

SECURITY CLASSIFICATION: UNCLASSIFIED

EXECUTIVE LEADERSHIP TEAM BRIEFING NOTE

Meeting No:
Agenda Item No:
Date
SECRETARIAT USE ONLY.

Subject **Technical Note – Use of Drones**

There is no specific timeframe required.

RECOMMENDATION

It is recommended that the Executive Leadership Team (ELT):

- **Note** the development of the *Queensland Government Drones Use Policy* by Department of Transport and Main Roads (expected delivery quarter four 2018).
- **Approve** the circulation and publication of the *DES Technical Note: Use of Drones* within the Department of Environment and Science (DES) (**Attachment 1**).
- **Endorse** the ownership of the whole of government *Queensland Government Drones Use Policy* and *DES Technical Note: Use of Drones* to reside in the most appropriate business area in DES, as identified and approved by ELT.

BACKGROUND

- The Queensland Government released the *Queensland Drones Strategy* (**Attachment 2**) in June 2018, with Objective 5 identifying the following key actions:
 - Develop an internal *Queensland Government Drones Use Policy* that provides information to agencies regarding the use of drones
 - Develop a set of standards to ensure drone data and imagery captured by government agencies meets quality, completeness, privacy and licensing standards for inclusion in the State Remotely Sensed Image Library and online tools such as Queensland Globe and QImagery.
- Development of the *Queensland Government Drones Use Policy* and standards are being led by the Department of Transport and Main Roads (TMR), and is expected to be delivered in quarter four 2018.
- A *DES Technical Note: Use of Drones* submission was presented to the Digital Investment Sub-Committee (DISC) on 5 September 2018.

KEY ISSUES

- Drones are currently being used by a number of DES business areas including Queensland Parks and Wildlife Service, Environmental Services and Regulation, Conservation and Sustainability Services and Science Division.
- Uses across the department include fire ground operations, surveying burnt areas, wildlife tracking, compliance monitoring and gathering footage for publications.
- DES does not have a departmental policy or procedure covering the use of drones by DES staff.
- Governance and Strategy have advised DES adopt interim procedures to ensure the department addresses the risks and issues including safety and security, protection of individuals' rights, facilities restrictions, imagery data and information management while awaiting a whole of government direction.
- The *DES Technical Note: Use of Drones* (**Attachment 1**) provides this guidance for DES business units, addressing specifications, insurance, legislation, information management and requirement of use by DES staff.
- The development of the *DES Technical Note* was based on TMRs Technical Note 156 "*Use of Remote Piloted Aerial System (RPAS)*" (issued in September 2016).

- DES will align to the whole of government *Queensland Government Drones Use Policy* on its release.
- DISC supported the content of the *DES Technical Note* however requested it be tabled with ELT for discussion and endorsement of which business area will take ownership of the current *DES Technical Note* and the forthcoming whole of government *Queensland Government Drones Use Policy* with the associated standards.
- Upon acceptance of ownership the nominated business area will be required to lead departmental communications of DES' role and responsibility in the use of drones.
- Unless another business area nominates carriage of the policy, Environmental Services and Regulation have offered to take ownership, in consultation with Corporate Services.
- DISC agreed a DES specific policy for management of drone usage by the general public on state owned land (for example, Queensland National Parks) was outside the scope of the submission to ELT.
- Responsibility for the asset and relevant compliance to the *DES Technical Note* will be owned by the business area who purchases the drone.

ELECTION/CABINET/PUBLIC COMMITMENTS/LEGISLATION

- This brief does not relate to any Election/Cabinet/Public commitments or Legislation.

FINANCIAL IMPACTS

- There are no financial impacts.

CONSULTATION

- Digital Investment Sub-Committee
- A/Deputy Director-General, Environmental Services and Regulation
- A/Deputy Director-General, Queensland Parks and Wildlife Service
- Deputy Director-General, Conservation and Sustainability Services
- Executive Director, Governance and Strategy
- Principal Governance Officer, Governance and Strategy
- Risk and Business Continuity Manager, Digital Enterprise Branch

Department of Environment and Science

Record of Procurement Activity (Non- Routine) - Part A – Planning

DES18274 for the purchase of UAV / UAS Technology in Compliance Implementation Program requirements



APPROVAL

Evaluation Panel Declaration

Evaluation Panel Chair (cannot be the Financial Delegate or the Procurement Officer)	
I declare that I am aware of my evaluation responsibility and confidentiality obligations and that I have no conflicts of interest relating to this procurement process (where a conflict is present, a Disclosure Statement will be completed and provided to the Procurement Officer).	Name: Brett Glosko Position: Compliance Delivery Manager (Operation TORA) Signature: [Redacted] sch4p4(6) Personal information Date: 28/11/2018
Evaluation Panel (cannot be the Financial Delegate or the Procurement Officer)	
I declare that I am aware of my evaluation responsibility and confidentiality obligations and that I have no conflicts of interest relating to this procurement process (where a conflict is present, a Disclosure Statement will be completed and provided to the Procurement Officer).	Name: Eugene Immisch Position: Compliance Delivery Manager (Gold Coast) Signature: [Redacted] sch4p4(6) Personal information Date: 28/11/2018
Evaluation Panel (cannot be the Financial Delegate or the Procurement Officer)	
I declare that I am aware of my evaluation responsibility and confidentiality obligations and that I have no conflicts of interest relating to this procurement process (where a conflict is present, a Disclosure Statement will be completed and provided to the Procurement Officer).	Name: Samantha Spence Position: Administration Officer Signature: [Redacted] sch4p4(6) Personal information Date: 28/11/18

Procurement Endorsement

Procurement Officer Endorsement:	
I certify that this Plan meets the requirements of the Queensland Procurement Policy 2018 (QPP) and the departmental Procurement Framework. (Refer to the department's Procurement Authorisations)	Name: Shawn Knox Position: Senior Procurement Officer Procurement Authorisation: Level 4 Signature: [Redacted] sch4p4(6) Personal information Date: 28/11/18

Financial Delegate Prior Approval

Financial Delegate Approval	
Based on the information provided in this Record of Procurement Activity, I confirm that there is funding available and support the release of a Request for Quotes for this requirement.	Name: Andrew Connor Position: Executive Director (IDSQC) Financial Delegation: 2 Signature: See attached BN Date: 16/11/18

QITC Exemption for ICT Procurement (To be confirmed for equipment phase)

QITC Exemption Approval	
<p>I approve an exemption from the application of the Queensland Information Technology Contracting (QITC) framework for this requirement.</p> <p>(Refer to Procurement Authorisation – QITC Exemption)</p>	<p>Name: [insert]</p> <p>Position: [insert]</p> <p>Financial Delegation: [insert]</p> <p>Signature _____ Date: _____</p>

Privacy statement: The information on this form is to be used to inform and to gain the approval of the relevant parties prior to any procurement process being undertaken. This information will only be disclosed externally if required by law.

1.0 Project Classification and Description

This plan relates to the procurement of (tick one or more boxes as required):

Value Risk Assessment (VRA) classifies this requirement as:	Goods/Services Components	Anticipated Expenditure (GST inclusive)	Cost Collector
☒ Professional Services (e.g. Management, Human Resources, Professional and Technical) ☒ General Goods ☒ Asset/s ☒ Information Technology – refer to the Information Technology webpage on the intranet or contact the ITP Account Manager as required	CASA regulatory fees Training (six staff) Aircraft kits x 6 Aviation radios x 12 iPad minis x 6 Compliance software AeroPoint GPS GCP's x 6 sets Annual Licencing fees for data analysis and storage Misc equipment (cables, SD cards, hoods, hard drives, safety equipment, spare parts, etc) Staff travel and TA	\$3,640 \$16,178 \$28,500 \$4,200 \$3,600 \$4,000 \$48,000 \$16,000 \$8,000 \$14,000	1001567
The requirement has been assessed as Non-Routine.			

2.0 Demand (what do you need?)

Demand Background and Overview of Requirements
<p>The ESR Executive have approved a program to implement unmanned aerial vehicles (UAV) / unmanned aerial systems (UAS) technology as an additional tool for Compliance and Investigations Officers to assist deliver regulatory and compliance functions, along with ongoing demonstration of the value of adopting new technologies to enhance the capability of the department's compliance workforce, for compliance, enforcement and incident response functions.</p> <p>Following endorsement by the ESR Executive, the ED project champion (Andrew Connor) briefed the DDG ESR and DG DES on the proposed program. The Director General DES and Deputy Director General ESR both supported the program.</p> <p>The program aims to build on the previous good work undertaken back in 2015 when the then Director General requested a trial be undertaken, which was assisted by the Griffith University Environmental Futures Research Institute. That program successfully demonstrated positive outcomes on behalf of the department, and a recommendation was made to purchase aircraft and training internal pilots. Unfortunately the DG left the department for another role at this time, and the internal program was placed on hold. Whilst the internal program was on hold, DES continued to utilise UAV technology via contracted services via the DNRME panel of pre-qualified suppliers. The quality of this product has always been fit for purpose, however the service can quickly become cost prohibitive once the demand increases to the level that is intended under this program.</p> <p>It should also be noted that costs for both hardware and training have significantly decreased, and the technology has advanced to a point whereby high level specialist skills are no longer required for the survey and mapping operations which can now be applied by internal staff via automated software solutions.</p> <p>Federal legislation administered by the Civil Aviation Safety Authority (CASA) requires an approved system of governance, training and management which will be delivered via this program, including the required organisational role of Chief Pilot. This will provide each ESR Compliance Region with a trained and certified pilot</p>

and aircraft to deliver UAV/UAS capability. This program will also provide enhanced waste levy compliance, which in return should deliver increased revenue return to the state through lawful and appropriate waste levy return.

sch3(7) Information subject to legal professional privilege

The program aims to deliver a photographic, video, mapping and survey capability via the 0 – 7 kg category as part of the initial phase of implementation, with the Chief Pilot holding certification for use of devices 0 – 25 kg, which will allow use and exploration of other payload capabilities such as technical monitoring equipment. The program will look to add this increased capability for all trained and certified pilots as the program progresses. The program will work up the increasing capability in incremental manageable steps, i.e. not biting off more than we can chew as we continue to develop this internal capability.

Are there related or interdependent goods and/or services (i.e. support agreements / on-going maintenance; subsequent stages / services etc.)? If there are subsequent stages/services, include whether the successful supplier of this procurement process will hold a competitive advantage or whether the interdependent services can be delivered by another supplier.

Fundamentally, the program is fairly simplistic in its procurement requirements, which includes three basic groupings: Pilot training, Hardware (aircraft, and associated accessories to enable flight and data capture) and the analysis/storage and presentation of geographical data (mapping and survey products) via the automated software subscription provider. The program has already obtained significant feedback from various other QLD Government departments regarding the quality and suitability of training providers, the suitability of aircraft for required purpose, and the quality of product and user experience for the mapping and survey software. The program has obtained a short list of suitable training providers. The required aircraft are off-the-shelf products, and available from numerous suppliers, however the mapping and survey software is currently a specialist field with limited suppliers. The successful supplier would then hold an advantage. The services offered are currently annual subscription services.

Are there any parts of requirement that could be provided by or supported by internal departmental resources?

This is a new specialist service/capability not yet offered within the department. Areas such as ITP can assist with procurement and advice regarding items such as iPads, and mapping/survey software.

Mandatory Requirements

(Non-negotiable requirements. Suppliers are conforming or non-conforming. There are no levels of compliance.)

Public Liability Insurance (\$10 million) per claim and in the aggregate (Training providers)

Workers' Compensation insurance in accordance with the *Workers' Compensation and Rehabilitation Act 2003 (Qld)*, or as required by Law (Training providers)

Professional Indemnity Insurance (\$1 million) per claim (Training providers)

Training providers must hold appropriate relevant CASA approvals.

A complete summary of requirements is detailed in the attached:

Request for Quote (Non-Routine) and Contract Details (Training)	✓
QITC Framework	
Request for Quote and QITC General/Module Orders	☐

3.0 Supply Market (who can supply it?)

Is the market likely to offer:	Yes	No
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Innovative solutions or alternative offers	☐	✓
New, advancing or unknown technologies	☐	✓
New or unknown suppliers	☐	✓
If yes to any of the above, is one of the following strategies recommended:	Yes	No
Expression of Interest / Request for Information	☐	✓
Multi-stage Procurement (e.g. Expression of Interest followed by targeted Request for Quote)	☐	✓

Proposed sourcing strategy	
<p>Tick the proposed sourcing strategy below and provide justification as required.</p> <p>Note: when identifying potential suppliers, consideration should be given to local suppliers and indigenous business where possible:</p> <ul style="list-style-type: none"> Local Supplier – in accordance with Queensland Procurement Policy (QPP), at least one regional and one Queensland supplier should be invited to quote for every procurement opportunity where possible. Indigenous suppliers – in accordance with the Queensland Indigenous Procurement Policy (QIPP), Queensland Government aims to increase the value of contracts awarded to Indigenous businesses and support the development, sustainability and growth of Indigenous businesses across Queensland. Quotes from indigenous suppliers are encouraged where possible. Refer to QIPP Fact Sheet for Government Buyers for further details. <p><u>Where can I find Indigenous suppliers?</u></p> <ul style="list-style-type: none"> Utilise Black Business Finder which is Queensland Government's Indigenous business database currently listing over 550 Indigenous businesses across a wide range of goods and services. Suppliers should be capable and have capacity to deliver the goods or services and offer value for money and appropriate probity of process should be observed. The Department of Aboriginal and Torres Strait Islander Partnerships (DATSIP) regional offices also have information on local Indigenous businesses. Contact your DATSIP Regional Office for more information. 	
<p>Non-Competitive (sole supplier)</p> <p>Where there are defensible reasons to restrict a tender to a sole supplier, justification must be provided.</p> <p>CASA AeroPoints</p>	✓
<p>Competitive (multiple suppliers)</p> <p>Where the market is highly competitive or unknown – Open Tender is strongly recommended.</p> <p>Suppliers have been selected on the following criteria:</p> <ul style="list-style-type: none"> Local suppliers sourced where possible Recommendations from other project managers whom have managed similar projects 	☐
<p>Supplier Notification List</p> <p>Based on the above it is recommended that the following supplier/s will be invited to quote (for limited offer process) OR notified of this Request for Quote opportunity (for open tender process) :</p>	

Training providers (identified as suitable by PolAir & DAF)		
UAS Pacific via CR Kennedy (recommended by DAF & PolAir)	Name: [REDACTED] Position: Managing Director	Address: Enoggera, Queensland Phone: 3855 3590 or [REDACTED] Email: [REDACTED]@uaspace.com
Fly UAS (Part of National Drones, providing training)	Name: [REDACTED] Position: Co-founder and CEO	Address: Redcliffe Aerodrome, Rothwell Phone: 1300 030 357 or [REDACTED] Email: [REDACTED]@nationaldrones.com.au
ACE Aviation	Name: [REDACTED] Position: Lead Sales	Address: Upper Mt Gravatt, Queensland Phone: [REDACTED] Email: [REDACTED]@aceaviation.com.au / info@aceaviation.com.au
Aircraft and associated equipment suppliers (identified as suitable suppliers by PolAir)		
CR Kennedy (DJI recommended supplier)	Name: [REDACTED] Position: RPA(Drone)/CI and DISTO product sales	Address: 80 Kingsford-Smith Drv, Albion, QLD 4010 Phone: 38626210 or [REDACTED] Email: [REDACTED]@crkennedy.com.au
Johnny Appleseed	Name: [REDACTED] Position: Sales Representative	Address: Salisbury, QLD Phone: 1800 477 477 Email: sales@ja-gps.com.au
Survey / Mapping software (specialist product with limited suppliers)		
Propeller Aero (recommended by SA EPA)	Name: [REDACTED] Position: Enterprise Sales Executive	Address: Surry Hills, NSW Phone: [REDACTED] Email: [REDACTED]@propelleraero.com
Pix4D via CR Kennedy	Name: [REDACTED] Position: RPA(Drone)/CI and DISTO product sales	Address: 80 Kingsford-Smith Drv, Albion, QLD 4010 Phone: 38626210 or [REDACTED] Email: [REDACTED]@crkennedy.com.au
Automated Ground Control Points (sole supplier)		
Propeller Aero	Name: [REDACTED] Position: Enterprise Sales Executive	Address: Surry Hills, NSW Phone: [REDACTED] Email: [REDACTED]@propelleraero.com
Aviation management software (identified as essential by PolAir & DAF)		
AVCRM	Name: [REDACTED] Position: Client Support Manager	Address: Albion Park Rail, NSW Phone: (02) 4202 8985 Email: contact@avcrm.net

4.0 Procurement Strategy Options

Recommended Procurement Strategy	
Limited Offer Process (selected supplier/s)	✓

Market Engagement	
How will the tender/RFQ be released	Q-tender* ☐ *All open tenders to be released via Q-tender Email Request ☒
The tender will remain in the market for:	Two weeks
Will there be an industry briefing/site visit/inspection?	Yes ☐ No ☒

5.0 Anticipated dates (Training Component Only):

Release of RFQ	27 November 2018
Closing Date for RFQ	10 December 2018
Individual evaluations	12 December 2018
Collation of scores into Matrix and moderation meeting	13 December 2018
Finalise Record of Procurement Activity – Part B (Evaluation Outcome and Recommendation)	13 December 2018
Award contract	14 December 2018
Contract commencement date	28 January 2018
Note: the above dates are indicative only and are subject to change	

6.0 Evaluation Process

6.1 Proposed Evaluation Criteria

The following evaluation criteria and weightings will be applied to evaluate each offer submitted:

Note: while offers submitted for **non-competitive strategies** will not apply weighted criteria, the offer must still be assessed for compliance to mandatory requirements and any other minimum requirements to confirm that the offer actually delivers what you need. They should also be assessed to identify any opportunities for negotiations or added value. **Key expectations or criteria to assess the sole offer against should be detailed below – weightings will not be applicable.**

Criteria	Sub Criteria (if applicable)	Sub Criteria Weighting Factors (if applicable)	Overall Criteria Weighting
Mandatory Requirements Compliance with mandatory requirements <ul style="list-style-type: none"> Public Liability insurance minimum \$10 million Workers' Compensation insurance 	Conforming or Non-Conforming		
Criterion 1 Supplier Methodology and Service Delivery	100%	Supplier Methodology and Service Delivery Key Personnel	60% 40%
Criterion 2 Value for Money	Value for money will be determined using the following method:		

<p>(Refer to the Supplementary Guideline on Evaluation Section 2.5.4.6 and 2.6 for further details.)</p>	<p>☒ Cost Effectiveness Ratio – Weighting N/A (default method for most projects)</p> <p>☐ Weighted Cost Evaluation – ☐ For non-competitive procurement, price will be reviewed to ensure it is within budget and that overall value for money is being considered in achieving outcome</p>
<p>Total weighting</p>	<p>100%</p>
<p>Rating Scale for Weighted Evaluation</p> <p>A point rating in the range (0-5) or (0-10) will be applied to all criteria except price.</p> <p>(Refer to the Supplementary Guideline on Evaluation Section 2.5.4.1 for further details)</p>	<p>☒ Rating scale of 0-5 will be applied (default rating that suits most projects)</p> <p>☐ Not applicable for Non-competitive strategies</p>
<p>Will short-listing and interview/presentations be part of the evaluation process?</p>	<p>Yes ☐ No ☒</p>

6.2 Proposed Evaluation process

The evaluation will be undertaken in accordance with the standard departmental process outlined in the Procurement Procedure and **the Supplementary Guideline – Evaluation** (available on the Intranet under the Procurement Framework). The evaluation outcome will be summarised in the RoPA Part B (Non-Routine) and submitted for procurement and financial approval as required.

