which relate to the protection, maintenance, management and monitoring of the WSF population and its habitat on the Subject Site are detailed in Table 3 below. The condition package included a number of conditions related to protecting, maintaining and enhancing the biodiversity values and WSF habitat within the development site (Table 2)

Table 2: EPBC Act approval (REF 2011/5987) conditions that relate to WSF habitat protection and enhancement

Condition number	Condition text	Approved document
1	<p>Prior to the commencement of the action, the person undertaking the action must submit to the Minister for approval a detailed Environmental Management Plan for the proposed action. The Environmental Management Plan must be submitted to Minister at least three (3) months prior to the commencement of the action. The Environmental Management Plan must be a standalone document that incorporates specific management actions required to protect matters of national environmental significance. The Environmental Management Plan must include:</p> <ul style="list-style-type: none"> <li>a) potential impacts to matters of national environmental significance;</li> <li>b) management and mitigation measures to manage: <ul style="list-style-type: none"> <li>i) acid sulphate soils;</li> <li>ii) sediment and erosion controls; and</li> <li>iii) pests and weeds;</li> </ul> </li> <li>c) detail of the objectives , methods, parameters and monitoring strategies to be used;</li> <li>d) performance criteria for each set of parameters at which point corrective actions are required to be implemented ;</li> <li>e) corrective actions, and/or mechanisms for developing corrective actions, and the parties responsible for implementing corrective actions;</li> <li>f) a vegetation management and rehabilitation plan/strategy;</li> <li>g) an environmental engagement strategy/plan identifying communication and engagement mechanism for ensuring community engagement with management practices required to protect matters of national environmental significance;</li> </ul>	<p>Environmental Management Plan (Approved; November 2013)</p> <p>Vegetation Management and Rehabilitation Plan (November 2013)</p>

Condition number	Condition text	Approved document
	The commencement of the action must not occur until the Environmental Management Plan has been approved by the Minister. The approved Environmental Management Plan must be reviewed by the person undertaking the action within six (6) months of an audit undertaken in accordance with Condition 13. If the Environmental Management Plan is amended following the review, the amended plan must be submitted to the Minister for approval. The approved Environmental Management Plan must be implemented.	
2	Within six (6) months of the commencement of the action, the person undertaking the action must submit to the Minister for approval a detailed Environmental Protection Plan which outlines the actions that will be taken to implement legally binding mechanisms to ensure the protection of the Environmental Protection Zone and Buffer Zones	Environmental Protection Plan (EPP) (Approved; July 2015)
3	<p>Prior to the Commencement of the action within each Precinct, the person undertaking the Action must submit to the Minister for approval a detailed Precinct Construction Environmental Management Plan (PCEMP). Each PCEMP must be submitted to the Minister at least three (3) months prior to the Commencement of the action within each Precinct. Each PCEMP must be a standalone document that incorporates specific management actions required for that Precinct, and any Incidental or Associated Works, unless those works are addressed in another PCEMP. Each PCEMP must include:</p> <ul style="list-style-type: none"> <li>a) details on the timing of construction works including (consistent with the requirements under Condition 7) any compensatory habitat works;</li> <li>b) current and detailed maps of the locations of: <ul style="list-style-type: none"> <li>i) Environmental Protection Zones, no-go areas/protected areas where only habitat creation, weed management or rehabilitation will occur;</li> <li>ii) sediment and erosion treatment and prevention devices;</li> <li>iii) prescribed Buffer Zones;</li> <li>iv) development and construction zones;</li> <li>v) essential services and easements;</li> <li>vi) roads; and</li> <li>vii) fauna protection devices and road crossings/underpasses</li> </ul> </li> <li>c) potential impacts to Matters of National Environmental Significance ;</li> <li>d) management and mitigation actions required for acid sulphate soils, surface and ground water quality, sediment and erosion controls, vegetation management, and pest and weed management to protect Matters of National Environmental Significance ;</li> <li>e) the objectives, methods, parameters and monitoring strategies to be used;</li> <li>f) performance criteria for each set of parameters at which point Corrective actions are required to be implemented;</li> <li>g) Corrective actions, and/or mechanisms for developing Corrective actions, and the parties responsible for implementing Corrective actions.</li> </ul>	<p>Precinct 1 CEMP (Approved; June 2014)</p> <p>Precinct 2 CEMP (Approved; May 2015)</p>

Condition number	Condition text	Approved document
	<p>The Commencement of the action in a Precinct must not occur until the PCEMP for the relevant Precinct has been approved by the Minister, or another PCEMP approved by the Minister includes the proposed works. Approved PCEMPs must be implemented.</p> <p>For Incidental or Associated Works, measures necessary to protect Matters of National Environmental Significance must be employed, such as erosion and sediment control and the re-establishment of vegetation, in accordance with. The approved PCEMP.</p> <p>Note: For clarification Preliminary Works may occur prior to approval of each PCEMP</p>	
5	<p>Prior to the commencement of the action, the person undertaking the action must provide a detailed map to the Department that identifies the areas of Wallum Sedge Frog (<i>Litoria longburensis</i>) habitat that will be destroyed or removed on the subject site.</p> <p>This has been prepared as Map 2.2D in the WSFMP.</p>	<p>Wallum Sedge Frog Management Plan (Approved; April 2015) (WSFMP) Map 2.2D</p>
6	<p>The person undertaking the action must not destroy or remove more than 152ha of Wallum Sedge Frog (<i>Litoria longburensis</i>) habitat on the subject site, as set out on the map to be provided in accordance with condition 5 of this approval.</p>	<p>WSFMP (Approved; April 2015) Precinct 2 CEMP; (Approved June 2015)</p>
7	<p>To minimise and compensate for the loss of a maximum 152 ha Wallum Sedge Frog (<i>Litoria longburensis</i>) habitat at the subject site, the person undertaking the action must establish created compensatory habitat for Wallum Sedge Frog within the subject site in accordance with the Wallum Sedge Frog Management Plan. The created compensatory habitat must be established in stages, commensurate with- the area of habitat destroyed or removed though the construction of the precincts and must reach a minimum of 152 ha, prior to the completion of construction of the Development.</p>	<p>WSFMP (Approved; April 2015) Precinct 2 CEMP; (Approved June 2015)</p>
8	<p>Prior to the Commencement of the action the person undertaking the action must develop and submit to the Minister for approval a Wallum Sedge Frog Management Plan to monitor and manage the Wallum Sedge Frog (<i>Litoria longburensis</i>) population at the Subject Site including its use of the Created Compensatory Habitat within the Subject Site. The Wallum Sedge Frog Management Plan must be developed by an Appropriately Qualified Ecologist. The Wallum Sedge Frog Management Plan must include:</p> <p>a) a review of the existing baseline <i>L. longburensis</i> population and distribution within the Subject Site;</p> <p>b) a scientifically robust methodology for monitoring <i>L. longburensis</i> population and Created Compensatory Habitat success within the Subject Site;</p>	<p>WSFMP (Approved; April 2015)</p>