NOTE: Below paragraph applies if Cost Effectiveness Ratio or Weighted Cost Evaluation has been selected in Evaluation Criteria table above.

An Evaluation Matrix will be developed to determine value for money and document evaluation outcomes, and submitted with the RoPA Part B (Copy of Evaluation Matrix can be found in the RoPA B template).

7.0 Contractual Strategy

Contracting Strategy	
What contract will apply?	<p>for general goods and services:</p> <p>☐ General Contract Conditions (when to use General Contract Conditions)</p> <p>☐ Comprehensive Contract Conditions (when to use Comprehensive Contract Conditions)</p> <p>for government building projects:</p> <p>☐ Small Scale Minor Works (<\$80K)</p> <p>☐ Minor Works (<\$250K)</p> <p>☐ Minor Works (with design) (<\$250K)</p> <p>☐ Medium Works (<\$750,000 for multiple trades or < \$1M for a single trade)</p> <p>☐ Medium Works (with design) (as above)</p> <p>for ICT goods/services (contact your ITP Account Manager in the first instance)</p> <p>☐ Queensland Information Technology Contracting (QITC) Framework</p>
<p>Are there additional contracting provisions applicable to the requirement?</p> <p>Refer to the Clause Bank for possible additional contracting provisions.</p>	<p>Yes ☐ No ☒</p>
<p>Are there specific consideration relating to privacy or confidentiality?</p> <ul style="list-style-type: none"> Go to market privacy/confidentiality consideration (e.g. confidential information in the RFQ documents) Post contract privacy/confidentiality consideration (e.g. confidential information as part of contract deliverables) 	<p>Yes ☐ No ☒</p> <p>If Yes, are the Privacy and Confidentiality clauses in the General / Comprehensive Contract condition sufficient? Do you require the supplier to obtain from its Personnel a signed Privacy / Confidentiality Deed?</p>
<p>Who will be responsible for finalising the Contract Management Plan and managing the contract as per the Contract Management Framework?</p>	<p>Brett Glosko Compliance Delivery Manager (Operation TORA)</p>

Key Performance Indicators / Service Levels

Measure	Performance Target / Measure	Frequency of Measurement	Responsibility	Consequences of failure
Performance and objectives	Satisfactory completion of all training by the end of Jan 2019.	On completion of project	DES and Contractor Project manager	Payment withheld until project deliverables are achieved unless negotiated otherwise.
Quality performance and objectives	Satisfactory and consistent communication between the contractor and project manager during the operational phase of the project to deal with emergent issues. No substantiated claims or complaints from the public or operators regarding the professional conduct of the contractor whilst on site.	Regular communications with project manager via email or mobile phone.	Contractor Project manager	Payment withheld until project deliverables are achieved unless negotiated otherwise.
WHS	Satisfactory submissions of all required documentation relating to the offer process.		Contractor Project manager	Payment withheld until project deliverables are achieved unless negotiated otherwise.
Administrative performance and objectives	Delivery of the operational reporting as agreed and at the end of the project phase		Contractor Project manager	Payment withheld until project deliverables are achieved unless negotiated otherwise.
Relationship Management performance and objectives	Status reports from the contracting project manager detailing any issue with procurement, health and safety, assembly and project timing.		DES and Contractor Project manager	Payment withheld until project deliverables are achieved unless negotiated otherwise.

8.0 Risk Register

Source of Risk	Risks Identified	Likelihood (A-E)	Consequence (1-5)	Identified Risk Level	Risk Treatment Strategy
Legal	• compliance with laws, regulations and policies	C	2	Medium	Who is responsible: Mitigation Strategy:
	• agreements and contractual obligations	C	2	Medium	
	• exposure to legal liability	C	2	Medium	
Financial and Economic	• budgeting and resource allocation	C	1	Low	Who is responsible: Brett Glosko Mitigation Strategy: Carry out a fully transparent and documented procurement Process for this activity
	• expenditure management	C	1	Low	
	• asset management	C	1	Low	
	• procurement and contracting	C	1	Low	
Fraud and corruption	• Collusion in procurement decisions or regulatory activities;	C	3	Medium	Who is responsible: Brett Glosko Mitigation Strategy: Carry out a fully transparent and documented procurement Process for this activity

Department of Environment and Science
Record of Procurement Activity (Non- Routine)
Part B – Recommendation
DES18274a for the purchase of Training



This evaluation has been undertaken in response to Request for Quotation (RFQ) DES18274a – ESR Training - UAV/UAS Technology in Compliance Implementation Program, and in accordance with the corresponding RoPA (Non-Routine) Part A, approved on 28/11/18 and the departments Supplementary Guideline - Evaluation.

1.0 Responses

Invitation release on QTender on	28 November 2018
Offer closed on	10 th December 2018 at 11:00am.
Offers were submitted from:	<ul style="list-style-type: none">• CR Kennedy/UAS Pacific• National Drones
Were any offers submitted after the closing date/time?	Yes ☒ No ☐ Details: Both suppliers submitted slightly late on the day of closing. Both offers were accepted.
Were any offers submitted considered alternative offers?	Yes ☐ No ☒

2.0 Mandatory Assessment

The offer received was assessed against the mandatory criteria and is considered conforming.

The below table summarises the results of the mandatory assessment.

Mandatory Requirements	CR Kennedy/UAS Pacific	National Drones
Public Liability Insurance	Compliant? Yes	Compliant? Yes
Workers' Compensation Insurance	Compliant? Yes	Compliant? Yes
Professional Indemnity Insurance	Compliant? Yes	Compliant? Yes
Training providers – CASA approvals	Compliant? Yes	Compliant? Yes

3.0 Evaluation and Moderation

Each Panel Member reviewed the offers and awarded rating for each offer against the criteria. Any inconsistent Panel ratings (generally a difference of 2+ points in ratings awarded) were discussed and moderated as necessary at a meeting of the Evaluation Panel [13/12/18]. Individual ratings and final moderated ratings (including any changes in individual scoring) are documented in the Evaluation Matrix at **Attachment B**.

Were there significant variances in the panels scoring / comments identified: Yes ☐ No ☒

Attachment A summarises the evaluation panel's summary of offers received.

4.0 Offer Clarification

Was any clarification required from any offeror/s based on their submitted quote / offer?	Yes ☐ No ☒
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5.0 Short-Listing Process and Outcomes

Did the Evaluation Panel determine that short-listing was necessary and/or interviews/presentations were necessary?	Yes ☐ No ☒ N/A ☐
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6.0 Interview / Presentation Process

Did the Evaluation Panel determine that interviews / presentations were necessary?	Yes ☐ No ☒ N/A ☐
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7.0 Negotiations

Were opportunities for improved value / negotiations undertaken between the parties?	Yes ☐ No ☒ Details: Requirement was considered a low value item (basic training package). Pricing received was considered reasonable and no further negotiations were entered into.
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8.0 Recommendation

The evaluation panel recommends the acceptance of the offer(s) received from:	CR Kennedy (UAS Pacific)
The total cost of the recommended offer is:	sch4p4(7)(1)(c) Business/commercial/professional/financial affairs
This purchase / project has approved funds of:	
Does the final value exceed the endorsed value	Yes ☐ No ☒
Does the recommended offer vary any of the standard whole of government contract terms / conditions?	Yes ☐ No ☒
If yes, has legal advice has been sought:	
Identify any contract terms that have been accepted / varied and identify any potential risks:	Yes ☐ No ☒
The nominated Contract Manager responsible for the finalisation of the Contract Management Plan and ongoing contract management activities is:	Name: Brett Glosco Position Title: Compliance Delivery Manager

9.0 Recommendation

Evaluation Panel Chair	
<p>I declare that I have evaluated all offers received in accordance with the approved evaluation strategy as outlined in the RoPA Non-Routine Part A and the Supplementary Guideline – Evaluation.</p> <p>The recommended offer maximises value for money and delivers the department's requirements.</p>	<p>Name: Brett Glosko</p> <p>Position: Compliance Delivery Manager</p> <p>Signature: [Redacted] Date: 13/12/2018</p>
Evaluation Panel Member	
<p>I declare that I have evaluated all offers received in accordance with the approved evaluation strategy as outlined in the RoPA Non-Routine Part A and the Supplementary Guideline – Evaluation.</p> <p>The recommended offer maximises value for money and delivers the department's requirements.</p>	<p>Name: Eugene Immisch</p> <p>Position: Compliance Delivery Manager</p> <p>Signature: [Redacted] Date: 13/12/2018</p>
Evaluation Panel Member	
<p>I declare that I have evaluated all offers received in accordance with the approved evaluation strategy as outlined in the RoPA Non-Routine Part A and the Supplementary Guideline – Evaluation.</p> <p>The recommended offer maximises value for money and delivers the department's requirements.</p>	<p>Name: Samantha Spence</p> <p>Position: Administration Officer</p> <p>Signature: [Redacted] Date: 13/12/2018</p>

PROCUREMENT ENDORSEMENT

Procurement Officer Endorsement:	
<p>I authorise that this evaluation was undertaken in accordance with the RoPA Non-routine Part A and the departmental Procurement Policy, Procedure and Supplementary Guideline – Evaluation.</p> <p>(Refer to the department's Procurement Authorisations)</p>	<p>Name: Julieann Ramsey</p> <p>Position: Senior Procurement Officer</p> <p>Procurement Authorisation: 3</p> <p>Signature: [Redacted] Date: 13/12/2018</p>

ATTACHMENTS TO THIS ROPA PART B:

- Attachment A – Evaluation Assessment
- Procurement Checklist for progressing with Financial Approval

ATTACHMENT A – Evaluation Assessment

Offers received were evaluated against evaluation criteria with the findings are summarised below:

Company	Criterion 1 Supplier Methodology and Service Delivery Key Personnel	Criterion 2 Value for Money	Contra propos
CR Kennedy	Yes ☒ No ☐ The Supplier provided sufficient information that confirmed their ability to adequately meet the requirement as specified.	Yes ☒ No ☐ This supplier has been evaluated as providing throughout their response, a value for money response to this RFQ.	No
National Drones	Yes ☐ No ☒ Supplier provided quality information for 0-7kg training requirement, however failed to provide a response to the 7-25kg type training.	Yes ☒ No ☒ Supplier failed to address all requirements. This made assessing value for money impossible.	No

Procurement Checklist for Non-Routine Projects

For non-routine purchases	
Is the Value Risk Assessment confirming the non-routine classification attached?	N/A
Is the Record of Procurement Activity (ROPA) Part A attached? (complete with prior approvals of procurement officer and financial delegate)	Yes
Have conflict of interest declarations been made (where applicable)?	N/A
Have the risks identified in Section 9 - Risk Register of the ROPA Part A been adequately addressed in the contract to be signed or the contract management plan?	N/A
ROPA Part B is attached? (complete with endorsement of the procurement officer)	Yes
Has a competitive procurement process been followed? If no, insert Procurement Officer's delegation limit for non-competitive process	Yes
Has a draft Contract Management Plan been developed?	Yes/No
Has the final contract been developed and is ready for signing?	Yes/No
Has a requisition been prepared?	Yes
The financial delegate will be required to approve expenditure: - ☒ on the attached requisition OR - ☐ via SAP workflow	Yes

Provide explanatory note for "No" answers:

This evaluation has been undertaken in response to Request for Quotation (RFQ) DES18274b – Aircraft – UAV/UAS Technology in Compliance Implementation Program and in accordance with the corresponding RoPA (Non-Routine) Part A, approved on 28/11/2018 and the departments Supplementary Guideline - Evaluation.

1.0 Responses

Invitation release on 1 February 2019 Offers were invited from: 1 February 2019 Addendum released 5 February 2019	<ul style="list-style-type: none"> RFQ was released to three companies identified as suitable suppliers by QLD Government Departments. One of the three companies was identified by the product manufacturer as a preferred supplier.
Offer closed on 7 February 2:00PM Offers were submitted from:	<ul style="list-style-type: none"> CR Kennedy Johnny Appleseed GPS
Were any offers submitted after the closing date/time?	Yes ☐ No ☒
Were any offers submitted considered alternative offers?	Yes ☐ No ☒

2.0 Mandatory Assessment

The offers received was assessed against the mandatory criteria and is considered conforming. The below table summarises the results of the mandatory assessment.

Mandatory Requirements	CR Kennedy	Johnny Appleseed GPS
Public Liability Insurance for a minimum of \$10M per claim;	Compliant? Yes ☒ No ☐	Compliant? Yes ☒ No ☐
Workers Compensation	Compliant? Yes ☒ No ☐	Compliant? Yes ☒ No ☐

3.0 Evaluation and Moderation

Each Panel Member reviewed the offers and provided comments against each of the key requirements identified in the RoPA Non-routine Part A to ensure the offers delivers the requirements. **Attachment A** summarises the evaluation panel's summary of offers received.

4.0 Offer Clarification

Was any clarification required from any offeror/s based on their submitted quote / offer?	Yes ☐ No ☒
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5.0 Short-Listing Process and Outcomes

Did the Evaluation Panel determine that short-listing was necessary and/or interviews/presentations were necessary?	Yes ☐ No ☒ N/A ☐
---	--

6.0 Interview / Presentation Process

Did the Evaluation Panel determine that interviews / presentations were necessary?	Yes ☐ No ☒ N/A ☐
--	--

7.0 Negotiations

Were opportunities for improved value / negotiations undertaken between the parties?	Yes ☐ No ☒ Requested items are all "off-the-shelf" items in a competitive market. Pricing was competitive.
--	--

8.0 Recommendation

The evaluation panel recommends the acceptance of the offer(s) received from:	CR Kennedy
The total cost of the recommended offer is:	
This purchase / project has approved funds of:	
Does the final value exceed the endorsed value	Yes ☐ No ☒
Does the recommended offer vary any of the standard whole of government contract terms / conditions?	Yes ☐ No ☒
If yes, has legal advice has been sought:	
Identify any contract terms that have been accepted / varied and identify any potential risks:	Yes ☐ No ☒
The nominated Contract Manager responsible for the finalisation of the Contract Management Plan and ongoing contract management activities is:	Name: Brett Glosko Position Title: Compliance Delivery Manager

Evaluation Panel Chair	
<p>I declare that I have evaluated all offers received in accordance with the approved evaluation strategy as outlined in the RoPA Non-Routine Part A and the Supplementary Guideline – Evaluation.</p> <p>The recommended offer maximises value for money and delivers the department's requirements.</p>	<p>Name: Brett Glosko</p> <p>Position: Compliance Delivery Manager</p> <p>Signature: [Redacted] Date: 12/02/2019</p>
Evaluation Panel Member	
<p>I declare that I have evaluated all offers received in accordance with the approved evaluation strategy as outlined in the RoPA Non-Routine Part A and the Supplementary Guideline – Evaluation.</p> <p>The recommended offer maximises value for money and delivers the department's requirements.</p>	<p>Name: Eugene Immisch</p> <p>Position: Compliance Delivery Manager</p> <p>Signature: [Redacted] Date: 12/02/2019</p>
Evaluation Panel Member	
<p>I declare that I have evaluated all offers received in accordance with the approved evaluation strategy as outlined in the RoPA Non-Routine Part A and the Supplementary Guideline – Evaluation.</p> <p>The recommended offer maximises value for money and delivers the department's requirements.</p>	<p>Name: Samantha Spence</p> <p>Position: Administration Officer</p> <p>Signature: [Redacted] Date: 12/02/2019</p>

PROCUREMENT ENDORSEMENT

Procurement Officer Endorsement:	
<p>I authorise that this evaluation was undertaken in accordance with the RoPA Non-routine Part A and the departmental Procurement Policy, Procedure and Supplementary Guideline – Evaluation.</p> <p>(Refer to the department's Procurement Authorisations)</p>	<p>Name: Julieann Ramsey</p> <p>Position: Senior Procurement Officer</p> <p>Procurement Authorisation: 3</p> <p>Signature: [Redacted] Date: 12/2/2019</p>

ATTACHMENTS TO THIS ROPA PART B:

- Attachment A – Evaluation Assessment
- Procurement Checklist for progressing with Financial Approval

Date : 17/04/2019 10:36:04 AM
From : "TASKER John"
To : "GLOSKO Brett"
Subject : Drone SaaS Providers
Attachment : image001.jpg;

Hi Brett,

It was great meeting you yesterday and getting a feel for where your group and DES more broadly are heading with your drone capability. As requested, we have identified the following companies as potential vendors for drone photogrammetry software-as-a-service:

- Propeller Aerobotics
- DroneDeploy (+ mission planning)
- Pix4D (mission planning; hybrid cloud/desktop)
- PrecisionMapper
- MapsMadeEasy

Given your use case and demonstrated capacity in Australia, Propeller Aerobotics is likely the best option. They are also one of the only companies on the market which specifically highlights waste management solutions.