Condition number	Condition text	Approved document
	<p>c) commitment to commencement of the construction of habitat ponds for the <i>L. olongburensis</i> concurrent with the commencement of works within each precinct;</p> <p>d) a <i>L. olongburensis</i> population and Created Compensatory Habitat monitoring program with readily measurable objectives, performance indicators and scientifically robust Success Criteria;</p> <p>e) timeframes for reporting and implementation;</p> <p>f) Corrective Actions, and/or mechanisms for developing Corrective Actions, and the parties responsible for implementing Corrective Act ions.</p> <p>g) a requirement for pre-construction surveying on the Subject Site by an Appropriately Qualified Ecologist immediately prior to the removal of any identified area/s of <i>L. olongburensis</i> habitat to record the size of the area to be destroyed/removed by the proposed action. This information must be included as a reporting requirement of the Wallum Sedge Frog Plan;</p> <p>h) an outline of the measures that will be undertaken to ensure that the Created Compensatory Habitat will be protected in perpetuity;</p> <p>i) Funding of at least \$0.5 million (2013 dollars, indexed to the Consumer Price Index and excluding GST) over 10 years from the Commencement of the action, for priority actions identified in the Wallum Sedge Frog Plan.</p> <p>The action must not Commence until the Wallum Sedge Frog Management Plan is approved by the Minister. The approved Wallum Sedge Frog Management Plan must be reviewed by the person undertaking the action within six (6) months of an audit undertaken in accordance with Condition 13. If the Wallum Sedge Frog Management Plan is amended following the review, the amended plan must be submitted to the Minister for approval. The approved Wallum Sedge Frog Management Plan must be implemented.</p> <p>Note: For clarification Preliminary Works may occur prior to approval of the Wallum Sedge Frog Management Plan.</p>	
9	<p>Within one (1) year of the commencement of the action, the person undertaking the action must prepare and submit a detailed <i>L. olongburensis</i> Contingency and Offset Strategy (including offsets in accordance with the department's Environmental Offset Policy) that will be implemented if the created compensatory habitat does not meet the defined success criteria</p>	WSF Strategy
10	<p>The person undertaking the Action must implement the following Buffer Zones at the subject site:</p> <p>a) the Riparian Corridor;</p> <p>b) the Frog Zone;</p> <p>c) the Frog Buffer; and</p> <p>d) the Lifestyle Buffer.</p> <p>Activities in accordance with Table 2.4 of the approved Wallum Sedge Frog Management Plan, required under Condition 8, are permitted in the Buffer Zones.</p>	WSFMP (Approved April 2015) Master Plan



### 2.1.1 Wallum Sedge Frog Management Plan

The Wallum Sedge Frog Management Plan (WSFMP) has been prepared by the Proponent and approved by the DotE to describe the mitigation approach to the WSF within the Subject Site. Broadly, the WSMFP describes the existing WSF habitat conditions and landscape ecology context of the site and sets out the mitigation strategy for the WSF, which is comprised of conservation of existing key habitats to be retained within the waterway corridors and creation of 152ha of WSF habitat and enhancement of existing WSF habitat along the waterway corridors.

WSF habitat that is lost through the development of the site will be re-created within the conservation zones in the waterway corridors, specifically the Frog Zone, Frog Buffer and Riparian Corridor. The approach to habitat creation at the Subject Site has implemented a scientifically robust methodology to determine the correct location for frog ponds, based on soil composition and hydroperiod required to create breeding conditions.

The WSMFP also details key performance indicators for created compensatory WSF habitat, monitoring requirements, corrective actions and reporting commitments. Monitoring of created habitat has been designed to assess the condition and success of created habitat and management measures designed to protect existing, retained habitat. The overall intent of this monitoring is to demonstrate the success of the mitigation measures and to identify any issues early so they can be rectified.

The primary component of the WSMFP that relates to this strategy is the stipulation of key performance indicators for the creation of compensatory WSF habitat (Table 3). Following the successful creation of WSF habitat, there is a minimum three year maintenance period where the created habitat can demonstrate that key performance indicators have been met and the area can be transferred to Sunshine Coast Council (SCC) as conservation reserve. The maintenance period can be extended up to a maximum of nine additional years (12 in total) to achieve the success criteria. This process is summarised in Figure 2. If successful compensatory habitat as described in Table 3 for the created compensatory habitat is not achieved at the end of the maintenance period, which includes any extension of that period up to a total of 12 years, the requirement to utilise the proposed offset area will be triggered.

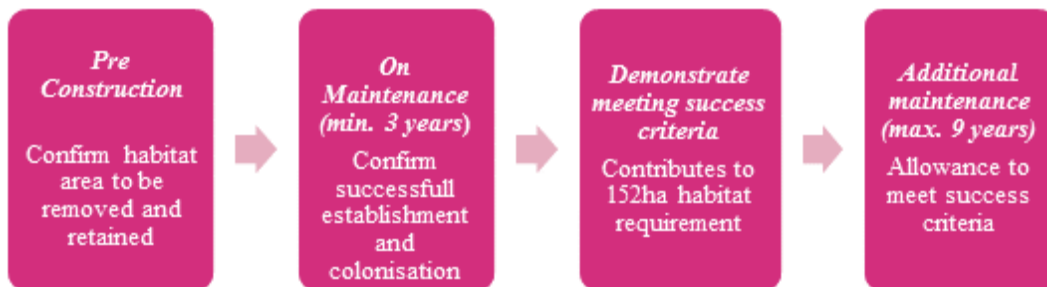


Figure 2 WSF habitat establishment, maintenance and monitoring process.

Table 3 Key performance indicators for establishing created compensatory habitat<sup>1</sup>

No.	Performance Area	Success Criteria (i.e. measurable and reportable targets)
<b>Created and retained Wallum Sedge Frog habitat ponds</b>		
1	Water chemistry	<p>pH range for individual ponds (if groundwater is intercepted) similar to or lower than pH levels recorded during 2012 surveys, see table 5.4a (i.e., &lt;4.9 [mean = 4.41, std dev = 0.34]), generally a pH range of between 3-5 across all constructed ponds.</p> <p>Tannic Acid equivalent concentration for individual ponds range between 5-39.2mg/L, with a median concentration of 10-20 mg/L across all constructed ponds.</p> <p>Conductivity range between 8-77µS/cm, with a median level of 20-30 across all constructed ponds.</p> <p>Collectively, created WSF ponds must achieve a:</p> <ul style="list-style-type: none"> <li>• Average water depth of created WSF ponds between 5-67cm;</li> <li>• Minimum water depth of constructed WSF ponds when full between 5cm; and</li> <li>• Maximum water depth of constructed WSF ponds when full between 30-100cm.</li> </ul>
2	Surface water runoff	No direct engineered and concentrated stormwater runoff from the development is to directly connect with any created or retained WSF habitat pond.
3	Hydroperiod	Created ponds must retain water for a continuous period of at least six to eight weeks. Such ponding is to occur under a summer/spring rainfall exceeding the 65%ile and/or consistent with ponding regime results recorded from control sites (refer to WSFMP Section 6.3).
4	Vegetation	<p>Created WSF ponds have a vegetation community consistent with that measured within existing WSF habitat. This includes (PER,2012):</p> <p>&gt;25% native rigid rushes/reeds/sedges comprising <i>Baumea articulata</i>, <i>Baumea juncea</i>, <i>Baumea rubiginosa</i>, <i>Juncus usitatus</i>, <i>Lepironia articulata</i></p> <p>&lt;25% open water</p> <p>No more than 25% non-native grasses including <i>Setaria sphacelata</i>, <i>Axonopus fissifolius</i>, <i>Paspalum scrobiculatum</i></p> <p>&lt;25% combined litter, bare ground, ferns, forbs, shrubs jointed rushes/reeds/sedges, limp rushes/reeds/sedges.</p>
5	Habitat connectivity	Constructed WSF habitat ponds at a minimum size of 50m <sup>2</sup> at a maximum distance of 300m from the nearest retained or constructed Wallum Sedge Frog pond.
6	Wallum Sedge Frog presence	The occurrence of WSF within both created and retained habitat ponds. Due to natural variability, frogs may not be present, however, provided the other key performance indicators are met, this will be accepted. If WSFs are present within defined conservation area, then it is assumed that all other key performance indicators are achieved.
7	Predatory fish	Fish predators (in particular mosquito fish <i>Gambusia holbrooki</i> ) do not become established in constructed WSF habitat ponds

<sup>1</sup> Note: these success criteria are taken from the latest approved WSFMP. Reference should be made to the latest approved WSFMP for current success criteria

No.	Performance Area	Success Criteria (i.e. measurable and reportable targets)
<b>Frog Buffer and Frog Rehabilitation Zone (excluding created and retained WSF habitat ponds)</b>		
8	Vegetation	75% native vegetation cover broadly consistent with Regional Ecosystems 12.2.12, 12.2.15 (not 12.2.15a), 12.2.7 (refer to Table 7.2c) including species identified in Table 7.2b. This is to be achieved 3 years post practical completion of the WSF habitat ponds and Frog Zone and Buffer Zone in accordance with construction phase sequencing.
9	Weed presence	100% free of <i>Baccharis halimifolia</i> and <i>Pinus elliottii</i> and all Class 1 and 2 Declared plants of Queensland.
<b>Maintenance and Asset Handover</b>		
10	On Maintenance	<p>The acceptance of on maintenance of frog habitat areas within conservation corridors ponds and habitat corridors may only be considered where part of a broader rehabilitation polygon which has also been accepted on maintenance. Due to the linear nature of these corridors, rehabilitation may occur in a staged basis where contiguous with staged development sequencing, provided habitat connectivity is not severed for more than 12 months.</p> <p>Areas of 5ha (or as agreed by relevant governing authority) may be accepted on maintenance at any one time. These may be contained within part of a titled allotment and do not require separate titling.</p> <p>Areas are required to be maintained for a period of three years at which time, provided the above key performance indicators are met, habitat polygons may be accepted off maintenance.</p>
11	Off Maintenance	Conservation areas to a size of 5ha may only be accepted “off maintenance” following a minimum maintenance period of 3 years from “on maintenance” or when the above key performance indicators are met, whichever is the latter.

The WSFMP also outlines potential risks to the successful creation of WSF and potential corrective actions that will be explored during the maintenance period to achieve the required key performance indicators (Table 4). These risks and corrective actions will apply to both the created compensatory habitat and offset areas delivered in the EPZ.

Table 4: Potential threats and risks to successful WSF habitat creation

Aspect Impacted	Issue Experienced	Possible reason	Corrective Action	Responsible Party
			Example of maintenance activity used to identify the risk	
Water chemistry	Elevated pH and conductivity combined with a reduced tannin concentration within created WSF habitat ponds.	An indication of surface water flows from the development entering the habitat ponds.	Locate surface water flow pathway and redirect to drainage infrastructure.	The person undertaking the action.
			Monitoring tasks will identify the occurrence of this risk.	The person undertaking the action.
Surface water runoff	Ineffective drainage from development.	Blocked pipes and culverts.	Clearing of block drainage infrastructure.	The person undertaking the action.
			Monitoring will identify the occurrence of this risk.	The person undertaking the action.
Hydroperiod	A significant increase or decrease in ponding time when compared to that achieved within retained existing WSF habitat.	Possibly the result of stormwater driven surface water inflows or a created WSF pond that is too shallow.	Identify surface water flows and redirect. Excavate pond deeper.	The person undertaking the action.
			Monitoring will identify the occurrence of this risk.	The person undertaking the action.
Vegetation	Incorrect establishment of plant species and hence development of habitat not preferred by the WSF.	The incorrect hydroperiod and/or ineffective weed control will result in the establishment of an inappropriate plant community.	Develop correct hydroperiod, as stated above and implement a weed management regime.	The person undertaking the action.
			Monitoring will identify the occurrence of this risk.	The person undertaking the action.
WSF presence	Created and retained WSF ponds do not support WSF	Incorrect hydroperiod, water chemistry and vegetation.	Activities as stated above.	The person undertaking the action.
			Monitoring will identify the occurrence of this risk.	The person undertaking the action.

Aspect Impacted	Issue Experienced	Possible reason	Corrective Action	Responsible Party
			Example of maintenance activity used to identify the risk	
Habitat connectivity	The poor establishment of created WSF habitat ponds not meeting the success criteria. Frog movement and hence habitat connectivity is disrupted by poor use of frog underpasses	Reasons as stated above. Poor vegetation establishment and entry/exit of culverts and/or underpasses. Poor habitat connectivity to culverts/underpasses.  Culvert too long, in incorrect location, or too dry.	Monitoring will identify the occurrence of this risk.	The person undertaking the action.
			All monitoring tasks will assist in identifying the occurrence of this risk.	The person undertaking the action.

### 2.1.2 Vegetation Management and Rehabilitation Plan

The Vegetation Management and Rehabilitation Plan (VMRP) has been prepared by the Proponent and approved by DotE to establish the staging, habitat and vegetation management strategies, target vegetation communities and performance objectives for restoration works within the EPZ and waterway corridors. The VMRP applies primarily to the EPZ and Riparian Corridor zone and provides an overarching site rehabilitation and enhancement plan. Rehabilitation actions in the Frog Zone and Frog Buffer are detailed in the WSFMP.

The VMRP has been prepared at a site-wide scale and has delineated Habitat Management Units (HMUs) within the EPZ to ensure that target vegetation communities of paperbark forest, eucalypt forest, sedgeland and wallum are restored.

At each development stage a precinct-specific Environmental Rehabilitation Plan (ERP) is to be prepared that details the management actions, schedule and program of restoration works, concept layouts, monitoring requirement and maintenance actions to meet the required performance objectives for ecological restoration. The ERP will also summarise the areas of WSF habitat impacted, created and protected in the waterway corridors and EPZ.

The ERP is required to be approved by the Queensland Government Minister for Economic Development Queensland (MEDQ) prior to the commencement of subdivision works within a precinct. Timing of relevant rehabilitation works is in accordance with the VMRP and the Conservation Infrastructure Agreement (CIA) executed between the Proponent, MEDQ and SCC.

## 2.2 Queensland State approvals

### 2.2.1 Master Plan

Caloundra South is a Priority Development Area (PDA) declared under the *Queensland Economic Development Act 2012* (formerly Urban Land Development Authority Act 2007). In 2011, the Caloundra South Development Scheme was prepared by the (then) Urban Land Development Authority (ULDA) to regulate development on the site. As part of the preparation of the Development Scheme the ULDA composed a Conservation Strategy, which was used to inform the Landuse Plan contained within the Development Scheme. The Master Plan layout was prepared by the Proponent in consultation with the community to respond to matters of matters of significance at both a local and State level as well as MNES under the EPBC Act.

The Conservation Strategy looked at the presence of threatened species on the site. It recommended the creation of core conservation areas and buffers, which were then secured through the EPZ within the Development Scheme and ultimately the Master Plan.

### 2.2.2 Conservation Strategy and Natural Environment Overarching Site Strategy

The protection and management of environmental and ecological values on the site have been outlined in detail in the approved Conservation Strategy. The Natural Environment Overarching Site Strategy been prepared to guide and implement the requirements of the approved Master Plan and Conservation Strategy. This was prepared ensuring consistency with the federally approved VMRP.

This Conservation Strategy outlines a framework for enhancing the biodiversity of Caloundra South and ensuring important ecological values are protected from development.

## 2.3 Conservation Infrastructure Agreement

The Proponent, SCC and the Queensland Government MEDQ have entered into an Infrastructure Agreement that is a legal framework outlining each party's contributions to development and conservation infrastructure. The Conservation Infrastructure Agreement (CIA) requires the Proponent to prepare, develop and implement Environmental Rehabilitation Plans (ERP) to describe the restoration of the EPZ and frog corridors.

The IA also provides measureable performance objectives that need to be reached in the EPZ and frog corridors, prior to areas being transferred to SCC to be managed as a part of their conservation network. The Conservation IA is the legal mechanism by which areas of the EPZ and frog corridors will be provided with protection in perpetuity.

These Commonwealth and State approvals have close links and are related to the development and implantation of this strategy, as shown in Figure 3.