Kind regards,



Queensland
Government

John Tasker

A/Senior Spatial Information Officer

State Imagery | Land & Spatial Information

Department of Natural Resources, Mines and Energy

P: (07) 3330 4311 | E: john.tasker@dnrme.qld.gov.au

275 George Street, Brisbane City QLD 4000

File Note

File Reference: DES18274c

Date: 30/04/2019

File Name: DES18274c

Subject (Detail): Procurement of Photogrammetry Software

This file note is in addition and in support of the approved procurement process for the UAV/UAS Technology in Compliance Implementation Program, RoPA - Part A (Attached).

The original RoPA Part A sought approval to seek quotes from two specialist providers for the supply of photogrammetry software to support survey work undertaken by remotely piloted aircraft, and more specifically to enable volumetric surveys for waste levy compliance. Since the RoPA Part A was approved, further investigations have occurred and specialist advice has been obtained, including from the Department of Natural Resources, Mines and Energy – State Imagery – Land and Spatial Information Team.

In addition, a dedicated meeting was undertaken on Tuesday 16 April 2019 to discuss the program requirements and procurement of photogrammetry software. The meeting was attended by the Gaynor Simonds (Secretariat of the Drones Working Group), Travis Hawkins (Account Manager, Information and Technology Partners), Mark De Bortoli (Team Leader, Information Strategy, ITP), John Drysdale (Account Manager, Ventures, Science and Technology), John Tasker (Senior Spatial Information Officer, DNRME), Wes Davidson (Senior Spatial Information Officer, DNRME), Julieann Ramsey (Senior Procurement Officer, Procurement Services), and myself (Brett Glosko, nominated Chief Remote Pilot, DES).

The dedicated meeting discussed all aspects of the program requirement, the limitations within DES regards to specialist knowledge of photogrammetry, specialist computer hardware required to support post capture image processing, time limitations of ESR Compliance Officers, etc.

It was agreed that post capture processing by a service provider would be the best fit for the ESR program requirements. A discussion then occurred regarding service provider options, including all other considerations such as location that the data is stored and processed, registration of the information assets, security classification of the information, etc.

At the conclusion of the broader meeting, a smaller specific meeting was convened to discuss the most appropriate service provider to meet all the requirements outlined through the previous meeting, and as previously documented. This meeting included; John Tasker, Julieann Ramsey and myself (Brett Glosko). John Tasker advised that the product offered by Propeller Aerobotics would be the best fit for the ESR requirements. This was subsequently followed up with an e-mail (attached), outlining the options available, however recommending Propeller Aerobotics as the "best option". This advice aligns with advice previously provided by the SA EPA. The SA EPA Chief Remote Pilot has continued to promote the Propeller Aerobotics product as the best fit for an environmental regulator and incident response needs, including the recommendation that this product is also preferred in regards to prosecution cases, whereby Propeller Aerobotics is prepared to take the witness stand to defend the accuracy of the data collected and processed via their product.

As such, the recommendation is to proceed with the purchase of the Propeller Aerobotics (software as a service) product on an annual subscription basis. This allows ESR to test the product, and withdraw from the service if the product does not deliver as required, or if other products become preferred.

Date: 30/04/2019

sch4p4(6) Personal information

Author: Brett Glosko
Position: Compliance Delivery Manager, Remotely Piloted Aircraft Systems
Unit/Office: Department of Environment and Science
Phone: 07 5626 6840

Signed by the other approved procurement panel members:

sch4p4(6) Personal information

Eugene Immisch
Compliance Delivery Manager, Gold Coast
Date: 30/04/2019

sch4p4(6) Personal information

Samantha Spence
Administration Officer, Gold Coast
Date: 30/04/2019

APPROVED

By Julieann Ramsey at 8:06 am, May 01, 2019

Submission to the Digital Investment Sub-Committee (DISC)

Subject *Mandate request – UAV Technology in Compliance*

RECOMMENDATION

It is recommended the Digital Investment Sub-Committee:

- **approve** the Unmanned Aerial Vehicles (UAV) Technology in Compliance concept brief (**Attachment 1**), granting initiative mandate.
- **approve** the creation of DISC's drones working group that includes remit of UAV / Drone topics such as policy, standards, governance and use.
- **Endorse** the requirement for Department of Environment and Science (DES) to apply to the Civil Aviation Safety Authority (CASA) for and hold a Remotely Piloted Aircraft Operators Certificate (ReOC), and have the required Chief Remote Pilot role.
- **approve** the initiative to be classified and run as a business as usual activity.
- **note** high-level estimated project costs of \$150,000 with funding available from existing divisional budget.

BACKGROUND

- Currently procurement of external specialist UAV (commonly known as a Drone) services to capture, process and provide analysis of spatial imagery is available for use through a Standing Offer Arrangement (SOA).
- Environmental Services and Regulation (ESR) have successfully demonstrated the use of UAVs, including collection of spatial imagery to assist in delivery of regulatory and compliance functions via the use of contract services and the successful delivery of a 2015 trial with the support of the Griffith University's Environmental Futures Research Institute.
- UAVs are currently being used by a number of DES business areas including Queensland Parks and Wildlife Service (QPWS), ESR, Conservation and Sustainability Services (CSS) and Science Division for multiple purposes.
- A Director General briefing note (Technical Note – Use of Drones) was approved on 30 October 2018 (**Attachment 2**), approving the DES Technical note, endorsing responsibility to the DISC Chair and endorsing the establishment of a DISC working group for private use of drones on public land policy development.
- The *DES Technical Note: Use of Drones* (**Attachment 3**) provides interim guidance for DES business units to individually address specifications, insurance, legislation, information management and other requirement of use by DES staff.

KEY ISSUES

- UAV technology has evolved rapidly, and provides numerous and growing opportunities and benefits to core departmental activities.
- Access to these services is via formal procurement processes, which can take time, and requires sufficient funding to be available to enable access to these services for the collection of this information.
- Use of UAV solutions also increases access and provides opportunities to collect additional information and evidence via an aerial platform that is currently not readily available to Compliance Officers, especially for time dependant reactive tasks.
- Internal use, compliance, licensing and guidance of UAVs across the department is varied, but all are operating in the under 2kg CASA 'excluded' category.

- ESR have identified a requirement for an in-house UAV capability for regulatory and compliance functions aimed at high volume and low purchase cost uses, while only accessing the complementary specialist contract services for low use and high cost equipment such as Light Detection and Ranging (LiDAR).
- Implementation of an in-house capability will allow a hybrid approach for the use of drones by complementing external services and providing a consistent framework for the under 2kg functions to operate within.
- The ESR UAV requirements exceed the CASA under 2kg excluded category requiring additional compliance including the need to be licensed and/or certified to fly.
- The over 2kg category requires DES to hold a Remotely Piloted Aircraft Operators Certificate (ReOC) to be approved by the Director General, and have a Chief Remote Pilot.
- The ESR initiative will establish safe and lawful flight operations, licenced and certified by CASA, as required for commercial operations, and establish the function and role of Chief Remote Pilot for use by the whole department.
- It is anticipated that the proposed departmental Drones Working Group, along with the Chief Remote Pilot, will assist with review, guidance, policy and procedures for all departmental UAV operations including, however not limited to:
 - Lawful and safe operations (includes licencing and accreditation)
 - Departmental governance arrangements
 - Privacy considerations and implications
 - Lawful access/entry to property
 - Chain of evidence
 - Workplace health and safety
 - Staff training
 - Current departmental management of UAV devices operating within the sub 2kg excluded category
 - Selection and maintenance of appropriate aircraft, equipment, software, etc
- The implementation of this initiative is proposed to be run as a business-as-usual (BAU) activity over a 12 month period to evaluate the ongoing benefit and use of internal UAVs, governance, licensing, certification and training combined with the use of external services.
- The initiative will provide operational learnings into the broader department and Drone working group for potential implementation and use of UAV technology across broader departmental business activities.

ELECTION/CABINET/PUBLIC COMMITMENTS/LEGISLATION

- This brief does not relate to any election/cabinet/public commitments or legislation.

FINANCIAL IMPACTS

- Funding is available from within existing divisional budget.
- The Chief Remote Pilot role will be funded through use of an existing ESR position.

CONSULTATION

- Chief Digital Officer, Corporate Services.
- Procurement Services.
- The ESR Senior Leadership Team (SLT) supports the need to integrate the use of departmentally owned and operated UAV into compliance and investigation activities.
- For the broad internal and external consultation undertaken in consideration of this initiative please see the Consultation section in the Concept Brief (**Attachment 1**).

FUTURE STEPS

- The initiative is to be added to the internal dashboard as an 'activity'.
- The initiative will provide updates at key intervals via ICT DataPoint, use the Drones working group for steering guidance, and provide a final report to summarise and close the initiative.

Endorsed

sch4p4(6) Personal information

Jody Paddison
A/Chief Digital Officer

6 / 12 / 18

Endorsed / Approved on behalf of DISC

Jacqueline Saxby (Chair DISC)
A/Deputy Director-General

/ /

Noted / Approved / Not Approved

Jamie Merrick (or the Senior Director on
behalf of)

Director-General

/ /

Director-General or Senior Director comments

Concept brief

Implementation of UAV Technology in Compliance Environmental Services and Regulation

Security classification: Unclassified

Initiative overview

Implement and evaluate a hybrid approach for access and use of Unmanned Aerial Vehicles (UAV) / Unmanned Aerial Systems (UAS) commonly known as Drones. UAV services will be accessed depending on need and value:

- External specialist services through a Standing Offer Arrangement (SOA)
- Internal in-house capability for regulatory, compliance and other functions requiring use of equipment in various weight categories, in various operating environments. This has a Civil Aviation Safety Authority (CASA) requirement to be licensed and/or certified to fly.
 - Other Department of Environment and Science (DES) divisions such as the Queensland Parks and Wildlife Service (QPWS) currently operate equipment in the CASA sub-2kg 'excluded' category for commercial reasons with certain conditions. These operations will not be impacted by the Environmental Services & Regulation (ESR) proposal, however the ESR proposed program and functions will be available to support other divisions to step up to a licenced category as their needs require.

A hybrid approach is seen as desirable, utilising in-house services for high volume and low purchase cost uses, and buying in specialist contract services for low use and high cost equipment such as Light Detection and Ranging (LiDAR) or the like. ESR will continue to monitor the evolving marketplace, and seek to adopt technologies into the in-house service delivery as these items become cost effective for in-house delivery.

The implementation of this initiative is proposed to be run as a business-as-usual (BAU) activity over a 12 month period to evaluate the ongoing benefit and use of internal UAVs, governance, licensing, certification and training combined with the use of external services.

Currently procurement of external specialist UAV / UAS services to capture, process and provide analysis of spatial imagery is available for use through a Standing Offer Arrangement (SOA) in place for all QLD government agencies.

ESR have successfully demonstrated the use of UAVs, including collection of spatial imagery to assist in delivery of regulatory and compliance functions via the use of contract services and the successful delivery of a 2015 trial with the support of the Griffith University's Environmental Futures Research Institute.

UAVs are currently being used by a number of DES business areas including Queensland Parks and Wildlife Service (QPWS), ESR, Conservation and Sustainability Services (CSS) and Science Division for multiple purposes in the excluded sub 2kg category with limited departmental guidance. The use and publication of the *DES Technical Note: Use of Drones* was approved by the Director General on the 30 October 2018 within DES.

Recently the ESR Senior Leadership Team (SLT) endorsed the development of an operational in-house UAV / UAS service capability of departmentally owned and operated UAV's, including access and use of appropriate software, tools, data analysis and storage.



Queensland

The proposed in-house capability aims to enhance delivery of regulatory and compliance functions, including:

- Implement UAV technologies to capture photographic and video data for regulatory and compliance purposes (including collection of evidence)
- Implement UAV technologies to capture and process spatial imagery as an additional tool and data set for Compliance and Investigations Officers to assist in regulatory functions, including waste levy compliance.
- Enhance staff safety by utilising UAV technologies to access areas and collect information known to include a variety of hazards and risks to staff.
- Enhance the ability to collect information via an aerial platform, and via enhanced technologies that previously were unavailable to staff from the ground or via more traditional data collection tools
- Demonstrate the ongoing value of adopting new technologies to enhance the capability of the department's compliance workforce, for compliance, enforcement and incident response functions.
- Provide operational learnings into the broader department for potential implementation and use of UAV technology across broader departmental business activities.

This initiative supports the vision outlined in the *Queensland Government Drones Strategy*.

Assurance Level

This is not applicable to activities.

Problem/Opportunity

- UAV technology has evolved rapidly, and provides numerous and growing opportunities and benefits to core departmental activities. Access to these services is currently available via the Department of Natural Resources, Mines and Energy (DNRME) administered Pre-Qualified Supplier Arrangement (PqSA) DNRME 17018 for the Acquisition of Spatial Imagery and Associated Products and Deliverables including Manned Aerial Imagery and LiDAR Acquisition, Unmanned Remote Sensing, Data processing and Delivery and Digital Elevation Models.
- Access to these services is via formal procurement processes, which can take time, and requires sufficient funding be available.
- Compliance Officers are located across the state, and as part of their core duties are required to respond to Unplanned Compliance Events (UCE's), incidents and undertake proactive compliance inspections. A combination of these activities are undertaken on a daily basis across the state.
- Officers regularly attend locations with difficult or inaccessible terrain, hostile persons or wildlife, weather events that create hazardous circumstances, such as flooding or fast moving water bodies, or locations that have hazardous materials that pose serious risks to human health and safety. Use of UAV's provides an engineering solution to overcome these hazards and risks.
- The ESR initiative will establish safe and lawful flight operations, licenced and certified by the CASA, as required for commercial operations, and establish the function and role of Chief Remote Pilot (to be referred to as Chief Pilot throughout the document) for use by the department.
- ESR have agreed to support the role of Chief Pilot from within its existing establishment. This role will participate on the proposed departmental Drones Working Group and support broader UAV activities with the department.
- Risks will be appropriately managed by ensuring UAV activities are licenced and certified by CASA, and is resourced to ensure ongoing lawful governance and operation by appropriately qualified personnel.
- The ESR initiative will train one pilot per compliance region, and undertake ongoing review of the operational benefits. Outcomes of the ongoing review will inform future expansion of the capability.
- The ESR SLT has requested that the ESR initiative is operational by the proposed Waste Levy implementation date, now scheduled for 1 July 2019.
- ESR has engaged extensively to date to ensure the learnings from all QLD and inter-state government departments are incorporated into operations.
- The ESR governance arrangements will mirror those currently in place within the Queensland Police Service (QPS). PolAir, the QPS air wing has provided ongoing support to the ESR initiative through advice, guidance, documentation and training.

- It is anticipated that the proposed departmental Drones Working Group, along with the Chief Pilot, will assist with review, guidance, policy and procedures for all departmental UAV operations including, however not limited to:
 - Lawful and safe operations (includes licencing and accreditation)
 - Departmental governance arrangements
 - Privacy considerations and implications
 - Lawful access/entry to property
 - Chain of evidence
 - Workplace health and safety
 - Staff training
 - Current departmental management of UAV devices operating within the sub 2kg excluded category
 - Selection and maintenance of appropriate aircraft, equipment, software, etc
- Use of UAV solutions also increases access and provides opportunities to collect additional information and evidence via an aerial platform that is currently not readily available to Compliance Officers, especially for time dependant reactive tasks.
- UAV's also offer additional data collection opportunities for the collection of spatial imagery and LiDAR. This data can then be analysed in GIS software applications to assist with:
 - Analysing disturbance footprints against approved disturbance areas
 - Calculating stockpile volumes, heights and slopes and changes to these
 - Calculating available capacity within dams or other storage devices
 - Reviewing rehabilitation against approved requirements
- These aspects were specifically reviewed as part of the previous trial that was delivered by ESR in 2015.
- It is anticipated that UAVs will assist the department with improved waste levy compliance, reduced levy avoidance, and increased levy revenue for the state.
- The ESR SLT recently attended a presentation from the South Australian Environmental Protection Agency (SA EPA), where the SA EPA showcased the value of utilising UAVs to enhance compliance capability, including for use in waste levy compliance.
- The SA EPA has advised that as a result of investigations using UAV technology it has recently issued an invoice to an operator to the value of \$1.5 million for waste levy avoidance.

Business drivers -

What is the primary driver for the initiative?	Agency driven
<u>Our Future State: Advancing Queensland's Priorities</u>	<ul style="list-style-type: none"> ▪ Protect the Great Barrier Reef ▪ Be a responsive government <p>Redefine our services through maximising business process redesign, digital technologies, innovation and collaboration</p>
<u>DES Strategic Plan 2018 – 2022</u>	<ul style="list-style-type: none"> ▪ Protection measures through robust policy, standards and insight ▪ Appropriate community and industry behaviours through targeted advice and regulation ▪ High-performing organisation delivering value to the community <p>Deliver an improved regulatory framework that proactively manages and monitors environmental and conservation risks, including financial assurance</p>

<u>DIGITAL1ST</u>	<ul style="list-style-type: none"> ▪ Priority One: People ▪ Priority Four: Trust <p>We will build capability so that together, we can deliver and benefit from a truly digital government.</p>
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Primary benefit	Value of benefit	Timing of benefit
Evidence of enhanced service delivery [efficiency / effectiveness]	<p>b. Evidence exists to demonstrate that this initiative supports enhanced delivery of government services to either internal or external customers.</p> <p>It is anticipated that UAVs will assist the department to ensure improved levy compliance and reduced levy avoidance.</p>	<p>It is estimated benefit will be realised:</p> <ul style="list-style-type: none"> ▪ during the initiative

Investment Category - Is the primary purpose of the initiative to ... (please select one)	<ul style="list-style-type: none"> ▪ Grow-the-business. Investments foster improvements in operations and performance related to the organisation's existing markets and customer segments. Value is measured in terms of operational performance improvements or in financial terms.
Investment Priority (Cranfield Grid) - What priority should the initiative be given? Does it ... (please select one)	<ul style="list-style-type: none"> ▪ Key operational - Initiatives that sustain the existing business operations, helping to avoid any disadvantage arising. It can be argued that in many industries a large number of certain applications and technologies have become so pervasive that they are mandatory for survival. These will often be referred to as a 'ticket to play' or 'cost of entry' for a particular industry or vertical segment.