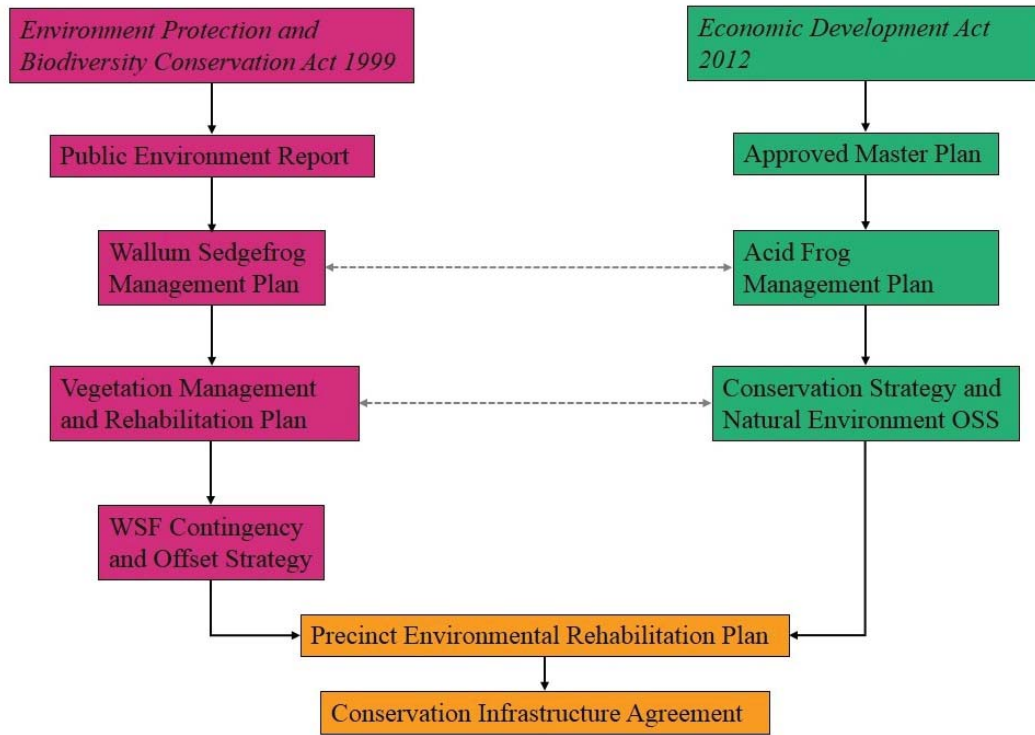


Figure 3: Current approvals links and relationships.

### 3 Contingency and offset approach

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The broad approach to contingency planning for compensatory habitat creation is outlined in the WSFMP. This includes the creation of a minimum of 152ha of WSF habitat in the waterway corridors, which includes the Riparian Zone, Frog Zone and Frog Buffer. Based on the current Master Plan there is approximately 280ha of land in these zones.

The approach to delivering WSF offsets is to provide offsets located within the EPZ that will be planned and delivered as part of the restoration works that are required to be staged as the development progresses. There are currently no requirements for the Proponent to improve or expand the extent of WSF habitat in the EPZ area of the Subject Site.

This section of the WSF Strategy will detail the following:

- Trigger for implementation of the offset plan;
- Methodology for mapping WSF habitat extent and quality in accordance with the EPBC Act Offset Assessment Guide and
- Methodology for calculating offset area based on the EPBC Act Offset Assessment Guide.

Figure 4 displays a flowchart diagram for the implementation of the compensatory habitat creation and offset delivery, which will be referred to throughout this section to ensure clarity in regards to the trigger for the delivery of this WSF Strategy.



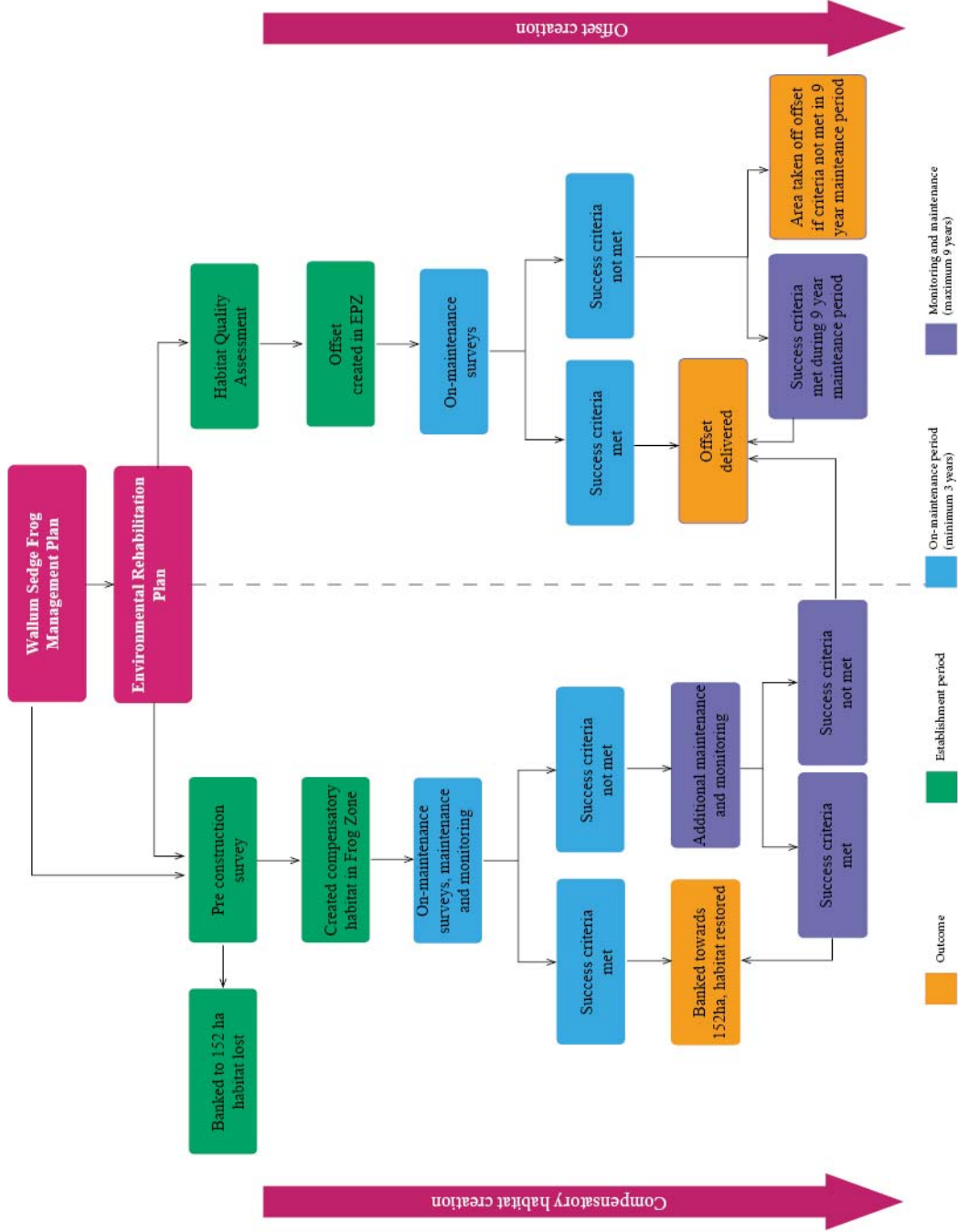


Figure 4 Approach and delivery flowchart for the WSF Contingency and Offset Strategy

### 3.1 Trigger for offset implementation

As detailed in the WSFMP the overarching WSF mitigation actions will be established in stages, commensurate with the development of the site. As such, the implementation of this WSF Strategy, if triggered, will occur in stages, corresponding to the development of the site.

Upon completion of created compensatory habitat within a development precinct/s, created compensatory habitat will undergo a minimum of 3 years on 'on-maintenance' monitoring. This monitoring, as detailed in the WSFMP, will assess the performance of the created compensatory habitat against site-wide key performance indicators in the WSFMP and Section 2.1.1 of this document.

If successful compensatory habitat as described in Table 3 for the created compensatory habitat is achieved at the end of the maintenance period, which may include any extension of that period up to a total of 12 years, the applicable area of created compensatory habitat can be handed over to SCC for future ownership and management under the Conservation IA.