Services and/or capability to be delivered
<ul style="list-style-type: none"> • Purchase of UAV's and associated equipment <ul style="list-style-type: none"> ○ Considerations include: <ul style="list-style-type: none"> ▪ The additional technology add-ons and software required to undertake regulatory activities and allow analysis of acquired imagery to occur following a flight i.e. to obtain data for volumetric calculations. ▪ Data storage and related considerations, such as, information management, cloud storage, data sovereignty, open data / sharing, privacy, legality, etc. • Training of officers to obtain Remote Pilot Licence (RePL); <ul style="list-style-type: none"> ○ Considerations include: <ul style="list-style-type: none"> ▪ The number of officers to be trained and their locations; ▪ How suitable officers will be identified and recruited i.e. through an EOI process in addition to their current role or will a particular role profile/position need to be created for pilots. • Requires the organisation to hold a Remotely Piloted Aircraft Operators Certificate (ReOC), and have a Chief Pilot; <ul style="list-style-type: none"> ○ Considerations include: <ul style="list-style-type: none"> ▪ Identification of a suitable officer to be nominated and assessed/interviewed by CASA to be the Chief Pilot for the department. ▪ The Chief Pilot would be accountable for all flights that occur under the ReOC,

undertaken by each pilot.

- Any officer who holds a RePL can then apply to be the Chief Pilot or alternatively an officer who already holds a standard commercial/recreational pilot's licence may be considered more suitable due to their background and experience (e.g. EPA SA Chief Pilot is a staff member with an existing pilot's licence).
- Additional development of an internal framework to manage flight approvals and ongoing operational aspects of the in house UAV program including:
 - Development of business processes and support materials for using UAV's and appropriate risk management and triage of flight requests ie. WH&S considerations; relevant forms and templates for flight approvals and risk assessments.

Procurement Strategy

Consultation with DES procurement has commenced in relation to procurement of training, aircraft, software and associated equipment.

Contact with the ITP account manager has also occurred.

Estimated timeframes

Estimated duration:

12 months, with a 6 month review aligning with core capability delivery for waste levy implementation (1st July 2019)

Proposed start date of initiative:

12/12/2018
Or as soon as possible

Proposed finish date of initiative:

13/12/2019
12 month review and end initiative report.

Risk if initiative does not progress

- Services are available via contract services through an SOA style arrangement, however are not timely, therefore are not currently available for time dependant reactive tasks and incidents.
- While contract services are highly desirable, due to the cost of these services, or budget limitations, these services are rarely accessed, and benefits not realised.
- Not having appropriate access to these services would greatly limit the department's ability to appropriately obtain this type of information and evidence that would greatly benefit a variety of compliance investigations, including waste levy compliance. Based on the information provided by other states, this could significantly reduce the ability to increase state revenue.
- Drones are already in use across DES with limited governance, licensing, certification and training. This initiative, working with the proposed Drones Working Group, will attempt to address the gap.

Impacted stakeholders and systems

The following stakeholders will be impacted by outcomes of this initiative:

- Business areas within DES using or intending to use UAVs
- Public, where UAV use is undertaken in public areas
- Service providers of UAV services under the DNRME SOA

The following system/s will be impacted by outcomes of this initiative:

- There is not currently a specific system impacted, however the consideration of the related information management, data collection and GIS / spatial imagery software applications will be required.

Funding	Estimated initiative capital costs (Including GST)	Estimated initiative operating costs (Including GST)	Estimated ongoing costs per year (Including GST)
Proposed Funding Source(s)			
Existing divisional budget		\$150,000	\$20,000 - \$30,000
Total estimated initiative cost			\$150,000
Budget available for this initiative	\$	\$	\$150,000
Additional budget required	\$	\$	\$Nil

Explanation: Implementation and first year of operation requires \$150,000. This includes training for up to six pilots (including Chief Pilot), five x small aircraft, 1 x larger heavy payload aircraft for carrying monitoring equipment, CASA certification, program management software, IT hardware, automated survey ground control points (GCP's), all required associated equipment, safety equipment, staff travel costs for training, etc. The initiative has existing ESR funds to cover this requirement.

Subsequent years of operation is estimated between \$20,000 - \$30,000, which includes annual software licencing fees, and an ability to train a small number of replacement pilots should turn-over occur. This estimate is based on costs required to maintain the first year initiative level of capability. If the capability level is increased, so too will ongoing costs. Maintaining a CASA certified Operations Certificate will require a Chief Pilot role. Advice from other QLD Government departments suggests that the Chief Pilot role becomes full time once the number of pilots exceeds 5 – 7. This will require ESR to fund a position. ESR has committed to this role with an existing funded position.

Business Case development

N/A

Funding: \$ N/A

Duration:

Resources:

Consultation

Summarise the extent of consultation undertaken in preparation of this concept brief:

Internal

- Digital Enterprise Branch
- Information Technology Partners (ITP)
- ITP Procurement
- DES Procurement Services
- QPWS (Protected Area Innovation Engagement and Policy, Parks Services, drone reps from Central & Northern regions and feedback from Southern region).
- Governance and Strategy
- Human Resources and Workplace Health and Safety
- ESR Litigation

- ESR Compliance Support
- ESR Regional Program Managers
- Waste Levy Taskforce
- Odour Abatement Taskforce
- Operation TORA
- GIS Team

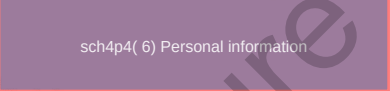
External

- Civil Aviation and Safety Authority (CASA)
- Department of Agriculture and Fisheries (DAF)
- Department of Natural Resources, Mines and Energy (DNRME)
- PolAir, Queensland Police Service (QPS)
- Department of Transport and Main Roads (DTMR)
- Maritime Safety Queensland (MSQ)
- Department of State Development, Infrastructure and Planning (DSDMIP)
- Queensland Government Insurance Fund (QGIF)
- South Australia Environmental Protection Agency (SA EPA)
- New South Wales Environmental Protection Agency (NSW EPA)
- Victoria Environmental Protection Agency (VIC EPA)

The Queensland Government Insurance Fund has advised that departmental pilots will be covered by existing personal liability insurance and departmentally owned UAVs will be covered under the department's existing insurance cover as long as the department and pilots are licenced and certified by CASA.

Proposed project governance

Project Executive / Sponsor	Andrew Connor, Executive Director, Industry Development and Southeast Qld Compliance
Senior Supplier	<i>Optional</i>
Senior User	<i>Optional</i>
Project Manager	Brett Glosko, Compliance Delivery Manager (Operation TORA)

Authorisation	
This concept brief for the UAV Technology in Compliance was endorsed via email by Andrew Connor, Executive Director, Industry Development and Southeast Qld Compliance on the 03/12/2018	Decision: Endorsed Signature: Name: Andrew Connor
This concept brief for the UAV Technology in Compliance was endorsed by Jody Paddison, A/DES Chief Digital Officer on the 06/12/2018	Decision: Endorsed / Endorsed with changes / Not endorsed  Signature: Name: Jody Paddison
This concept brief for the UAV Technology in Compliance was considered by the Digital Investment Sub-Committee on the 12/12/2018	Decision: Approved / Approved with changes / Not approved / Pipeline Chair signature: Name:
Notes:	

Once approved this is your **mandate** to commence starting up an initiative / identifying a program. However, **Project Commencement Approval** is still required. Please contact Digital Enterprise Branch for more information.

Appendix A – Assurance Profile

Not Applicable to Activities

Appendix B – Investment Priority

Investment Priority (Cranfield Grid) - What priority should the initiative be given? Does it ...	
1) Result in a clear benefits for the business?	Yes - High Potential & Strategic
If yes, is it clear what the business benefits are and how they can be obtained?	Yes - Strategic
2) Enable the achievement of specific objectives?	Yes - High Potential & Strategic
If yes, is it clear what the business benefits are and how they can be obtained?	Yes - Strategic
3) Overcome known business disadvantages?	Yes - Key Operational
4) Avoid foreseeable business risks becoming a major problem?	No
5) Improve the productivity of the business and reduce long-term costs?	Yes - Support
6) Enable the organisation to meet statutory requirements?	Yes - Key Operational & Support
Will failure to comply lead to significant business risk?	Yes - Key Operational
7) Provide benefits not yet known, but may result in 1) or 2) above?	No
<i>**Initiative will be High Potential, Strategic, Support or Key Operational. The most 'Yes' responses will determine the investment priority**</i>	Key Operational

Initiative Type

The following are defined in the QGCIO ICT Profiling standard. Note: Activity has been discontinued in the ICT Work Plan and the definition came from the previous 2016 QGCIO Profiling standard:

- **Project** – A temporary process or endeavour which has a start and end time, a structured set of defined products or outputs, a budget and business justification. A methodology is followed including the establishment of a formal governance board.
- **Program** – A temporary structure created to coordinate, direct and oversee the implementation of a set of related projects and activities to deliver outcomes that contribute to achieving an organisation's strategic objectives. A program produces an end-state and is finite (albeit often years in duration).
- **Activity** – May have a set start and end time but does not require a new governance board to be established. An activity will generally have cost and resource requirements. Activities may also form part of a program even though they cannot be justified to be run as projects, e.g. Transition activities. Activities typically include information management (IM), information security (IS) and other business as usual (BAU) work that may be ongoing such as rolling asset replacement.

SECURITY CLASSIFICATION: UNCLASSIFIED
BRIEFING NOTE – DIRECTOR-GENERAL

Subject: Technical Note – Use of Drones

There is no specific timeframe required.

RECOMMENDATION

It is recommended that the Director-General:

- **approve** the circulation and publication of the 'Technical Note: Use of Drones (October 2018)' (DES Technical Note) (**Attachment 1**) within the Department of Environment and Science (DES)
- **endorse** the responsibility for the DES Technical Note being assigned to the Chair of the Digital Investment Sub-Committee (DISC)
- **endorse** the establishment of a DISC working group to develop a DES policy for the private use of drones on public land.

BACKGROUND

- The Queensland Government released the *Queensland Drones Strategy* (**Attachment 2**) in June 2018, with Objective 5 identifying the following key actions:
 - develop an internal Queensland Government drones use policy that provides information to agencies regarding the use of drones
 - develop a set of standards to ensure drone data and imagery captured by Government agencies meets quality, completeness, privacy and licensing standards for inclusion in the State Remotely Sensed Image Library and online tools such as Queensland Globe and QImagery.
- Development of the Queensland Government Drones Use Policy and standards are being led by the Department of Transport and Main Roads (TMR), and is expected to be delivered in quarter four 2018.
- On 5 September 2018, a DES Technical Note submission was presented to DISC and Executive Leadership Team (ELT) on 5 October 2018.

KEY ISSUES

- Drones are currently being used by a number of DES business areas including Queensland Parks and Wildlife Service, Environmental Services and Regulation, Conservation and Sustainability Services, and Science Division.
- Uses across DES include fire ground operations, surveying burnt areas, wildlife tracking, compliance monitoring and gathering footage for publications.
- DES does not have a departmental policy or procedure covering the use of drones by its officers.
- Governance and Strategy, Corporate Services has advised DES adopt interim procedures to ensure it addresses the risks and issues including safety and security, protection of individuals' rights, facilities restrictions, imagery data and information management while awaiting a whole of government direction.
- The DES Technical Note (**Attachment 1**) provides this guidance for DES business units, addressing specifications, insurance, legislation, information management and requirement of use by DES officers.
- The development of the DES Technical Note was based on TMR's Technical Note 156 "Use of Remote Piloted Aerial System (RPAS)" (issued in September 2016).
- DES will align to the whole-of-government Queensland Government Drones Use Policy on its release.

- DISC supported the content of the DES Technical Note however requested it be tabled with ELT for discussion and endorsement of which business area will take ownership of the current DES Technical Note and the forthcoming whole-of-government *Queensland Government Drones Use Policy* with the associated standards.
- ELT approved the DES Technical Note, subject to final input from Science Division and Arts Queensland.
- ELT recommended ownership of the DES Technical Note be assigned to the Chair of DISC and that DISC was to take responsibility for the establishment of the working group.
- Responsibility for the asset and relevant compliance to the DES Technical Note will be owned by the business area who purchases the drone.

ELECTION/CABINET/PUBLIC COMMITMENTS/LEGISLATION

- This brief does not relate to any election/cabinet/public commitments or legislation.

FINANCIAL IMPACTS

- There are no financial impacts.

CONSULTATION

- ELT
- Deputy Director-General, Arts Queensland
- Acting Assistant Director-General, Science Division
- Executive Director, Governance and Strategy
- Principal Governance Officer, Governance and Strategy
- Risk and Business Continuity Manager, Digital Enterprise Branch.

FUTURE STEPS

- N/A

Endorsed**Noted / Approved / Not Approved**

Rob Lawrence
Deputy Director-General
Corporate Services
18 / 10 / 2018


Jamie Merrick (or the Senior Director on behalf of)
Director-General
20 / 10 / 18

<i>Director-General or Senior Director comments</i>

Published on DES Disclosure Log
RTI Act 2009

Technical Note

Use of Drones

October
2018



Prepared by: Digital Enterprise Branch, Department of Environment and Science

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Acknowledgements

This document is based on Technical Note 156 "Use of Remote Piloted Aerial System (RPAS)" issued September 2016 by State of Queensland (Department of Transport and Main Roads).

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Summary

This Technical Note has been prepared to communicate the use of Drones, Remotely Piloted Aircraft System (RPAS) or Unmanned Aerial Vehicle (UAV) in Department of Environment and Science (DES). Drone use is increasing, however, before employing this type of technology in a project or in operations, minimum requirements need to be addressed.

Until a policy and procedure is developed, this interim technical note is to be adhered to. Your division may apply further business rules or procedures in addition to this technical note.

Local business units will adopt a Standard Operating Procedure (SOP) and approvals relevant to their needs.



Background

Drone is the common term for a Remotely Piloted Aircraft System (RPAS) or Unmanned Aerial System (UAS). It is any remotely controlled or autonomous aircraft. These systems commonly contain a camera or video camera, Airborne LiDAR Scanned, inertial management unit (IMU), GNSS, camera stabilisation mount or gimbal. These systems are normally controlled by a ground based pilot, within visual line of sight. They operate under real time or pre-programmed flight path and can be multi-rotor or fixed wing. These systems are highly portable, with the ability to be hand-launched.

Regulatory requirements

The operator must comply with all statutory and regulatory requirements applicable to the use of drones.

This includes, but is not limited to:

CASA

<https://www.casa.gov.au/standard-page/commercial-unmanned-flight-remotely-piloted-aircraft-under-2kg>

<https://www.casa.gov.au/aircraft/standard-page/can-i-fly-there-drone-safety-app>

Department of Transport and Main Roads

Contact your local regional office regarding permits to fly over state-controlled roads.

Information Privacy Act 2009 (Qld)

<https://www.legislation.qld.gov.au/browse/inforce#/act/title/i>

Drones and the Privacy Principles

<https://www.oic.qld.gov.au/guidelines/for-government/guidelines-privacy-principles/applying-the-privacy-principles/drones-and-the-privacy-principles>

[privacy-toolkit-drones-and-privacy-implications](#)

Minimum requirements for WH&S

Fully documented risk assessment by the drone operator. The operator shall abide by DES's Workplace Health & Safety (WH&S) Policies.

A Contractor must supply a Safety Management Plan.

For operators who are DES staff and do not hold a Remote Pilot Licence (RePL), measures of how line of sight will be maintained on specific projects or operations must be documented in accordance with your local business unit's Standard Operating Procedure (SOP) and approvals.

Minimum requirements for contracts

Contract documentation is to ensure that all information collected remains the intellectual property (IP) of DES.

Only RPAS contractors with Civil Aviation Safety Authority (CASA) approvals must be used. The pilot of a RPAS must have a current CASA issued Controllers Certificate and current UAS Operator Certificate (UOC). The link below is regularly updated and must be checked before a contractor is accepted.

<https://www.casa.gov.au/aircraft/standard-page/remotely-piloted-aircraft-rpa-operators-certificate>

Minimum insurance requirements for contractors

Public Liability Insurance with a \$20m limit of liability.

Professional Indemnity Insurance with a \$10m limit of liability on projects over \$50,000, reduced to \$1m for lower value projects.

Minimum requirements of RPAS equipment

Ensure that all deliverables can be converted to standard data formats without loss of functionality or integrity.

Ensure that any imagery captured is georeferenced to Geocentric Datum of Australia 1994 (GDA94).

A minimum 12-megapixel camera to be used. If video recording is to be used, minimum capacity to meet 1080p.

Set up must include gimbal (gyro-stabilised mount for camera).

Automatic return to home feature in the event of signal loss.

Flight and landing areas must be provided to a Project Manager or Manager prior to commencement of project or operation. Note: in emergency situations (eg. bushfires, flooding, cyclone damage assessment, missing persons etc.) local emergency procedures would apply.

No sound recordings are permitted as part of the image and data capture process.

To avoid privacy issues, the images captured must have the ability to pixelate details, for example, faces of people, vehicle registration licence plates, or other personal information where the identity of an individual is apparent. Unless the gathered images are for compliance or law enforcement activities, any personal details must be pixelated prior to data storage.

Information management

Information collected from drone use must be for a lawful purpose related to the function of the department

Relevant recordkeeping policy must be applied to collected information.

Asset

The business area which purchased the drone has overall responsibility for the asset.

Contacts

Advice should be sought from your Divisional Manager.

SECURITY CLASSIFICATION: UNCLASSIFIED

BRIEFING NOTE – EXECUTIVE DIRECTOR – WASTE AND RECOVERY

Subject: Request to purchase additional aircraft capable of flying in wet weather from within existing approved budget allocation - UAV / UAS Technology in Compliance Implementation Program

RECOMMENDATION

It is recommended that the Executive Director:

- **Approve the purchase of an additional aircraft capable of flying in wet weather from within existing approved budget allocation for the UAV / UAS Technology in Compliance Implementation Program.**

BACKGROUND

- The UAV / UAS Technology in Compliance Implementation Program budget of \$150,000.00 was approved 16/11/2018, with direction provided by the ESR Executive that operations are to focus on waste levy compliance once operational.
- The program deliverables have been progressing as per the approved project plan and aligned to proposed timeframes.
- The original program proposal aimed to be as cost effective as possible, therefore only requested / recommended an introductory fleet of aircraft to achieve the minimum requirements outlined by the ESR executive.
- The ESR executive required the ability to conduct waste levy compliance through visual inspections (photos, video and real time visual observations), mapping and survey tasks (including volumetric surveys), surveillance of unlicensed or unlawful operations, and monitoring of various contaminants and other monitoring tasks.
- Unfortunately there is not a one size fits all aircraft on the market that allows ESR to achieve all required tasks using a single aircraft.
- As such, the recommendation was to purchase aircraft capable of undertaking the mapping and survey tasks, capturing visual and photographic information/evidence, and an aircraft capable of carrying surveillance equipment and monitoring equipment.
- None of the recommended aircraft are capable of flying in wet weather. This restricts officer's ability to inspect sites or attend incidents during wet weather events.
- The department regulates numerous activities that have wet weather or water release conditions or criteria.
- Stormwater management is a significant part of waste management sites responsibilities, and wet weather events pose high risks due to potential management practices, or deliberate releases designed to be concealed by wet weather events.
- Having the ability to maintain operational flight capability (aerial inspection) during wet weather events is highly desirable for compliance, and incident response capability.
- Through a competitive procurement process, the program has been able to achieve a number of incremental cost savings currently totalling \$15,830.70.
- It is estimated that by the end of the implementation stage of the program, further cost savings are achievable, with a projected overall saving of up to \$26,629.02. The proposed wet weather capable aircraft is currently quoted at \$8,093.80, and could be purchased from within existing budget savings keeping program costs within the originally approved budget allocation.
- The wet weather aircraft was not considered as part of the original proposal due to its higher cost, and inability to carry monitoring payloads. Whilst it has increased technical / safety capabilities, and has the ability to fly in wet weather, it was not considered cost effective for the broader use across the regions in higher numbers as required. To spec this aircraft for survey tasks, it is significantly more costly than the existing survey aircraft, and as stated, can only carry camera payloads, not additional monitoring

equipment. This aircraft can however carry the existing surveillance camera already purchased for the heavy lift aircraft.

KEY ISSUES

- The additional of a wet weather capable aircraft will increase the ability to undertake waste compliance, surveillance and attend incidents during wet weather events.
- Savings achieved to date mean the purchase can occur within the existing approved budget allocation, thus remaining within overall program budget, and having increased the capability of the program aircraft fleet.

COSTING SUMMARY/FINANCIAL IMPACTS

- The proposed additional aircraft can be purchased from savings achieved to date, and within the already approved program budget.

RISK ASSESSMENT

- The additional requested aircraft is an off-the-shelf item of relatively low cost; however is one of the most up-to-date aircraft available in regards to technology. This means greater longevity of usable life, and reduced risks in operation due to built-in safety technologies.
- This aircraft was already on the list for future acquisition, and has already been written into the DES Operations Manual and Procedures library ready to be approved by CASA.
- QPWS have recently purchased one of these aircraft, and are seeking to roll-in under the DES ReOC once approved by CASA. This requires the Chief Remote Pilot to have comprehensive knowledge of the aircraft and be competent in the flight operation of this aircraft. Having one of these aircraft within the available fleet addresses this compliance requirement, and reduces program/departamental risks.
- The proposed aircraft has a max take-off weight of 6.14kg, allowing all ESR pilots to fly this aircraft under their existing 0 – 7kg pilots licence.

Attachments:

- UAV / UAS Technology in Compliance Implementation Program Budget Allocation approval.

Approved/Not Approved

Name:

Executive Director W&R ESR

/ /

<i>Executive Director comments</i>

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- An Organisational ARN requires the signature of the chief executive or equivalent as per the attached Application Form (**Attachment 2**) and is a prerequisite to apply for a ReOC and Chief Remote Pilot.
- ESR is one of the divisions that has identified a requirement to operate an in-house UAV capability requiring commercial licensing for regulatory and compliance functions.
- Under the guidance of the DWG, the DISC-endorsed ESR initiative has scoped, resourced and funded a proof of concept that will obtain the Organisational ARN, ReOC and establish the Chief Remote Pilot function, on behalf of the department.
- The additional identified need to operate under a licensed operation, outside of ESR, will be able to leverage the proposed establishment of the Chief Remote Pilot function and associated departmental licensing.
- The ESR proof of concept will establish safe and lawful flight operations, with learnings and advice shared and discussed with the DWG to assist with the development of department's drones guidance, policies and management approaches.
- The department's Chief Remote Pilot role will sit within ESR during the 12 month initiative, with evaluation of the role's ongoing function and the organisational unit most suited to assume ongoing responsibility.
- The CASA assessment and approval process takes 70 business days following submission of all required information and evidence.
- The ESR executive has asked that the proof of concept be operational by the start of the waste levy introduction to assist with waste levy compliance.

FINANCIAL IMPACTS

- Funding for the ESR initiative is available from within existing divisional budget, and will be managed from within ESR's Waste and Recovery Unit.

CONSULTATION

Internal consultation:

- DISC
- Digital and Information Services, Science and Technology
- ESR Litigation
- Information and Technology Partners
- Procurement/Finance
- ESR Compliance Support
- Waste Levy Taskforce
- Odour Abatement Taskforce
- GIS Team
- ESR Regional Program Managers
- QPWSP (Protected Area Strategy and Investment, Park Services, drone representatives from Central and Northern Regions and feedback from Southern Region)
- Governance and Strategy, Corporate Services
- Human Resources and Workplace Health and Safety, Corporate Services
- Waste Levy Taskforce, ESR
- Science and Technology Division.

External consultation:

- CASA
- Department of Agriculture and Fisheries
- Department of Natural Resources, Mines and Energy
- PolAir Queensland, Queensland Police Service
- Department of Transport and Main Roads
- Maritime Safety Queensland
- Department of State Development, Manufacturing, Infrastructure and Planning
- Queensland Government Insurance Fund
- South Australia Environmental Protection Agency
- New South Wales Environmental Protection Agency
- Victoria Environmental Protection Agency.

FUTURE STEPS

- Commence the proof of concept initiative.
- Apply for the Organisational ARN, ReOC and Chief Remote Pilot.
- Report to the DWG.

Endorsed**~~Noted~~ / Approved / ~~Not Approved~~**

Dean Ellwood

Deputy Director-General**Environmental Services and Regulation**

12 / 2 / 2019

Jamie Merrick (or Executive Director on behalf of)

Director-General

21 / 2 / 19

Director-General or Executive Director comments



IMPORTANT INFORMATION FOR APPLICANTS

1. Use this form to apply for an Aviation Reference Number (ARN) for an organisation. If you require an individual ARN complete [Form 1162](#).
2. If the organisation has previously held a CASA issued aircraft registration or permission, please contact CLARC on 131 757 to discuss.
3. If you have been issued with an ARN for your organisation previously and do not know the number please contact CLARC on 131 757 to discuss.
4. Fields marked with an (*) are mandatory for this application.

PLEASE READ THE GUIDELINES PRIOR TO COMPLETING THIS FORM AND ENSURE THAT YOU INCLUDE ANY REQUIRED IDENTIFICATION.

Privacy Statement: Any personal information you provide to CASA is protected by the *Privacy Act 1988* (Cth). CASA can only collect, use and disclose that information in accordance with that Act. CASA will use the information collected in this form for purposes associated with performing its functions under the *Civil Aviation Act 1988*, the *Airspace Act 2007*, the *Aviation Transport Security Act 2004* or the regulations made under those Acts. For full details on how CASA collects, protects and uses personal information, please refer to [CASA's Privacy Policy](#).

Section 1: Organisation's Details

Legal Name*	Department of Environment and Science						
☐ ACN; OR ☐ ARBN; OR ☐ Foreign ID Number	<table><tr><td></td><td></td><td></td></tr></table> OR <table><tr><td></td><td></td><td></td></tr></table>						
Organisation Type*	☐ Public/Proprietary Company ☐ Incorporated Association ☐ University/Tertiary Body	☒ Government ABN: 46 640 294 485 ☐ Foreign Company/Body ☐ Foreign Government/Regulator					

Section 2: Address Details

Physical Address*	Level 3, 400 George Street					
					Suburb	Brisbane
	State	Queensland	Postcode	4000	Country	Australia
Postal Address <small>(Individual or Organisation's Postal Address, if different to Physical Address)</small>	GPO Box 2454					
					Suburb	Brisbane
	State	Queensland	Postcode	4001	Country	Australia
Registered Office Address <small>This is only required for Organisations with an ACN/ARBN (As listed with ASIC, cannot be a PO Box address)</small>						
					Suburb	
	State		Postcode		Country	

Section 3: Contact Details

Phone	07 5626 6840	Fax	
Email	brett.glosko@des.qld.gov.au	Mobile	4p4(6) Personal informat

Note: CASA's preferred means of contact will be via email, as such notification of your ARN will be sent through via email if provided.

Section 4: Applicant's Declaration

I hereby declare that the particulars set out in this application are true in every respect and the copy of the attached identification document is a true representation of the original and has not been altered in any way. Note - there are penalties for providing false and misleading information and may result in prosecution, fines and cancellation of civil aviation authorisations.

I am aware and accept the risk that information sent via email may be intercepted and read during transmission, not delivered or modified.

I have read CASA's policy on the collection and release of information and I authorise CASA to release information contained on this form in accordance with that policy.

Print Name: * Jamie Merrick

Signature: *

Date: *

21, 2, 19

Tick the applicable box below for the position held within the organisation *

☐ Director

☐ Company Secretary

☒ CEO

☐ President

☐

Vice President

☐

Other
(attach letter of authority)

Section 5: Liaison details for this Application

Please provide contact details below for the individual CASA can contact if there is an issue with this application. The organisation ARN will also be returned to this individual.

Name: Brett Glosko

Phone: 07 5626 6840

Email: brett.glosko@des.qld.gov.au

Submit to CASA by:

- Email: aircraftregistration@casa.gov.au
- Mail: ACR-CLARC CASA
CASA
GPO Box 2005
CANBERRA ACT 2601

SECURITY CLASSIFICATION: UNCLASSIFIED

BRIEFING NOTE – DIRECTOR-GENERAL

**Subject Letter of Thanks to Officers of the Queensland Police Service's
PolAir Queensland**

There is no specific timeframe required

RECOMMENDATION

It is recommended that the Director-General:

- **sign** the letter to Commissioner Ian Stewart, Commissioner of Police, Queensland Police Service (QPS) thanking two QPS PolAir Queensland officers for their support and advice (**Attachment 1**).

BACKGROUND

- Environmental Services and Regulation (ESR) recently approved the development of an in-house drone capability to support compliance and investigation functions including waste levy compliance.
- The ESR Executive Group recommended that the position identified to lead the development of the drone capability be made available to support the development of a broader Department of Environment and Science (the department) drone capability, both through support to the drones working group and through a Chief Pilot role available for all divisions.
- The operational needs of the ESR capability required the development of a Civil Aviation Safety Authority approved commercial operation.
- Given commercial aviation operations have not traditionally been a normal part of the department's business, significant research, training, learnings and documented evidence to support an application for commercial aviation operations has, and continues to be, required.
- The Chief Pilot and Chief Maintenance Controller from PolAir (QPS' air wing) have provided invaluable support, and continue to offer ongoing support to the department to build our capability, and ensure our operations are safe, lawful and meet the Queensland Government policy of being model drones users.

KEY ISSUES

- In recognition of these officers invaluable support, it is recommended that a letter of thanks be issued as a token of appreciation.

ELECTION/CABINET/PUBLIC COMMITMENTS/LEGISLATION

- This brief does not relate to any election/cabinet/public commitments or legislation.

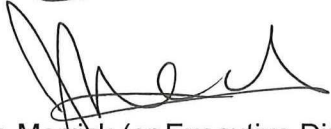
FINANCIAL IMPACTS

- There are no financial impacts.

Endorsed

Dean Ellwood
Deputy Director-General
Environmental Services and Regulation
13 / 2 / 2019

Noted / Approved / Not Approved


Jamie Merrick (or Executive Director on behalf of)
Director-General
21 / 2 / 19

Director-General or Executive Director comments



Department of
Environment and Science

Our Ref: CTS 03094/19

Commissioner Ian Stewart
Commissioner of Police
Queensland Police Service
GPO Box 1440
BRISBANE QLD 4001

Dear Commissioner Stewart *Ian*

I write to extend my sincere thanks to your officers, Acting Sergeant Rob Whittle and Acting Sergeant Mark Gamer of PolAir Queensland, from within your Specialist Services Group.

I am advised that both Acting Sergeant Whittle and Acting Sergeant Gamer have continued to provide invaluable support and advice to my officers to assist the Department of Environment and Science in developing our own Remotely Pilot Aircraft Systems operations.

I would sincerely appreciate it if you could pass on my thanks to these officers on my behalf.

Should your officers require any further information, they may contact Mr Brett Glosko, Compliance Delivery Manager, Environmental Services and Regulation, Department of Environment and Science on telephone (07) 5626 6840 or by email at brett.glosko@des.qld.gov.au.

Yours sincerely


Jamie Merrick
Director-General

22 / 2 / 19

Date : 2/11/2018 3:26:52 PM

From : "CONNOR Andrew"

To : "BOWMAN Michael"

Cc : "LINO Starsky" , "GULLICK Jude" , "FRASER Kyla" , "HERTSLET Bryce" , "GLOSKO Brett" , "BURGESS-DEAN Rachel"

Subject : RE: QER Funding Requests

Attachment : ESR UAV_UAS Program Pilot Requierments.pdf;Executive Director BN_UAV_UAS Compliance Implementation Program_AC endorsed.docx;UAV_UAS Compliance Implementation Project Costings.pdf;UAV_UAS Compliance Implementation Project Proposal.pdf;image001.png;image004.jpg;image003.png;image006.png;

G'day Michael,

As requested, please find attached the first ED SSC brief for ODDG review prior to ED SSC consideration. We have a DG BN also ready to progress through Dean once we have secured the QER funding.

The key time pressure on this is that we need to allow 70 business days to get through the CASA process for pilots and we are aiming to have the capability by commencement of the waste levy.

Cheers,

Andrew



Andrew Connor

Executive Director

Industry, Development & Southeast Queensland Compliance

Environmental Services and Regulation

Department of Environment and Science

P 07 3330 6335

Level 8, 400 George Street, Brisbane QLD 4000

GPO Box 2454, Brisbane QLD 4001



From: BOWMAN Michael

Sent: Tuesday, 30 October 2018 4:28 PM

To: HERTSLET Bryce; GLOSKO Brett

Cc: CONNOR Andrew; LINO Starsky; GULLICK Jude; FRASER Kyla

Subject: QER Funding Requests

Afternoon all,

To support the decision making process concerning QER funding requests may I please ask that an Executive Director briefing note be drafted and forwarded (via the ODDG) to Rachel Burgess-Dean as the QER fund class manager.

There will be two briefs required; one for the drone program and the other for the Connect compliance enhancements. As a minimum, please include details pertinent to the following:

- Project scope
- Cost versus benefit
- A summary of costings and how the dollar figures have been calculated
- Estimated timeframe to implement
- Risk assessment in relation to project deliverables, and probability of costs exceeding estimates
- Where the proposed projects are currently at in terms of research, quotations received from contractors etc

The due date is Friday, November 9 or earlier.

Once the requested information has been received and reviewed, the DDG will need to be consulted before funding decisions can be finalised.

Thanks in advance



Michael Bowman

Principal Finance Officer

Office of the Deputy Director General

Environmental Services & Regulation

Department of Environment & Science

P 07 3330 5950 | E michael.bowman@des.qld.gov.au
Level 7, 400 George Street, Brisbane QLD 4000

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ESR UAV/UAS Program - Pilot Responsibilities/Duties

The following list of responsibilities and duties is designed to help inform potential program participants (pilots) of the responsibilities that officers will need to manage and deliver to enable participation in the program. This list will also assist Managers to help determine the suitability of officers for selection to participate in the program. No additional remuneration for this task is currently proposed, with program tasks to substitute existing workload in equal proportions.

Longer term, use of UAV's/UAS within ESR and DES will likely become normal core business, with these devices considered one of a compliance officers normal tools, similar to a noise or water meter. Further adoption of these devices into mainstream use would likely also include an increased number of trained pilots, reducing reliance on original program participants.