If, after three years of monitoring, and the key performance indicator/s are not achieved, a further nine years of continued monitoring and corrective actions can be undertaken. This additional time frame may be needed to ensure that adequate climatic conditions can occur (i.e. rainfall to drive prolonged habitat ponding for breeding success) to determine whether or not created habitat meets the key performance indicators. In addition to this, results from the monitoring of the WSF habitat control sites placed on and off site will be used to gauge the level of success of the created compensatory habitat – particularly from a breeding pond wetting/drying regime.

Monitoring and reporting on all of the key performance indicators described in Table 3 will be undertaken biannually. These monitoring reports will specify when a particular parcel of compensatory habitat is successful and thus when a particular parcel of compensatory habitat can be taken 'off maintenance'.

The implementation of this WSF Strategy occurs when a specified area of created compensatory habitat does not meet the key performance indicators within the three years of on maintenance monitoring, plus the additional nine years of monitoring. At the time of triggering the offset strategy, the preconstruction survey applicable to the area of failed created compensatory habitat (which includes Habitat Quality rating) will be used to calculate an applicable habitat offset area based on previously identified offset area. This is explained in greater detail in the Section 4 of this WSF Strategy.

### 3.2 Offset delivery timing

Land management responsibilities, ownership and governance on large scale residential developments spanning long time frames are often complicated and difficult to predict. A risk to the successful implementation of this strategy is the acquisition and management of suitable land parcels for offset requirements over the 30 year project life span. To control and reduce this risk, the strategy for the Subject Site will include delivery of and securing offsets in the EPZ.

The voluntary delivery of WSF offset requirements prior to the actual need to deliver (as defined in Section 3.3) ensures that over the 30 year lifetime of the project DotE can have confidence that the strategy can be implemented in the event that areas of the created compensatory habitat do not meet the success criteria. The delivery of this strategy will result in offsets additional to the created compensatory habitat required under the Condition 7 of the Approval.

When offset areas meet the key performance indicators as described in Table 3, the applicable area will be recognised as a successful offset area.

### 3.3 Mapping WSF habitat and quality

Under the conditions of the EPBC Act approval decision, no more than 152ha of WSF habitat is to be destroyed or removed (Condition 6) over the entire Caloundra South site. Due to the long implementation timeframe of the project, preconstruction surveys for WSF habitat are required prior to the (Condition 8g) prior to destruction or removal of any habitat. These preconstruction surveys will assess the condition of the habitat removed/destroyed at the time of impact.

Under the WSFMP, a preconstruction survey methodology has been developed to ensure that the amount of WSF habitat that is to be removed, destroyed and/or retained is adequately assessed and reported. The results of this mapping are presented in the corresponding precinct's Construction Environmental Management Plan (CEMP) and are attributed to the maximum permitted 152ha of habitat destroyed or impacted. The WSFMP (via Map 2.2D) will also be updated following each pre-construction survey to track the areas of WSF habitat protected, created and removed.

The preconstruction survey implemented under the WSFMP is and will be the most up-to-date mapping of WSF habitat across the site. It represents the most appropriate quantitative measure of area of impact to be input into the EPBC Act *Offset Assessment Guide* calculator to estimate the magnitude of the residual impact and subsequent offset commitment.

During the preconstruction survey<sup>2</sup>, habitat quality will be assessed in order to rate the area of habitat to be removed/destroyed and how well this particular area of the site supports the WSF and contributes to its ongoing viability. The three components of habitat quality that are required to be addressed in the EPBC Act Offset Assessment Guide calculator will be used to assess habitat quality:

1. Site condition,
2. Site context, and
3. Species stocking rates.

Key ecological attributes (habitat requirements, lifecycle, movement patterns and threatening processes) of the WSF will also be used help determine the overall habitat quality score between 0-10.

It is proposed that a WSF habitat quality score is attributed to each of the Site Condition, Site context and Species Stocking rate components, then the overall score averaged to obtain a final single WSF Habitat Quality score. For example, an overall WSF Habitat Quality score of 6 will be made up from a Site Condition score of 8, a Site Context score of 8 and a Species Stocking rate of 3 ( $8+8+3 = 19$ ;  $19/3 = 6.3$  rounded down to 6).

As shown in Table 5, WSF habitat quality will be determined prior to WSF habitat being removed or destroyed on a precinct by precinct basis during preconstruction surveys. This quality score will then be used to update the offset requirement within the designated offset areas in the EPZ, further detailed in Section 4. The current (Dec 2015) offset calculator will be used for the life of the project, unless the Proponent and DotE reach agreement that an alternative calculator is to be used.

### 3.3.1 Defining WSF habitat during low rainfall years

The Wallum Sedgefrog inhabits seasonally inundated ephemeral wetlands. During unseasonally dry conditions, it is highly probable that identified Wallum Sedgefrog habitat across the Subject Site will not become inundated in water. Furthermore, during reduced rainfall periods it is anticipated that WSF activity would be low and thus aural / visual surveys would likely not yield representative results. Wallum Sedgefrog habitat quality mapping during periods of reduced rainfall conditions resulting in the absence of seasonal inundation of ephemeral wetlands will be achieved via the dry weather sampling methodology detailed in Box 1 of the WSFMP. This methodology uses a combination of vegetation type (native rigid rushes/reeds/sedges comprising (but not limited to) *Baumea articulata*, *Baumea juncea*, *Baumea rubiginosa*, *Juncus usitatus*, *Lepironia articulata*, Soil type (sandy loam, with high organic matter content), and Topography to map the extent of WSF Habitat.

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<sup>2</sup> As per Condition 8g of the Approval, the preconstruction survey will be undertaken by an appropriately qualified ecologist.

Due time for significant rain to fall over the spring/summer/autumn period must pass prior to implementation of the dry weather preconstruction survey. As such, if significant seasonal rainfall has not occurred prior to the end of March, the dry weather habitat survey technique detailed in the WSFMP can be implemented. During dry weather, the 2012 PER WSF habitat mapping will be used as the basis for assessing WSF habitat location across the site.

During dry weather conditions, a WSF habitat quality score will be attributed to each of the Site Condition and Site context components of the WSF Habitat Quality score table (refer to Table 5), then the overall score averaged to obtain a final single WSF Habitat Quality score. For example, an overall WSF Habitat Quality score of 6 will be made up from a Site Condition score of 8, a Site Context score of 4 ( $8+4 = 12$ ;  $12/2 = 6$ ). This methodology will assume a given Species Stocking rate based on the condition and context of the habitat area.

Table 5: WSF Habitat score to be used in the EPBC Act calculator. Species Stocking rate determined as per methods employed in the Caloundra South Public Environmental Report (2012)

WSF Habitat Score		WSF Habitat Quality		
		Site condition	Site Context	Species Stocking rate (Relative abundance criteria)
Poor / Very low	1-2	Highly modified non-native vegetation, with limited adjoining foraging habitat. No evidence of surface water ponding	Isolated habitat area, highly influence by existing on ground management activities	No recent observation of WSF previous observation
Low	3-4	Limited tall sedges/grasses, with dominance of shrubs and trees, limited evidence of surface water ponding	Isolated habitat, with linkage to other habitat not within known corridors	Standardised aural census count $\leq$ first quartile for all aural census counts (i.e., $<1$ frog). OR Standardised transect count below first quartile for all transect counts (i.e., $\leq 0.22$ frogs/5 minutes survey). OR Standardised visual search count below first quartile for all visual search counts (i.e., $\leq 0.34$ frogs/5 minutes survey).
Moderate	5-6	Erect sedges and grasses (non-native), evidence of surface water ponding.	Small habitat area within movement corridors	Standardised aural census count $>$ than first quartile and $\leq$ second quartile for all aural census counts (i.e., 2 frogs). OR Standardised transect count $>$ first quartile and $\leq$ second quartile for all transect counts (i.e., 0.23-0.29 frogs/5 minutes survey). OR Standardised visual search count $>$ first quartile and $\leq$ second quartile for all visual search counts (i.e., 0.3-0.75 frogs/5 minutes survey).
High	7-8	Dominance of dense native sedges with infrequent non-native grasses, with adjoining native foraging habitat, evidence of surface water ponding	Medium habitat area within movement corridors	Standardised aural census count $>$ second quartile and $\leq$ third quartile for all aural census counts (i.e., 3-5 frogs). OR Standardised transect count $>$ second quartile and $\leq$ third quartile for all transect counts (i.e., 0.30-0.39 frogs/5 minutes survey). OR Standardised visual search count $>$ second quartile and $\leq$ third quartile for all visual search counts (i.e., 0.76-1.73 frogs/5 minutes survey).
Very High to Excellent	9-10	Dense, advanced native sedge growth, with adjoining native foraging habitat, evidence of surface water ponding	Large size habitat area within movement corridors	Standardised aural census count $>$ third quartile for all aural census counts (i.e., $>5$ frogs/ 5 min census). OR Standardised transect count $>$ third quartile for all transect counts (i.e., $>0.39$ frogs/5 minutes survey). OR Standardised visual search count $>$ third quartile for all visual search counts (i.e., $>1.73$ frogs/5 minutes survey).