Officer requirements:

Flying operations

- Trained, licensed, and certified by the Civil Aviation Safety Authority
- Obtain aviation radio qualifications
- Complete flight plan specific risk assessments and safety plans
- Observe and interpret meteorological data to ensure safe operating conditions for UAV operations
- Review aeronautical charts to identify airfields, flight paths, and likely aircraft operations and movements prior to flight planning
- Complete site specific flight plans and briefings
- Complete pre-flight checks and required documentation
- Obtain approval of risk assessment and flight plan by the Chief Pilot before any air operations commence
- Operate aviation radio equipment and liaise with air traffic control and/or other manned aircraft to maintain safe flying operations and conditions for all users of the airspace
- Control the UAV in airspace with other manned and unmanned aircraft
- Complete flight and aircraft log-book records
- Conduct aircraft and associated equipment inspection and maintenance regime

Compliance activity support

- Assist compliance centres to identify appropriate opportunities to enhance compliance data capture through use of UAV / UAS, and deliver this service/support
- Support your, and other Compliance Centre's, or other Regions, including travel, which may involve overnight stays away from your normal business centre, and reside in accommodation provided by the department on an as required basis in both regional and remote areas. On occasion, officers may be required to participate in lengthy inspection or investigation campaigns that require up to 7 days continuous compliance field work; this will be with appropriate compensation as per the relevant industrial instrument
- Provide rapid deployment capability to support emergent issues such as incidents, or compliance response to time critical matters. This may require officers to work out-side of normal business hours, at night, and/or include early or late starts and finishes with limited notice

General program requirements

- Participate in all required training and education required by legislation and program requirements
- Maintain all required CASA certification to enable lawful flight operations
- Ensure all CASA and program reporting requirements are completed and submitted as required
- Provide any additional support to the program as approved by departmental management
- Ensure ongoing effective communications with Chief Pilot to enable effective governance and program success, including where adverse incidents or actions may impact on lawful or safe flying operations

SECURITY CLASSIFICATION: UNCLASSIFIED

BRIEFING NOTE – EXECUTIVE DIRECTOR – STRATEGY SUPPORT AND COMPLIANCE

Subject: UAV / UAS Technology in Compliance Implementation Program - budget allocation

RECOMMENDATION

It is recommended that the Executive Director:

- **Approve the proposed UAV / UAS Technology in Compliance Implementation Program budget allocation OF \$150,000.**

BACKGROUND

- This proposed program aims to implement unmanned aerial vehicles (UAV) / unmanned aerial systems (UAS) technology as an additional tool for Compliance and Investigations Officers to assist deliver regulatory and compliance functions, along with ongoing demonstration of the value of adopting new technologies to enhance the capability of the department's compliance workforce, for compliance, enforcement and incident response functions.
- The program seeks to support the vision outlined in the Queensland Government Queensland Drones Strategy: "Our vision is that Queensland is a world leader in drone technology and application.", "Queensland is a place where drones complement and enhance Queenslanders' lives and support our communities."
- The Queensland Drones Strategy lists the department specifically, and states the department will use UAVs (drones) to "Monitor compliance with environmental approvals including large scale rehabilitation."
- The proposed program aims to build on previous work undertaken in 2015 that successfully demonstrated positive outcomes on behalf of the department, however was not pursued then due to high costs of the drones that provided the desired capability and the specialised technical capability required to process the imagery captured.
- Costs have significantly decreased since then, and the technology has advanced to a point whereby high level specialist skills are no longer required for the survey and mapping operations which can now be applied via automated software solutions.
- The ESR Executive recently invited a presentation from the South Australian EPA, whereby the SA EPA showcased the value of utilising UAVs to enhance compliance capability, including for use in waste levy compliance. It is anticipated that UAVs will assist the department to ensure improved levy compliance, reduced levy avoidance, and increase levy revenue for the state. The SA EPA has since advised that it has recently issued an invoice to an operator to the value of \$1.5 million for waste levy avoidance as a result of investigations using UAV technology.
- The ESR program is currently being assisted and supported by PolAir (Queensland Police), DTMR, MSQ, DSDMIP, DAF, and EPA South Australia. The current project manager, and proposed Chief Pilot has also engaged with and now participates in the Queensland Government drones working group.
- All the above listed departments/entities have indicated high level support for integrating UAV technology into operations, and provided numerous and growing examples of enhanced capability and service delivery as a result of integrating this technology.

KEY ISSUES

- The ESR Senior Management Team (SMT) has supported a proposal to integrate the use of departmentally owned and operated UAV / UAS into compliance and investigation activities.
- ESR SMT has requested that if possible, the program be operational for the proposed waste levy implementation date.
- The program will establish lawful flight operations licenced and certified by the Civil Aviation Safety Authority (CASA), as required by federal legislation for commercial operations.
- The program aims to provide learnings into the broader department for potential implementation of UAV technology into other core business activities.
- The program will establish the function and role of Chief Pilot as required by CASA for use by the department.
- As a minimum, the program will train one pilot per compliance region, with the aim to be operational 4 March 2019.
- It is proposed to fund the first year of operation from existing QER funds.
- CASA advise that the assessment and approval process takes 70 business days following submission of all required information and evidence.
- A DG briefing note has been drafted seeking the DG to endorse the program, and sign a CASA Aviation Reference Number (ARN) application for the organisation to enable the application and assessment process to begin.
- Program costings have been obtained, including quotes from potential suppliers.
- Training can be rolled out relatively quickly, i.e. within two weeks of approval if all pilots are available to attend.
- All required equipment are 'off-the-shelf' items that are available almost immediately.
- The biggest delay in operationalising the program is the 70 day CASA assessment and approval timeframe, noting we are heading into the Christmas period where additional delays may occur.

COSTING SUMMARY/FINANCIAL IMPACTS

- The current cost estimate for the implementation stage of this program is attached.

RISK ASSESSMENT

- Whilst this program aims to adopt advanced technical capability using advanced technology, the equipment required for the implementation stage of the program is off-the-shelf, and the implementation of this program is relatively simple.
- Items required by the program individually are relatively low cost, and the likelihood of cost estimates increasing within the program delivery timeframe is very low.
- The Civil Aviation Safety Authority (CASA) is the government body responsible for the licensing and regulation of commercial UAV use within Australia.
- Any employee of DES required to fly a UAV in the workplace is deemed to be flying commercially, and therefore is required to hold a remote pilot licence (RePL) from CASA.
- Whilst CASA introduced an excluded category for UAVs under 2kg, operations within this excluded category is very limited and would only pertain to a very small segment of DES uses (likely QPWS on QPWS estate). It is recommended that risks associated with limited operations within the sub 2kg device category be managed through appropriate training and accreditation provided through this program.
- As a commercial organisation, DES is required to hold a Remotely Piloted Aircraft Operators Certificate (ReOC), and have a Chief Pilot (CASA delegate) to oversee the required RPAS operations manual/s, RPAS operations procedures, flight planning and approvals, manage CASA audit requirements, etc.
- Numerous restrictions apply to UAV use, however holders of appropriate licences and certification are able to apply for exemptions by submitting a safety case, risk assessment and flight authorisation form/s to enable UAV use for almost all DES licenced sites or investigation locations.
- Appropriate training and licensing will ensure DES pilots are appropriately experienced, knowledgeable of the legal requirements and restrictions for operation of remotely piloted aircraft, and perform as professionals.

- The Chief Pilot will ensure maintenance of required records and ensure compliance with CASA, Departmental, and legal requirements, and ensure safe operations through appropriate program governance.
- The Queensland Government Insurance Fund has advised that departmental pilots will be covered by existing personal liability insurance and departmentally owned UAVs will be covered under the department's existing insurance cover as long as the department and pilots are licenced and certified by CASA as required by federal legislation.
- In regards to meeting the SMT desired date to be operational (waste levy implementation date), the biggest delay for operationalising the program is the 70 day CASA assessment and approval timeframe, and noting that we are heading into the Christmas period where additional delays may occur. Timely approval of a budget allocation will enable the best opportunity for successfully meeting the SMT desired implementation date.

Attachments:

- UAV / UAS Technology in Compliance Implementation Program Costing Proposal
- UAV / UAS Technology in Compliance Implementation Program Proposal
- ESR UAV / UAS Program Pilot Requirements

Approved/Not Approved

Name:

Executive Director SSC ESR

/ /

Executive Director comments

Executive Director comments

UAV / UAS Technology in Compliance Implementation Program

Costing Proposal

Item	Details	Cost
CASA Aviation Reference Number and test fee	CASA requirement to hold a unique organisation and individual reference number for identification purposes and mandatory English language test fee 1 x organisation, 6 x pilots	\$1,640
CASA ReOC Assessment and Approval Application Fee	Regulatory body assessment and approval of program	\$2,000
ReOCPL training and certificate accreditation for Chief Pilot plus radio licence	Required pilot training for 0-25kg multi-rotor, including additional training required for Chief Pilot role	\$5,378
ReOCPL training and certificate for pilots plus radio license	Required pilot training for 0-7kg multi-rotor @ \$2,700 each x 5 officers	\$13,500
Aviation radios	Hand held aviation radios required for pilots to communicate with air-traffic control or manned aircraft @ \$350 each x 12 (two per pilot = 1 x operational 1 x spare)	\$4,200
DJI Phantom 4 Pro V2.0 kit	< 2kg multi-rotor UAV kit (includes additional flight batteries, charging hub, prop guards @\$3,500 x 5	\$17,500
DJI Matrice M600 Pro kit	Heavy lift multi-rotor UAV capable of carrying equipment up to 6kg. Kit includes additional flight batteries, Zenmuse X5 RGB camera, gimbal and camera adaptor	\$11,000
iPad Mini	To be used as displays on the UAV controller x 6 (Whilst controllers can be purchased with inbuilt display, these do not allow addition of required software for pre-flight flight programming for survey / mapping work	\$3,600
AVCRM automated compliance software system	RPA Manager system to support program management and CASA audit requirements. This includes qualification manager, inventory system, document control library, CASA regulation library, weather interface system, battery manager system, maintenance controller, etc.	\$4,000
Survey / Mapping software and data management	Pricing currently based on Propeller Aero platform. Annual subscription. Includes up to 55 secure uploads/year, data interpretation, reporting, data hosting, etc	\$16,000
AeroPoints	Set of automated GPS ground control points required for GPS accuracy in survey and mapping tasks @\$8,000 x 6 sets	\$48,000
Travel and TA costs for training	Travel and TA costs for six regional officers - Brisbane based training	\$14,000
Misc equipment and spares	Cables, cases, screen hoods, SD cards, external hard drives, safety equipment, UAV spare parts including rotors, etc	\$8,000
Total		\$148,818

PROJECT TITLE:	UAV / UAS Technology in Compliance Implementation Program
ED CHAMPION:	Andrew Connor
PROJECT DIRECTOR :	Bryce Hertslet
PROJECT MANAGER:	Brett Glosko
Proposal Author:	Brett Glosko

1. Proposal

Project Description	<p>Integrate the use of departmentally owned and operated unmanned aerial vehicles (UAV) / unmanned aerial systems (UAS) into compliance and investigation activities.</p> <p>Establish lawful operations licenced and certified by the Civil Aviation Safety Authority (CASA), as required by federal legislation for commercial operations.</p> <p>Provide learnings into broader department for potential implementation of UAV technology into other and/or broader core business activities.</p> <p>(UAVs can also be referred to as remotely piloted aircraft (RPA) or drones, however all shall be referred to as UAV for the remainder of the document.)</p>
Objectives	<p>This Program aims to implement UAVs as an additional tool for Compliance and Investigations Officers to deliver regulatory and compliance activities, along with ongoing demonstration of the value of adopting new technologies to enhance the capability of the department's compliance workforce, and compliance, enforcement and incident response functions.</p> <p>This program seeks to support the vision outlined by the Queensland Government, the Minister and the Director General.</p> <p>The Queensland Government through the Queensland Drones Strategy, outlines: "Our vision is that Queensland is a world leader in drone technology and application.", "Queensland is a place where drones complement and enhance Queenslanders' lives and support our communities."</p> <p>The Queensland Drones Strategy specifically lists the department, and states that the department will use UAV (drones) to "Monitor compliance with environmental approvals including large scale rehabilitation."</p> <p>The Minister has expressed three key expectations, with two directly related to this program. "Science will be at the heart of our work" and "Strive to be an innovative agency responsive to community's needs and expectations".</p> <p>The Director General outlined a desire to "Strengthen our core capabilities to utilise science, data and insights, and digital technology.</p> <p>ESR Executive (SMT) were recently provided a presentation from the South Australian EPA, whereby they showcased the value of utilising UAVs to enhance compliance capability, including for use in waste levy compliance. SMT were supportive of developing an in-house UAV program as an innovative mechanism to enhance DES compliance capability, improve the ability to obtain critical information and increase staff safety, which includes specific tasks such as waste levy compliance.</p>
Expected Duration	<p>It is proposed that the initial implementation stage of this program aim to have an introductory level of operational capability prior to the implementation of the waste levy.</p> <p>It should however be noted that due to the evolving nature and expanding uses of this technology, the program should continue for at least 12 – 24 months to enable appropriate use and evaluation, whereby extended opportunistic use of UAVs will be utilised during core compliance business, i.e. in response to unplanned compliance events, responding to incidents, and planned proactive inspections as per the Compliance Prioritisation Model. It is expected that the program will be integrated into normal operations once the program reaches suitable maturity and</p>

	governance arrangements are approved and integrated into existing business arrangements.
Regulatory & Corporate Framework	<p>The Civil Aviation Safety Authority (CASA) is the government body responsible for the licensing and regulation of commercial UAV use within Australia. Any employee of DES required to fly a UAV in the workplace is deemed to be flying commercially, and therefore is required to hold a remote pilot licence (RePL) from CASA. CASA introduced a restricted excluded category for UAVs under 2kg, however use in this excluded category is limited and would only pertain to a small segment of DES uses. It is suggested that risks associated with limited operations within the sub 2kg devices is best managed through appropriate training and accreditation provided through this program.</p> <p>As a commercial organisation, DES is required to hold a Remotely Piloted Aircraft Operators Certificate (ReOC), and have a Chief Pilot to oversee the required RPAS operations manual/s and RPAS operations procedures, flight planning and approvals, manage CASA audit requirements, etc.</p> <p>Numerous restrictions apply to UAV use, however holders of appropriate licences and certification are able to apply for exemptions by submitting a safety case, risk assessment and flight authorisation form/s to enable UAV use for almost all DES licenced sites.</p> <p>Training and licensing will ensure DES pilots are knowledgeable of the legal requirements and restrictions for operation of remotely piloted aircraft. The Chief Pilot will ensure maintenance of required records and ensure compliance with CASA, Departmental, and legal requirements, and safe operations.</p> <p>QGIF has provided advice that DES staff will be covered by personal liability insurance and DES UAVs will be covered under the DES insurance cover as long as DES and DES staff are licenced and certified by CASA as required by federal legislation.</p>
Methodology	<p>The initial implementation phase of the program will aim to train one pilot and supply one small (<2kg) rotary wing aircraft per ESR compliance region, plus the option to include an Investigations Team member.</p> <p>CASA requires the organisation to have a Chief Pilot which performs the function of CASA delegate.</p> <p>The small low cost rotary wing aircraft will provide an aerial platform for remote visual inspections (photos and video), and survey and mapping capability at any of the department's licensed sites, locations subject to UCE response or at incidents (some restrictions may apply depending on specific location and/or incident type).</p> <p>It is also proposed to obtain a single larger rotary wing aircraft capable of carrying increased payloads suitable for carrying and using technical equipment. This aircraft will be available for use across the state for specific higher payload tasks such as environmental monitoring. An example would be to support the work of Operation TORA or the Odour Abatement Taskforce.</p> <p>The scope and range of monitoring equipment available for use on UAV continues to grow, therefore the functionality of the UAVs will continue to increase and improve over time. The program will aim to adopt new technologies and monitoring equipment to be implemented and/or carried by the aircraft as it increasingly becomes available.</p>

Assumptions/ Constraints: <ul style="list-style-type: none"> Federal legislation and licensing requirements limits use of UAV for commercial use to trained and approved pilots. Ability of the department to use these devices will be limited to the number of trained and approved pilots available. Selection of suitable officers for pilot training will be crucial to the success of the program. Selection must consider the likelihood that the officer will continue to work within ESR Compliance for an appropriate length of time to ensure return on investment and continuity of the program deliverables. Whilst it will not be possible to know definitively if an officer will continue working in a role delivering this program, best judgement and an interview with potential candidates should occur to increase the likely success of the program. 	
Start Date: As soon as possible to ensure best opportunity to meet the waste levy implementation date (noting the CASA assessment and approval timeframe of 70 business days).	Projected Finish Date: Aim is for the first phase of this program to be operational by the proposed waste levy implementation date, however it is proposed that use of this technology will be enduring and built into normal operations. Initial program evaluation should occur at no less than six monthly intervals, extending out to 12 monthly reviews once the program stabilises and matures.