## 4 Contingency and offset delivery

Created compensatory habitat, as well as contingency areas and sites for delivery of offsets, will be located generally within the waterway corridors and the EPZ. This section of the strategy describes:

- how the WSFMP and master plan layout allows for contingency planning for the created compensatory habitat;
- where created habitat will be installed and demonstrates suitable areas for contingency; and
- the process for identifying and assessing the habitat quality of offset areas.

### 4.1 Created compensatory habitat contingency delivery

A minimum of 152ha of created compensatory habitat is to be provided (EPBC Act Approval Decision Condition 7), which can be constructed in the Frog Zone, Frog Buffer and Riparian Zones. Under the definition in the EPBC Act approval, created compensatory habitat is habitat created, constructed and developed that is intended to be utilised by the WSF. This can include foraging, movement and breeding habitat.

The location and placement of areas of specific habitat for the WSF will be designed and planned during the precinct-level ERP. Table 6 shows the total areas available in the Frog Zone, Frog Buffer and Riparian Zone that are not currently mapped as WSF habitat. There is a total of 280ha<sup>3</sup> available for the provision of created compensatory habitat.

Table 6: Total area in hectares within Frog Zone, Frog Buffer and Riparian that are not currently mapped as WSF frog habitat

Rehabilitation Stage	Precincts	Planned compensatory Frog Zone	Planned compensatory Frog Buffer	Planned compensatory Riparian	Total (ha)
1	2	16.0	9.3	5.1	30.4
2	3,4,5	7.1	5.7	3.9	16.7
3	7,8,9	12.3	10.6	7.6	30.5
4	10,11,12	26.2	17.4	7.9	51.5
5	13	28.1	9.0	4.6	41.7
6	15	21.0	17.3	8.6	46.9
7	17,18,19	31.6	18.2	13.0	62.8
TOTAL		142.3	87.5	50.7	280.5

<sup>3</sup> The current total of 280ha available for the provision of created compensatory habitat is based on calculations from the current version of Map 2.2D in the WSFMP. These areas will be updated following each pre-construction survey and reported in accordance with the requirements of the latest approved WSFMP.

The maintenance and monitoring strategy within the WSFMP requires biannual monitoring of the created habitat areas, including application of corrective actions where needed. If areas of compensatory habitat are not meeting the success criteria, corrective actions defined in the WSFMP will be applied. If after applying these corrective actions, and these areas continue to not succeed, alternative areas will be investigated for creating habitat.

## 4.2 Offset delivery

Within the EPZ to the east of the developable portion of the Subject Site there are extensive opportunities for the rehabilitation, restoration embellishment and/or recreation of WSF habitat. Opportunities for improving existing WSF habitat or creating new WSF habitat will be identified during the preparation of each precinct-specific ERP. These areas will be created, maintained and monitored in accordance with the requirements and key performance indicators for created compensatory habitat (refer Table 3). Once these areas have met the key performance indicators specified in the WSFMP and ERP, these areas will be transferred to SCC in accordance with the Conservation Infrastructure Agreement.

As shown in Table 7, there is a large amount of land within the EPZ that is either of low quality or degraded land that, subject to rehabilitation and restoration works would have many of the habitat attributes of the WSF breeding ponds and foraging habitat. The quality of WSF habitat within the EPZ in 2012 was highly variable and attributed to the history of intensive forestry and agricultural land uses (pine plantation, cattle grazing) that occurred prior to Stockland ownership of the Subject Site. Stockland has managed the Subject Site to prevent the re-introduction of pine regrowth, which in some areas has favoured wallum and sedgeland regrowth to occur through natural succession. It is also likely that habitat quality may change between 2012 and the implementation of the ERP.

Table 7: Total area within the EPZ that are not currently mapped as WSF habitat

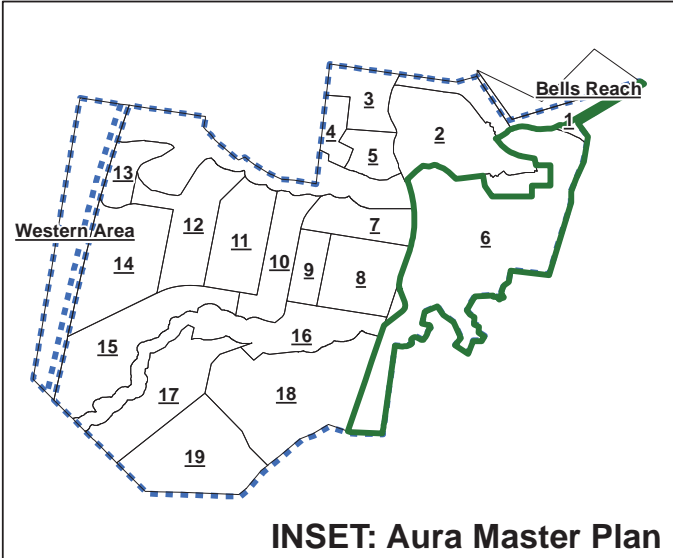
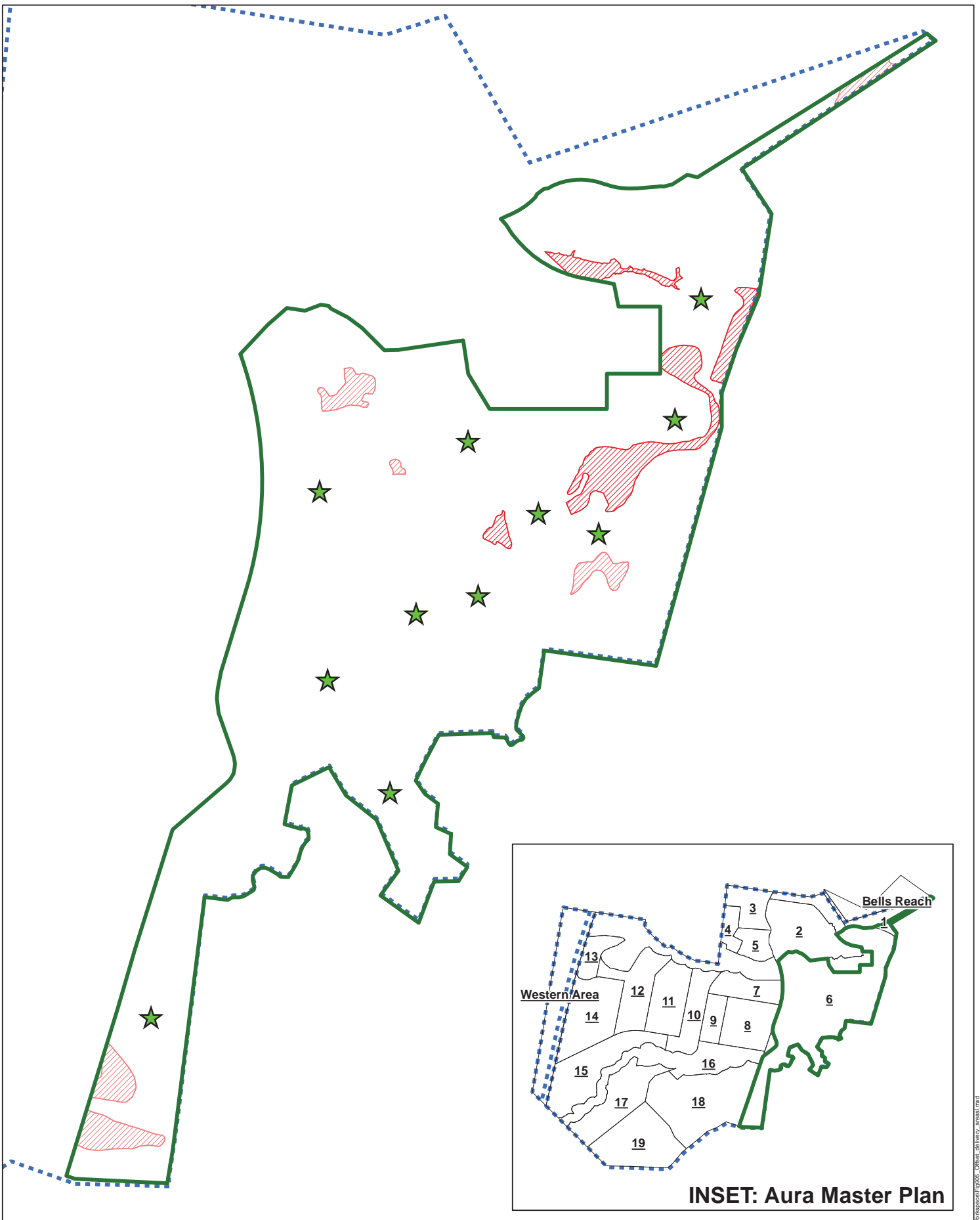
Rehabilitation Stage	Development Precincts	EPZ not mapped as frog habitat (ha)
1	1	5.0
2	2	49.7
3	3,4,5	51.8
4	7,8,9	75.4
5	10-15	128.3
6	17,18,19	46.3
<b>TOTAL</b>		<b>356.4</b>