Resources

Lead Division:	ESR
Project Team:	<ul style="list-style-type: none"> - Brett Glosko (Chief Pilot) - 4 x ESR regional compliance officers (to be determined in consultation with regional management) - 1 x ESR Investigations Team member (optional)
Cost/Budget:	<p>5 x DJI Phantom 4 Pro V2.0 kit (\$3,500 each) = \$17,500</p> <p>1 x DJI Matrice M600 Pro kit = \$11,000 (5.5kg payload for technical equipment)</p> <p>5 x ReOCPL training and certificate for pilot plus radio license 0-7kg multi-rotor (\$2,700 each) = \$13,500</p> <p>1 x ReOCPL training and certificate accreditation for Chief Pilot, 0-25kg multi-rotor = \$5,378</p> <p>CASA ReOC Assessment and Approval Application Fee = \$2,000</p> <p>CASA Aviation Reference Number, 1 x organisation, 6 x pilots = \$1,640</p> <p>AVCRM automated compliance software system (CASA audit purposes) = \$4,000</p> <p>Hand-held aviation radios = \$4,200</p> <p>Survey/Mapping software and data management = \$16,000</p> <p>AeroPoints (set of GPS ground control points) \$8,000 each x 6 = \$48,000</p> <p>Travel and TA for pilot training x 6 pilots (Brisbane) = \$14,000</p> <p>iPads x 6 = \$3,600</p> <p>Misc. equipment (cables, cases, screen hoods, SD cards, external hard drives, spare parts, etc) = \$8,000</p> <p>Total estimated cost: \$148,818</p>

Key Actions /Tasks (Milestones)

Objective	Activity/ task	Timing	Performance measure	Responsibility
1	Identify all legislative, policy, and procedural requirements to develop and implement a lawful and safe UAV/UAS program	Week 0 – 10	Meet all legislative, policy, procedure and guideline requirements, obtain CASA approvals	Project Manager / Chief Pilot (CP)
2	Liaise and work with all relevant work units within DES and government to ensure successful and timely program delivery, i.e. Litigation, Procurement, ITP, other agencies', etc	0 – 6	Meet all legislative, policy, procedure and guideline requirements	CP
3	Identify and source suitable staff from the four ESR Compliance regions to be trained as pilots + investigator (investigator optional)	0 – 4	Pilots approved by CDM, PMC and ED for each of the regions.	CP & PMC's
4	Source procurement support: Hybrid procurement process (Procurement team and ITP)	3 - 12	Obtain approved procurement process	CP
5	Purchase and undertake ReOCPL training for Chief Pilot, regional pilots and investigator (investigator optional)	4 – 8	Staff trained and accredited	CP
6	Write brief and obtain Director General authorisation for CASA application process	3 - 4	DG signs off on program and application paperwork	CP, PD, ED, DDG
7	Initiate organisational application process with CASA	4 – 6	Obtain certification and licencing	CP
8	Purchase aircraft and associated equipment	4 – 6	Aircraft and equipment ordered and delivered	CP & Procurement
9	Develop all policy, procedures, operating manuals, approval processes, risks assessments, forms, log books, etc to ensure a safe and lawful program	5 – 12	Meet all legislative (including CASA) requirements, approvals and accreditation	CP & Pilots
10	Purchase Program Compliance Software	5 - 10	Software installed, and program information updated for use	CP
11	Purchase survey/mapping software	5 - 10	Pilots are trained and familiar with use and data upload process	CP
12	Obtain all relevant CASA approvals and certification (70 business day assessment and approval timeframe)	0 – 14	Obtain all required approvals and accreditation	CP
13	Identify required program governance structure and support arrangements. Work with other government departments to identify what has been implemented elsewhere and replicate as required	5 – 14 weeks	Brief Project Director, ED Champion and SMT regarding identified and recommended program governance requirements	CP & PD
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Objective	Activity/ task	Timing	Performance measure	Responsibility
14	Distribute aircraft to pilots upon completion of training, accreditation and program approval	Following CASA approval of pilots and program	Pilots and compliance centre's acknowledge receipt of asset and asset records updated	CP, Pilots and CDM
15	Provide familiarisation and training for all pilots in the use of all software, and program record keeping requirements	14 - 20	All pilots are able to efficiently use program software packages and keep required records	CP
16	Work with pilots to identify opportunities to utilise aircraft to deliver and enhance inspection and compliance capability	Ongoing	Target of 1 x UAV inspection per month/pilot.	CP, Pilots and CDM's
17	Chief Pilot to review flight planning and risk assessment documents and provide feedback and direction as required	Ongoing	Flight plans and risk assessments approved by Chief Pilot	CP
18	Continue to monitor UAV / UAS industry developments and identify opportunity to enhance program capabilities. Includes, aircraft, monitoring equipment, software, etc. May include attendance at UAV/UAS specific workshops, events, etc.	Ongoing	Document equipment suitable for testing with UAV Liaise with other agencies or organisations to maintain contemporary knowledge of available equipment	CP & Pilots
19	Continue to liaise with pilots and ensure documentation of outcomes and benefits of UAV program and CASA requirements for CASA audit purposes.	Ongoing	Ongoing record of use and outcomes and compliance software system	CP & Pilots
20	Ongoing record keeping and documentation as required by legislation and program requirements	Ongoing	Provide phase one report completed to the satisfaction of management, including recommendations about further and future use of UAV within ESR and DES.	CP & Pilots

Approval
Program Manager

Date	Recommended ☒	Not Recommended ☐	Not Recommended ☐
2/11/2018	Approved via email sighted by ED.	Refine and resubmit Return to submitting officer with any necessary comments for consideration Click here to enter text.	No further action. Return to submitting officer with any necessary comments for consideration Click here to enter text.

Executive Director IDSQC

Date	Approved X	Not Approved ☐	Not Approved ☐
2/11/2018	Click here to enter text. <div style="border: 1px solid red; background-color: #cccccc; padding: 2px; margin-top: 5px;">sch4p4(6) Personal information</div>	Refine and resubmit Return to Manager with any necessary comments for consideration. Click here to enter text.	No further action Return to Manager with any necessary comments for consideration. Click here to enter text.

**Environmental Services and Regulation
Senior Management Team Meeting
IDSQC SMT Paper**

SMT Member: Andrew Connor

SMT Paper Author: Brett Glosko

Subject Title: Mandatory training required to establish UAV program

Date: 18 October 2018

Purpose

Seek SMT endorsement of preferred initial approach to immediately undertake mandatory training required to establish UAV program.

Action required: SMT to endorse preferred initial approach to upfront training:

- Immediate upfront training for Chief Pilot only; or
- Immediate upfront training for Chief Pilot & 4 x regional Compliance Officers/Pilots

Background:

SMT recently agreed to progress the implementation of a UAV program, with the aim of being operational by the implementation date for the QLD waste levy currently proposed for 4 March 2019.

ESR UAV ED Champion Andrew Connor recently met with the DG and DDG to obtain support to progress the program.

Current Civil Aviation Safety Authority (CASA) requirements require the department to have all UAV operators trained and certified, along with a Chief Pilot for the organisation. Chief Pilot training and certification requires equivalent pilot training, followed by an additional training and certification component to certify the Chief Pilot for their role.

Advice received suggests that the CASA certification and approval process for an organisation can take up to three months to complete, therefore it is recommended to have the Chief Pilot trained as soon as possible to ensure adequate knowledge of the CASA requirements to ensure an informed and efficient program implementation process.

Current Issues:

Given the suggestion that CASA approvals may take up to three months to complete, it is recommended that the training be undertaken for the Chief Pilot as soon as possible.

It should be noted that the Chief Pilot will need to undertake the same initial pilot training as the four regional officers/pilots, prior to continuing on with the additional level of training for Chief Pilot certification by CASA.

Option one is to send the proposed Chief Pilot for training immediately, followed by the four regional staff at a later date, however prior to the program becoming operational.

Option two is to send all five staff undertaking the initial training together to ensure all required participants receive their training upfront. The benefit of doing this is to allow the Chief Pilot and four regional pilots to meet, network and develop a professional relationship during the week long training program, which should enhance the professional relationship between participants for improved program success. This may also provide opportunity for the regional pilots to provide some level of support to the Chief Pilot in the development of program deliverables.

Summary:

All five staff will require accredited pilot training prior to the program becoming operational. The UAV program manager (proposed Chief Pilot) will facilitate the arrangements for training for all initial participants, including a selection process in consultation with the relevant ED, PMC and CDM.

Endorsement of option two (all five officers trained up front) will only occur if the selection process for the four regional pilots does not hold up the process, and risk program delay compromising operational status by the waste levy implementation start date.

If endorsement of option two occurs, however selection delays also occur compromising operational status by the desired date, the proposed Chief Pilot will progress training for the Chief Pilot and already approved regional participants to ensure program success.

Consultation:

- ESR UAV ED Champion Andrew Connor (ED IDSQC)
- Kath Sherman (Director SCII)

SECURITY CLASSIFICATION: UNCLASSIFIED

BRIEFING NOTE – EXECUTIVE DIRECTOR – STRATEGY SUPPORT AND COMPLIANCE

Subject: UAV / UAS Technology in Compliance Implementation Program - budget allocation

RECOMMENDATION

It is recommended that the Executive Director:

- **Approve the proposed UAV / UAS Technology in Compliance Implementation Program budget allocation OF \$150,000.**

BACKGROUND

- This proposed program aims to implement unmanned aerial vehicles (UAV) / unmanned aerial systems (UAS) technology as an additional tool for Compliance and Investigations Officers to assist deliver regulatory and compliance functions, along with ongoing demonstration of the value of adopting new technologies to enhance the capability of the department's compliance workforce, for compliance, enforcement and incident response functions.
- The program seeks to support the vision outlined in the Queensland Government Queensland Drones Strategy: "Our vision is that Queensland is a world leader in drone technology and application.", "Queensland is a place where drones complement and enhance Queenslanders' lives and support our communities."
- The Queensland Drones Strategy lists the department specifically, and states the department will use UAVs (drones) to "Monitor compliance with environmental approvals including large scale rehabilitation."
- The proposed program aims to build on previous work undertaken in 2015 that successfully demonstrated positive outcomes on behalf of the department, however was not pursued then due to high costs of the drones that provided the desired capability and the specialised technical capability required to process the imagery captured.
- Costs have significantly decreased since then, and the technology has advanced to a point whereby high level specialist skills are no longer required for the survey and mapping operations which can now be applied via automated software solutions.
- The ESR Executive recently invited a presentation from the South Australian EPA, whereby the SA EPA showcased the value of utilising UAVs to enhance compliance capability, including for use in waste levy compliance. It is anticipated that UAVs will assist the department to ensure improved levy compliance, reduced levy avoidance, and increase levy revenue for the state. The SA EPA has since advised that it has recently issued an invoice to an operator to the value of \$1.5 million for waste levy avoidance as a result of investigations using UAV technology.
- The ESR program is currently being assisted and supported by PolAir (Queensland Police), DTMR, MSQ, DSDMIP, DAF, and EPA South Australia. The current project manager, and proposed Chief Pilot has also engaged with and now participates in the Queensland Government drones working group.
- All the above listed departments/entities have indicated high level support for integrating UAV technology into operations, and provided numerous and growing examples of enhanced capability and service delivery as a result of integrating this technology.

KEY ISSUES

- The ESR Senior Management Team (SMT) has supported a proposal to integrate the use of departmentally owned and operated UAV / UAS into compliance and investigation activities.
- ESR SMT has requested that if possible, the program be operational for the proposed waste levy implementation date.
- The program will establish lawful flight operations licenced and certified by the Civil Aviation Safety Authority (CASA), as required by federal legislation for commercial operations.
- The program aims to provide learnings into the broader department for potential implementation of UAV technology into other core business activities.
- The program will establish the function and role of Chief Pilot as required by CASA for use by the department.
- As a minimum, the program will train one pilot per compliance region, with the aim to be operational 4 March 2019.
- It is proposed to fund the first year of operation from existing QER funds.
- CASA advise that the assessment and approval process takes 70 business days following submission of all required information and evidence.
- A DG briefing note has been drafted seeking the DG to endorse the program, and sign a CASA Aviation Reference Number (ARN) application for the organisation to enable the application and assessment process to begin.
- Program costings have been obtained, including quotes from potential suppliers.
- Training can be rolled out relatively quickly, i.e. within two weeks of approval if all pilots are available to attend.
- All required equipment are 'off-the-shelf' items that are available almost immediately.
- The biggest delay in operationalising the program is the 70 day CASA assessment and approval timeframe, noting we are heading into the Christmas period where additional delays may occur.

COSTING SUMMARY/FINANCIAL IMPACTS

- The current cost estimate for the implementation stage of this program is attached.

RISK ASSESSMENT

- Whilst this program aims to adopt advanced technical capability using advanced technology, the equipment required for the implementation stage of the program is off-the-shelf, and the implementation of this program is relatively simple.
- Items required by the program individually are relatively low cost, and the likelihood of cost estimates increasing within the program delivery timeframe is very low.
- The Civil Aviation Safety Authority (CASA) is the government body responsible for the licensing and regulation of commercial UAV use within Australia.
- Any employee of DES required to fly a UAV in the workplace is deemed to be flying commercially, and therefore is required to hold a remote pilot licence (RePL) from CASA.
- Whilst CASA introduced an excluded category for UAVs under 2kg, operations within this excluded category is very limited and would only pertain to a very small segment of DES uses (likely QPWS on QPWS estate). It is recommended that risks associated with limited operations within the sub 2kg device category be managed through appropriate training and accreditation provided through this program.
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- Appropriate training and licensing will ensure DES pilots are appropriately experienced, knowledgeable of the legal requirements and restrictions for operation of remotely piloted aircraft, and perform as professionals.

- The Chief Pilot will ensure maintenance of required records and ensure compliance with CASA, Departmental, and legal requirements, and ensure safe operations through appropriate program governance.
- The Queensland Government Insurance Fund has advised that departmental pilots will be covered by existing personal liability insurance and departmentally owned UAVs will be covered under the department's existing insurance cover as long as the department and pilots are licenced and certified by CASA as required by federal legislation.
- In regards to meeting the SMT desired date to be operational (waste levy implementation date), the biggest delay for operationalising the program is the 70 day CASA assessment and approval timeframe, and noting that we are heading into the Christmas period where additional delays may occur. Timely approval of a budget allocation will enable the best opportunity for successfully meeting the SMT desired implementation date.

Attachments:

- UAV / UAS Technology in Compliance Implementation Program Costing Proposal
- UAV / UAS Technology in Compliance Implementation Program Proposal
- ESR UAV / UAS Program Pilot Requirements

Approved/Not Approved

sch4p4(6) Personal information

Name: *Rachel Burgess-Dean*
Executive Director SSC-ESR*16/11/2018***Executive Director comments**

PROJECT TITLE:	UAV / UAS Technology in Compliance Implementation Program
ED CHAMPION:	Andrew Connor
PROJECT DIRECTOR :	Bryce Hertslet
PROJECT MANAGER:	Brett Glosko
Proposal Author:	Brett Glosko

1. Proposal

Project Description	<p>Integrate the use of departmentally owned and operated unmanned aerial vehicles (UAV) / unmanned aerial systems (UAS) into compliance and investigation activities.</p> <p>Establish lawful operations licenced and certified by the Civil Aviation Safety Authority (CASA), as required by federal legislation for commercial operations.</p> <p>Provide learnings into broader department for potential implementation of UAV technology into other and/or broader core business activities.</p> <p>(UAVs can also be referred to as remotely piloted aircraft (RPA) or drones, however all shall be referred to as UAV for the remainder of the document.)</p>
Objectives	<p>This Program aims to implement UAVs as an additional tool for Compliance and Investigations Officers to deliver regulatory and compliance activities, along with ongoing demonstration of the value of adopting new technologies to enhance the capability of the department's compliance workforce, and compliance, enforcement and incident response functions.</p> <p>This program seeks to support the vision outlined by the Queensland Government, the Minister and the Director General.</p> <p>The Queensland Government through the Queensland Drones Strategy, outlines: "Our vision is that Queensland is a world leader in drone technology and application.", "Queensland is a place where drones complement and enhance Queenslanders' lives and support our communities."</p> <p>The Queensland Drones Strategy specifically lists the department, and states that the department will use UAV (drones) to "Monitor compliance with environmental approvals including large scale rehabilitation."</p> <p>The Minister has expressed three key expectations, with two directly related to this program. "Science will be at the heart of our work" and "Strive to be an innovative agency responsive to community's needs and expectations".</p> <p>The Director General outlined a desire to "Strengthen our core capabilities to utilise science, data and insights, and digital technology.</p> <p>ESR Executive (SMT) were recently provided a presentation from the South Australian EPA, whereby they showcased the value of utilising UAVs to enhance compliance capability, including for use in waste levy compliance. SMT were supportive of developing an in-house UAV program as an innovative mechanism to enhance DES compliance capability, improve the ability to obtain critical information and increase staff safety, which includes specific tasks such as waste levy compliance.</p>
Expected Duration	<p>It is proposed that the initial implementation stage of this program aim to have an introductory level of operational capability prior to the implementation of the waste levy.</p> <p>It should however be noted that due to the evolving nature and expanding uses of this technology, the program should continue for at least 12 – 24 months to enable appropriate use and evaluation, whereby extended opportunistic use of UAVs will be utilised during core compliance business, i.e. in response to unplanned compliance events, responding to incidents, and planned proactive inspections as per the Compliance Prioritisation Model. It is expected that the program will be integrated into normal operations once the program reaches suitable maturity.</p>

	governance arrangements are approved and integrated into existing business arrangements.
Regulatory & Corporate Framework	<p>The Civil Aviation Safety Authority (CASA) is the government body responsible for the licensing and regulation of commercial UAV use within Australia. Any employee of DES required to fly a UAV in the workplace is deemed to be flying commercially, and therefore is required to hold a remote pilot licence (RePL) from CASA. CASA introduced a restricted excluded category for UAVs under 2kg, however use in this excluded category is limited and would only pertain to a small segment of DES uses. It is suggested that risks associated with limited operations within the sub 2kg devices is best managed through appropriate training and accreditation provided through this program.</p> <p>As a commercial organisation, DES is required to hold a Remotely Piloted Aircraft Operators Certificate (ReOC), and have a Chief Pilot to oversee the required RPAS operations manual/s and RPAS operations procedures, flight planning and approvals, manage CASA audit requirements, etc.</p> <p>Numerous restrictions apply to UAV use, however holders of appropriate licences and certification are able to apply for exemptions by submitting a safety case, risk assessment and flight authorisation form/s to enable UAV use for almost all DES licenced sites.</p> <p>Training and licensing will ensure DES pilots are knowledgeable of the legal requirements and restrictions for operation of remotely piloted aircraft. The Chief Pilot will ensure maintenance of required records and ensure compliance with CASA, Departmental, and legal requirements, and safe operations.</p> <p>QGIF has provided advice that DES staff will be covered by personal liability insurance and DES UAVs will be covered under the DES insurance cover as long as DES and DES staff are licenced and certified by CASA as required by federal legislation.</p>
Methodology	<p>The initial implementation phase of the program will aim to train one pilot and supply one small (<2kg) rotary wing aircraft per ESR compliance region, plus the option to include an Investigations Team member.</p> <p>CASA requires the organisation to have a Chief Pilot which performs the function of CASA delegate.</p> <p>The small low cost rotary wing aircraft will provide an aerial platform for remote visual inspections (photos and video), and survey and mapping capability at any of the department's licensed sites, locations subject to UCE response or at incidents (some restrictions may apply depending on specific location and/or incident type).</p> <p>It is also proposed to obtain a single larger rotary wing aircraft capable of carrying increased payloads suitable for carrying and using technical equipment. This aircraft will be available for use across the state for specific higher payload tasks such as environmental monitoring. An example would be to support the work of Operation TORA or the Odour Abatement Taskforce.</p> <p>The scope and range of monitoring equipment available for use on UAV continues to grow, therefore the functionality of the UAVs will continue to increase and improve over time. The program will aim to adopt new technologies and monitoring equipment to be implemented and/or carried by the aircraft as it increasingly becomes available.</p>

Assumptions/ Constraints:

- Federal legislation and licensing requirements limits use of UAV for commercial use to trained and approved pilots. Ability of the department to use these devices will be limited to the number of trained and approved pilots available.
- Selection of suitable officers for pilot training will be crucial to the success of the program. Selection must consider the likelihood that the officer will continue to work within ESR Compliance for an appropriate length of time to ensure return on investment and continuity of the program deliverables. Whilst it will not be possible to know definitively if an officer will continue working in a role delivering this program, best judgement and an interview with potential candidates should occur to increase the likely success of the program.