Areas for delivery of offsets will be investigated and confirmed in the EPZ during the preparation of each precinct stage ERP. These areas will include sections of low quality WSF habitat and areas with minimal existing WSF habitat value, where habitat can be improved or created. Indicative locations for these areas of created habitat in the EPZ are shown in Figure 5. This figure shows areas of high and very high WSF habitat<sup>4</sup> within the EPZ and areas of investigation for delivering offsets.

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<sup>4</sup> As mapped in the current approved version of the WSFMP (April 2015)



- Environmental Protection Zone
- EPBC Referral Boundary
- Master Plan Precincts
- Offset delivery investigation area
- WSF habitat quality**
- Very High
- High

Client <b>Stockland</b>				
Job Title <b>Aura Wallum Sedge Frog Contingency and Offset Strategy</b>				
Drawing Title <b>Potential offset delivery areas in EPZ</b>				
1	30/11/2015	GJK	By	Appd
Issue	Date	By	Chkd	Appd

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Scale at A3 <b>1:14,340</b>	Drawing Status <b>Final</b>
Coordinate System <b>GDA 1994 MGA Zone 56</b>	
Job No <b>244519-00</b>	Figure No <b>005</b>

To ensure that the calculation of offset requirements satisfactorily match the level of residual impact, habitat quality assessments prepared in accordance with the EPBC Act *Offset Assessment Guide* are needed across areas within the EPZ proposed to be used to enhance existing low quality WSF habitat or create new WSF habitat (i.e. delivered as offsets). Figure 6 outlines the methodology for establishing the area of offset requirement, linking the quality score of the removed WSF habitat with that of the quality of WSF habitat to be counted as an offset. The criteria for Site Condition, Site Context and Species Stocking Rate from the EPBC Act *Offset Assessment Guide* from Table 6 of this report will be used for the habitat quality score of the offset areas.

If an area of created compensatory habitat fails to meet the key performance indicators after the maximum total maintenance period of 12 years, then the residual impact of the failed area will be offset by the offset established in the EPZ. The actual area required to be covered by the offset contribution will depend on the habitat quality scores and the results of the EPBC Act *Offset Assessment Guide* calculator.

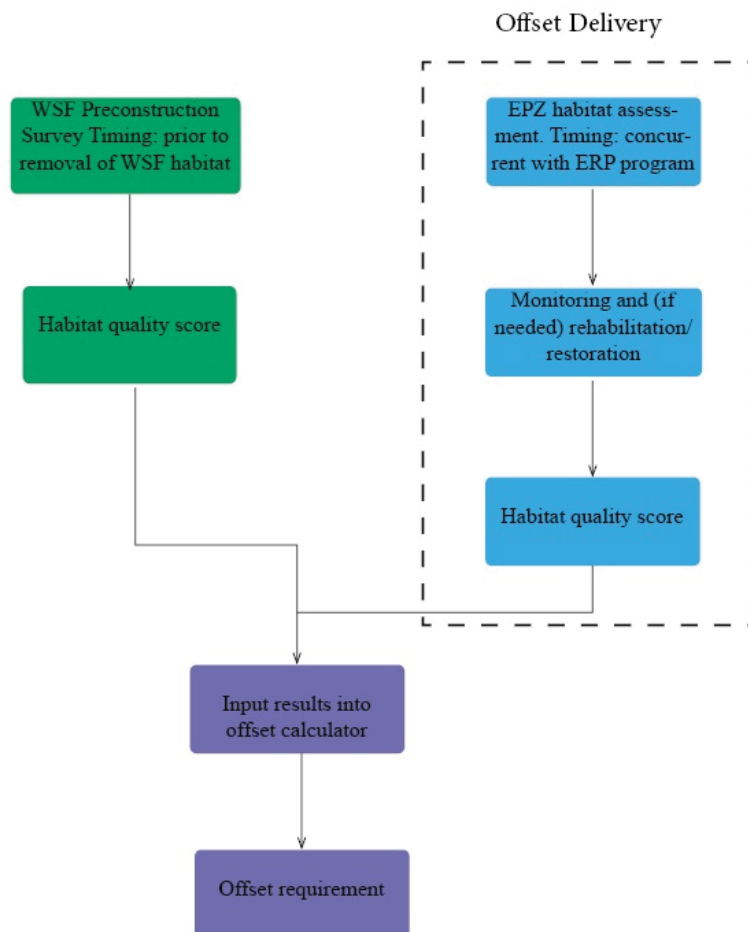


Figure 6 Flow chart to describe the relationship between preconstruction surveys and area within EPZ designated for offset requirements

## 5 Governance arrangements

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Any offset strategy or proposal delivered in accordance with the EPBC Act *Environmental Offsets Policy* must have transparent and open governance arrangements. The planning, delivery, monitoring and successful implementation of the WSF Strategy will rely on existing governance arrangements required under approvals and existing approved documents.

The key document which outlines the governance arrangements is the CIA, as it protects the EPZ in perpetuity. The Annual Compliance Report (ACR) is the means by which the Proponent will publicly present the results of the compensatory habitat creation and offset delivery, enabling the offset delivery to be transparent and publicly available.

### 5.1 Conservation Infrastructure Agreement

The CIA between the Proponent, SCC and the Queensland Government defines the process by which areas of created compensatory habitat and d offsets in the EPZ will be established and maintained until they meet the key performance indicators in the current, approved WSFMP. This document is a legal agreement that requires the Proponent to restore areas of the waterway corridors and EPZ to meet performance requirements and success criteria.