Start Date:

As soon as possible to ensure best opportunity to meet the waste levy implementation date (noting the CASA assessment and approval timeframe of 70 business days).

Projected Finish Date:

Aim is for the first phase of this program to be operational by the proposed waste levy implementation date, however it is proposed that use of this technology will be enduring and built into normal operations. Initial program evaluation should occur at no less than six monthly intervals, extending out to 12 monthly reviews once the program stabilises and matures.

Resources

Lead Division:	ESR
Project Team:	<ul style="list-style-type: none"> - Brett Glosko (Chief Pilot) - 4 x ESR regional compliance officers (to be determined in consultation with regional management) - 1 x ESR Investigations Team member (optional)
Cost/Budget:	<p>5 x DJI Phantom 4 Pro V2.0 kit (\$3,500 each) = \$17,500</p> <p>1 x DJI Matrice M600 Pro kit = \$11,000 (5.5kg payload for technical equipment)</p> <p>5 x ReOCPL training and certificate for pilot plus radio license 0-7kg multi-rotor (\$2,700 each) = \$13,500</p> <p>1 x ReOCPL training and certificate accreditation for Chief Pilot, 0-25kg multi-rotor = \$5,378</p> <p>CASA ReOC Assessment and Approval Application Fee = \$2,000</p> <p>CASA Aviation Reference Number, 1 x organisation, 6 x pilots = \$1,640</p> <p>AVCRM automated compliance software system (CASA audit purposes) = \$4,000</p> <p>Hand-held aviation radios = \$4,200</p> <p>Survey/Mapping software and data management = \$16,000</p> <p>AeroPoints (set of GPS ground control points) \$8,000 each x 6 = \$48,000</p> <p>Travel and TA for pilot training x 6 pilots (Brisbane) = \$14,000</p> <p>iPads x 6 = \$3,600</p> <p>Misc. equipment (cables, cases, screen hoods, SD cards, external hard drives, spare parts, etc) = \$8,000</p> <p>Total estimated cost: \$148,818 D</p>

Key Actions /Tasks (Milestones)

Objective	Activity/ task	Timing	Performance measure	Responsibility
1	Identify all legislative, policy, and procedural requirements to develop and implement a lawful and safe UAV/UAS program	Week 0 – 10	Meet all legislative, policy, procedure and guideline requirements, obtain CASA approvals	Project Manager / Chief Pilot (CP)
2	Liaise and work with all relevant work units within DES and government to ensure successful and timely program delivery, i.e. Litigation, Procurement, ITP, other agencies', etc	0 – 6	Meet all legislative, policy, procedure and guideline requirements	CP
3	Identify and source suitable staff from the four ESR Compliance regions to be trained as pilots + investigator (investigator optional)	0 – 4	Pilots approved by CDM, PMC and ED for each of the regions.	CP & PMC's
4	Source procurement support: Hybrid procurement process (Procurement team and ITP)	3 - 12	Obtain approved procurement process	CP
5	Purchase and undertake ReOCPL training for Chief Pilot, regional pilots and investigator (investigator optional)	4 – 8	Staff trained and accredited	CP
6	Write brief and obtain Director General authorisation for CASA application process	3 - 4	DG signs off on program and application paperwork	CP, PD, ED, DDG
7	Initiate organisational application process with CASA	4 – 6	Obtain certification and licencing	CP
8	Purchase aircraft and associated equipment	4 – 6	Aircraft and equipment ordered and delivered	CP & Procurement
9	Develop all policy, procedures, operating manuals, approval processes, risks assessments, forms, log books, etc to ensure a safe and lawful program	5 – 12	Meet all legislative (including CASA) requirements, approvals and accreditation	CP & Pilots
10	Purchase Program Compliance Software	5 - 10	Software installed, and program information updated for use	CP
11	Purchase survey/mapping software	5 - 10	Pilots are trained and familiar with use and data upload process	CP
12	Obtain all relevant CASA approvals and certification (70 business day assessment and approval timeframe)	0 – 14	Obtain all required approvals and accreditation	CP
13	Identify required program governance structure and support arrangements. Work with other government departments to identify what has been implemented elsewhere and replicate as required	5 – 14 weeks	Brief Project Director, ED Champion and SMT regarding identified and recommended program governance requirements	CP & PD

Objective	Activity/ task	Timing	Performance measure	Responsibility
14	Distribute aircraft to pilots upon completion of training, accreditation and program approval	Following CASA approval of pilots and program	Pilots and compliance centre's acknowledge receipt of asset and asset records updated	CP, Pilots and CDM
15	Provide familiarisation and training for all pilots in the use of all software, and program record keeping requirements	14 - 20	All pilots are able to efficiently use program software packages and keep required records	CP
16	Work with pilots to identify opportunities to utilise aircraft to deliver and enhance inspection and compliance capability	Ongoing	Target of 1 x UAV inspection per month/pilot.	CP, Pilots and CDM's
17	Chief Pilot to review flight planning and risk assessment documents and provide feedback and direction as required	Ongoing	Flight plans and risk assessments approved by Chief Pilot	CP
18	Continue to monitor UAV / UAS industry developments and identify opportunity to enhance program capabilities. Includes, aircraft, monitoring equipment, software, etc. May include attendance at UAV/UAS specific workshops, events, etc.	Ongoing	Document equipment suitable for testing with UAV Liaise with other agencies or organisations to maintain contemporary knowledge of available equipment	CP & Pilots
19	Continue to liaise with pilots and ensure documentation of outcomes and benefits of UAV program and CASA requirements for CASA audit purposes.	Ongoing	Ongoing record of use and outcomes and compliance software system	CP & Pilots
20	Ongoing record keeping and documentation as required by legislation and program requirements	Ongoing	Provide phase one report completed to the satisfaction of management, including recommendations about further and future use of UAV within ESR and DES.	CP & Pilots

Approval
Program Manager

Date	Recommended ☒	Not Recommended ☐	Not Recommended ☐
2/11/2018	Approved via email sighted by ED.	Refine and resubmit Return to submitting officer with any necessary comments for consideration Click here to enter text.	No further action. Return to submitting officer with any necessary comments for consideration Click here to enter text.

Executive Director IDSQC

Date	Approved ☒	Not Approved ☐	Not Approved ☐
2/11/2018	Click here to enter text. <div style="background-color: #cccccc; padding: 5px; border: 1px solid #000;"> sch4p4(6) Personal information </div>	Refine and resubmit Return to Manager with any necessary comments for consideration. Click here to enter text.	No further action Return to Manager with any necessary comments for consideration. Click here to enter text.

UAV / UAS Technology in Compliance Implementation Program

Costing Proposal

Item	Details	Cost
CASA Aviation Reference Number and test fee	CASA requirement to hold a unique organisation and individual reference number for identification purposes and mandatory English language test fee 1 x organisation, 6 x pilots	\$1,640
CASA ReOC Assessment and Approval Application Fee	Regulatory body assessment and approval of program	\$2,000
ReOCPL training and certificate accreditation for Chief Pilot plus radio licence	Required pilot training for 0-25kg multi-rotor, including additional training required for Chief Pilot role	\$5,378
ReOCPL training and certificate for pilots plus radio license	Required pilot training for 0-7kg multi-rotor @ \$2,700 each x 5 officers	\$13,500
Aviation radios	Hand held aviation radios required for pilots to communicate with air-traffic control or manned aircraft @ \$350 each x 12 (two per pilot = 1 x operational 1 x spare)	\$4,200
DJI Phantom 4 Pro V2.0 kit	< 2kg multi-rotor UAV kit (includes additional flight batteries, charging hub, prop guards @ \$3,500 x 5	\$17,500
DJI Matrice M600 Pro kit	Heavy lift multi-rotor UAV capable of carrying equipment up to 6kg. Kit includes additional flight batteries, Zenmuse X5 RGB camera, gimbal and camera adaptor	\$11,000
iPad Mini	To be used as displays on the UAV controller x 6 (Whilst controllers can be purchased with inbuilt display, these do not allow addition of required software for pre-flight flight programming for survey / mapping work	\$3,600
AVCRM automated compliance software system	RPA Manager system to support program management and CASA audit requirements. This includes qualification manager, inventory system, document control library, CASA regulation library, weather interface system, battery manager system, maintenance controller, etc.	\$4,000
Survey / Mapping software and data management	Pricing currently based on Propeller Aero platform. Annual subscription. Includes up to 55 secure uploads/year, data interpretation, reporting, data hosting, etc	\$16,000
AeroPoints	Set of automated GPS ground control points required for GPS accuracy in survey and mapping tasks @\$8,000 x 6 sets	\$48,000
Travel and TA costs for training	Travel and TA costs for six regional officers - Brisbane based training	\$14,000
Misc equipment and spares	Cables, cases, screen hoods, SD cards, external hard drives, safety equipment, UAV spare parts including rotors, etc	\$8,000
Total		\$148,818

ESR UAV/UAS Program - Pilot Responsibilities/Duties

The following list of responsibilities and duties is designed to help inform potential program participants (pilots) of the responsibilities that officers will need to manage and deliver to enable participation in the program. This list will also assist Managers to help determine the suitability of officers for selection to participate in the program. No additional remuneration for this task is currently proposed, with program tasks to substitute existing workload in equal proportions.

Longer term, use of UAV's/UAS within ESR and DES will likely become normal core business, with these devices considered one of a compliance officers normal tools, similar to a noise or water meter. Further adoption of these devices into mainstream use would likely also include an increased number of trained pilots, reducing reliance on original program participants.

Officer requirements:

Flying operations

- Trained, licensed, and certified by the Civil Aviation Safety Authority
- Obtain aviation radio qualifications
- Complete flight plan specific risk assessments and safety plans
- Observe and interpret meteorological data to ensure safe operating conditions for UAV operations
- Review aeronautical charts to identify airfields, flight paths, and likely aircraft operations and movements prior to flight planning
- Complete site specific flight plans and briefings
- Complete pre-flight checks and required documentation
- Obtain approval of risk assessment and flight plan by the Chief Pilot before any air operations commence
- Operate aviation radio equipment and liaise with air traffic control and/or other manned aircraft to maintain safe flying operations and conditions for all users of the airspace
- Control the UAV in airspace with other manned and unmanned aircraft
- Complete flight and aircraft log-book records
- Conduct aircraft and associated equipment inspection and maintenance regime

Compliance activity support

- Assist compliance centres to identify appropriate opportunities to enhance compliance data capture through use of UAV / UAS, and deliver this service/support
- Support your, and other Compliance Centre's, or other Regions, including travel, which may involve overnight stays away from your normal business centre, and reside in accommodation provided by the department on an as required basis in both regional and remote areas. On occasion, officers may be required to participate in lengthy inspection or investigation campaigns that require up to 7 days continuous compliance field work; this will be with appropriate compensation as per the relevant industrial instrument
- Provide rapid deployment capability to support emergent issues such as incidents, or compliance response to time critical matters. This may require officers to work out-side of normal business hours, at night, and/or include early or late starts and finishes with limited notice

General program requirements

- Participate in all required training and education required by legislation and program requirements
- Maintain all required CASA certification to enable lawful flight operations
- Ensure all CASA and program reporting requirements are completed and submitted as required
- Provide any additional support to the program as approved by departmental management
- Ensure ongoing effective communications with Chief Pilot to enable effective governance and program success, including where adverse incidents or actions may impact on lawful or safe flying operations

PROJECT TITLE:	UAV / UAS Technology in Compliance Implementation Program
ED CHAMPION:	Andrew Connor
PROJECT DIRECTOR :	Bryce Hertslet
PROJECT MANAGER:	Brett Glosko
Proposal Author:	Brett Glosko

1. Proposal

Project Description	<p>Integrate the use of departmentally owned and operated unmanned aerial vehicles (UAV) / unmanned aerial systems (UAS) into compliance and investigation activities.</p> <p>Establish lawful operations licenced and certified by the Civil Aviation Safety Authority (CASA), as required by federal legislation for commercial operations.</p> <p>Provide learnings into broader department for potential implementation of UAV technology into other and/or broader core business activities.</p> <p>(UAVs can also be referred to as remotely piloted aircraft (RPA) or drones, however all shall be referred to as UAV for the remainder of the document.)</p>
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Expected Duration	<p>It is proposed that the initial implementation stage of this program aim to have an introductory level of operational capability prior to the implementation of the waste levy.</p> <p>It should however be noted that due to the evolving nature and expanding uses of this technology, the program should continue for at least 12 – 24 months to enable appropriate use and evaluation, whereby extended opportunistic use of UAVs will be utilised during core compliance business, i.e. in response to unplanned compliance events, responding to incidents, and planned proactive inspections as per the Compliance Prioritisation Model. It is expected that the program will be integrated into normal operations once the program reaches suitable maturity and</p>

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Assumptions/ Constraints: <ul style="list-style-type: none"> Federal legislation and licensing requirements limits use of UAV for commercial use to trained and approved pilots. Ability of the department to use these devices will be limited to the number of trained and approved pilots available. Selection of suitable officers for pilot training will be crucial to the success of the program. Selection must consider the likelihood that the officer will continue to work within ESR Compliance for an appropriate length of time to ensure return on investment and continuity of the program deliverables. Whilst it will not be possible to know definitively if an officer will continue working in a role delivering this program, best judgement and an interview with potential candidates should occur to increase the likely success of the program. 	
Start Date: As soon as possible to ensure best opportunity to meet the waste levy implementation date (noting the CASA assessment and approval timeframe of 70 business days).	Projected Finish Date: Aim is for the first phase of this program to be operational by the proposed waste levy implementation date, however it is proposed that use of this technology will be enduring and built into normal operations. Initial program evaluation should occur at no less than six monthly intervals, extending out to 12 monthly reviews once the program stabilises and matures.

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Project Team:	<ul style="list-style-type: none"> - Brett Glosko (Chief Pilot) - 4 x ESR regional compliance officers (to be determined in consultation with regional management) - 1 x ESR Investigations Team member (optional)
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Key Actions /Tasks (Milestones)

Objective	Activity/ task	Timing	Performance measure	Responsibility
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2	Liaise and work with all relevant work units within DES and government to ensure successful and timely program delivery, i.e. Litigation, Procurement, ITP, other agencies', etc	0 – 6	Meet all legislative, policy, procedure and guideline requirements	CP
3	Identify and source suitable staff from the four ESR Compliance regions to be trained as pilots + investigator (investigator optional)	0 – 4	Pilots approved by CDM, PMC and ED for each of the regions.	CP & PMC's
4	Source procurement support: Hybrid procurement process (Procurement team and ITP)	3 - 12	Obtain approved procurement process	CP
5	Purchase and undertake ReOCPL training for Chief Pilot, regional pilots and investigator (investigator optional)	4 – 8	Staff trained and accredited	CP
6	Write brief and obtain Director General authorisation for CASA application process	3 - 4	DG signs off on program and application paperwork	CP, PD, ED, DDG
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8	Purchase aircraft and associated equipment	4 – 6	Aircraft and equipment ordered and delivered	CP & Procurement
9	Develop all policy, procedures, operating manuals, approval processes, risks assessments, forms, log books, etc to ensure a safe and lawful program	5 – 12	Meet all legislative (including CASA) requirements, approvals and accreditation	CP & Pilots
10	Purchase Program Compliance Software	5 - 10	Software installed, and program information updated for use	CP
11	Purchase survey/mapping software	5 - 10	Pilots are trained and familiar with use and data upload process	CP
12	Obtain all relevant CASA approvals and certification (70 business day assessment and approval timeframe)	0 – 14	Obtain all required approvals and accreditation	CP
13	Identify required program governance structure and support arrangements. Work with other government departments to identify what has been implemented elsewhere and replicate as required	5 – 14 weeks	Brief Project Director, ED Champion and SMT regarding identified and recommended program governance requirements	CP & PD
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19	Continue to liaise with pilots and ensure documentation of outcomes and benefits of UAV program and CASA requirements for CASA audit purposes.	Ongoing	Ongoing record of use and outcomes and compliance software system	CP & Pilots
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Approval
Program Manager

Date	Recommended ☒	Not Recommended ☐	Not Recommended ☐
2/11/2018	Approved via email sighted by ED.	Refine and resubmit Return to submitting officer with any necessary comments for consideration Click here to enter text.	No further action. Return to submitting officer with any necessary comments for consideration Click here to enter text.

Executive Director IDSQC

Date	Approved X	Not Approved ☐	Not Approved ☐
2/11/2018	Click here to enter text. <div style="border: 1px solid red; background-color: #800080; color: white; padding: 5px; margin-top: 5px;"> sch4p4(6) Personal information </div>	Refine and resubmit Return to Manager with any necessary comments for consideration. Click here to enter text.	No further action Return to Manager with any necessary comments for consideration. Click here to enter text.