### 5.2 Annual Compliance Report

The Proponent is required to complete an Annual Compliance Report (ACR) under Condition 14 of the EPBC Act approval decision. This ACR is to be submitted to DotE within three months of every annual anniversary from the commencement of the action and until 12 months after the cessation of the action, which is to be publicly displayed on the Proponent's website. The status of the compensatory habitat creation and offset delivery will be tracked within the ACR and include:

- Results of any pre-clearing WSF habitat surveys;
- Results of any WSF habitat condition surveys in the EPZ
- A quantification of WSF habitat protected and WSF habitat removed or destroyed to tally the allowed maximum 152 ha impacted;
- Calculation of areas of created compensatory habitat and results of any maintenance monitoring;
- Calculation of areas of WSF habitat created in the EPZ as offsets and results of any maintenance monitoring; and
- Calculation of areas of created or restored WSF habitat that has met the key performance indicators in both the compensatory habitat and offset areas.

## 6 Offset area monitoring requirements

The monitoring methodology requirements of the offset areas for WSF habitat in the EPZ will use the same methodology outlined in Section 7 and 8 of the approved WSFMP for areas of created compensatory habitat. These will include:

- **Pre-construction phase:** WSF habitat survey to determine habitat to be removed on a precinct or group of precincts basis, as well as assessment of habitat quality in areas where offsets are created (see Section 3.2 of this report); and
- **On maintenance phase:** monitoring of WSF presence and habitat during the establishment of the Frog conservation areas, including retained existing WSF habitat (Table 8).

Once the offset areas have met the key performance indicators they will be able to be transferred to SCC in accordance with the Conservation IA and a successful offset will have been delivered.

Table 8: Monitoring requirements

Monitoring element	Task	Frequency, timing and length
WSF presence assessment	Undertake WSF presence/absence assessment to determine the extent of habitat use.	
Vegetation assessment	Undertaken quantitative vegetation assessment of to ensure created compensatory WSF habitat supports semi erect semi-aquatic emergent vegetation consistent with a vegetation community consistent with that measured within existing WSF habitat (as per methods outlined in Table 7.1a).	Biannually, between October and April depending on climatic conditions.
Water quality assessment	Undertake pH, conductivity and Tannin measurements of water within both created compensatory and existing retained WSF habitat area to confirm suitability. Methods detailed in Table 7.1a of the WSFMP).	Monitoring period of minimum 3 years and until KPI's are addressed
Hydrologic assessment	Retrieve and review shallow groundwater / surface water level logger data within both created compensatory and retained existing WSF habitat.  Compare information gained from water level loggers deployed within existing retained habitat (from Pre-construction surveys) with that sourced within created compensatory WSF habitat during.	Ability to extend to an additional maximum of 9 years (12 years in total)

## 7 Meeting the EPBC Act Environmental Offset Policy

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Offsets will only be triggered if the patches of the 152ha of required created compensatory habitat do not meet the success criteria provided in Table 4 of this strategy. The WSF Strategy has been prepared to meet the requirements of the EPBC Act approval decision for Caloundra South and demonstrates principles set out in the EPBC Act Offsets Policy. A summary of how this strategy has addressed these principles is in Table 9.

The commitments for delivering offsets that are the creation and enhancement of WSF habitat within the EPZ, will deliver an overall conservation outcome for the species. The current habitat quality for WSF within the EPZ is variable, with much of the ex-plantation and pasture lands providing minimal value. The actions to restore and create WSF habitat in the EPZ are not required by any other approvals and will be a new commitment delivered as an offset under the EPBC Act.

The offset package outlined in this strategy is completely built around direct offsets, which are the restoration of degraded WSF habitat and the creation of new habitat. Due to the long time frame for the development of the Subject Site, the quantum of area to be delivered as an offset will be determined in pre-construction surveys prior to the time of impact. The improvement or creation of additional areas of foraging and breeding habitat for the WSF on the Subject Site, to lead to a net gain in a suitable habitat, is a suitable to cover the residual impacts in the situation that the required compensatory habitat does not meet success criteria.

Area of created offset habitat will be subject to rigorous monitoring and maintenance regimes to assess progress against the defined success criteria. Under this WSF Strategy, an area will not be deemed to be a successful offset unless the success criteria have been met. These success criteria include confirmed presence of WSF, as well as other habitat attributes such as specific water chemistry and vegetation characteristics.

All of the commitments and actions defined in this strategy will be reported on annually in the ACR, required under the EPBC Act approval for the Subject Site. This ACR is required to be made publicly available, ensuring that the trigger for requiring an offset and the delivery of required offsets will be open and transparent.

Table 9: Summary of offset principles and how they have been addressed in this Strategy

Offset requirements	Application to offset strategy
7.1 Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action;	The WSFMP has been prepared to provide an overall positive conservation outcome for WSF on the Subject Site and within the local area. The offset strategy will provide further conservation benefits by delivering areas of improved habitat quality for WSF and greater extent of WSF habitat within the EPZ. This requirement for enhanced WSF habitat in the EPZ is not currently required under any existing approvals.
7.2 Be built around direct offsets but may include other compensatory measures;	The WSF Strategy relies solely on direct offsets delivered within the EPZ. As part of the EPBC Act approval, the Proponent is required to commit \$500,000 to indirect priority actions for the conservation of the WSF.
7.3 Be in proportion to the level of statutory protection that applies to the protected matter.	The current EPBC Act offset policy uses the calculator tool Offset Assessment Guide that takes into account the conservation status of the species and the proportion of any residual impact that requires offsetting. This strategy sets out the methodology for assessing this habitat condition and the size of any required offset area immediately prior to the time of impact. Due to the likely changes in habitat quality over time, this approach is considered to more accurately quantify offset requirements at the time of impact.
7.4 Be of a size and scale proportionate to the residual impacts on the protected matter;	This strategy has outlined the process by which the residual impact will be calculated to ensure the offset (if required) will be of suitable size and scale.
7.5 Effectively account for and manage the risks of the offset not succeeding	Areas subject to offset establishment will adopt the same monitoring, maintenance and corrective actions procedures as outlined in the WSFMP.
7.6 Be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs (this does not preclude the recognition of state or territory offsets that may be suitable as offsets under the EPBC Act for the same action);	The areas for proposed offsets will be located within the EPZ, outside areas of existing high quality WSF habitat. Although the EPZ is required to be protected and restored, there are no approval requirements or conditions that require WSF habitat to be enhanced or increased in extent.
7.7 Be efficient, effective, timely, transparent, scientifically robust and reasonable	The efficiency, effectiveness and timeliness of the offset delivery will be outlined in the strategy and will be linked to the timing of the offset trigger. The delivery of the offset habitat will follow the scientifically robust methodology for creating compensatory habitat, as defined in the WSFMP. Timeliness of offset delivery will be linked to completion of the off-maintenance period.
7.8 Have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.	Governance arrangements will need to demonstrate how the person undertaking the action (i.e. the Proponent) will maintain any required offsets until they are self-sustaining areas of habitat. The requirements for this are outlined in the Conservation IA and will be publicly advertised in the Annual Compliance Report.

## 8 Conclusion

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This WSF Strategy has been prepared to demonstrate that the Proponent has a contingency strategy for the creation of the required 152ha of compensatory habitat. It also outlines the process for delivering offsets if sections of this created compensatory habitat do not meet the required success criteria. This strategy is part of a wider package of commitments and conditions that are designed to achieve a conservation gain for the WSF within the site and the Caloundra region, by increasing the extent of habitat and providing landscape linkages within the site.

The strategy provides greater certainty around the process by which offsets will be triggered and delivered in the case that areas of created compensatory habitat do not meet the required success criteria. These measures are linked to the transparent governance arrangements associated with the Conservation IA and will be reported on publicly as part of the Proponent's compliance reporting requirements each year.

The strategy relies on the delivery of offsets by enhancing and creating WSF habitat within the existing EPZ at the Caloundra South site. These offsets will be created as the development progresses, be subject to scientifically rigorous maintenance and monitoring and transferred to SCC as part of the CIA.