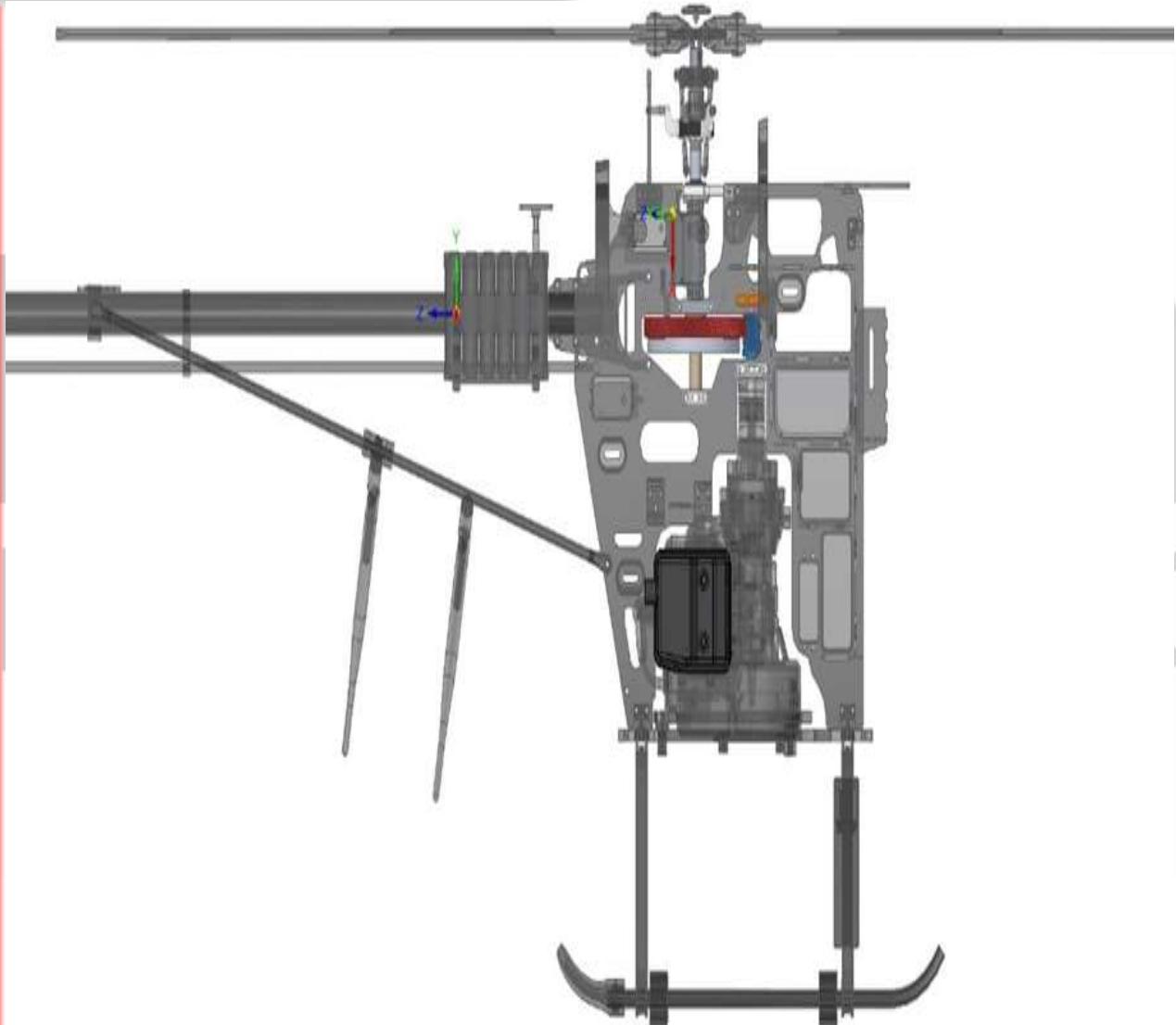




## BACKGROUND

- Regona Trading (Pty) Ltd t/a Regona Manufacturing We are classified as a Micro Enterprise (SMME)The company is Woman-owned, Black and Youth.
- Regona's expertise in material handling, engineering development, fabrication, and assembly, augmented by strategic partnerships, uniquely positions us to address the development and machining project to enhance the capability of a locally designed and developed UAV Helicopter with advanced mapping and aerial surveying, providing precise and cost-effective geospatial insights in industry-standard formats.
- The UAV helicopter is locally designed with South African Civil Aviation Authority (SACAA) approval. Equipped with high-resolution cameras, multispectral or video, and Lidar which can conduct detailed surveys of mining sites, forestry, security, defense and agricultural area.



## FOCUS AREAS

### SUSTAINABILITY AND SOCIAL IMPACT

- The increased payload will enhance the detailed surveys conducted of mining sites, forestry and agricultural areas by means of increased sensor combinations and time required to capture data.
- The data supports the producers in the agricultural sector by providing early and accurate yield predictions, on time and for planning the logistics of harvesting, storage, defense, security and sale.
- In forestry, this data enables comprehensive mapping and analysis of forest terrain, aiding in understanding the landscape, identifying features, and planning effective forestry management strategies. This enhances overall security in forested areas, prevents illegal logging, and ensures timely intervention.
- In the mining sector additional topographic mapping, detailed 3D models can be created through modern SFM (Structured from Motion) algorithms. Ultra-high-resolution imagery is used to create highly accurate and detailed 3D models for speedy and precise volume calculation.
- Skills transfer and training across the mining, forestry and agricultural sectors in the various aspects of UAV use and data capturing is a contributor to local human capital development.



AGRICULTURE



FORESTRY



MINING



CIVIL

### Speed

**Max Speed: 25m/s**

**Cruise Speed: 15m/s**

### Distance/Range

**Range: 15-20km**

### Load Capacity

**3kg max**

### Endurance

**2 hours max flight time.**

## AIMS OF THE PROJECT

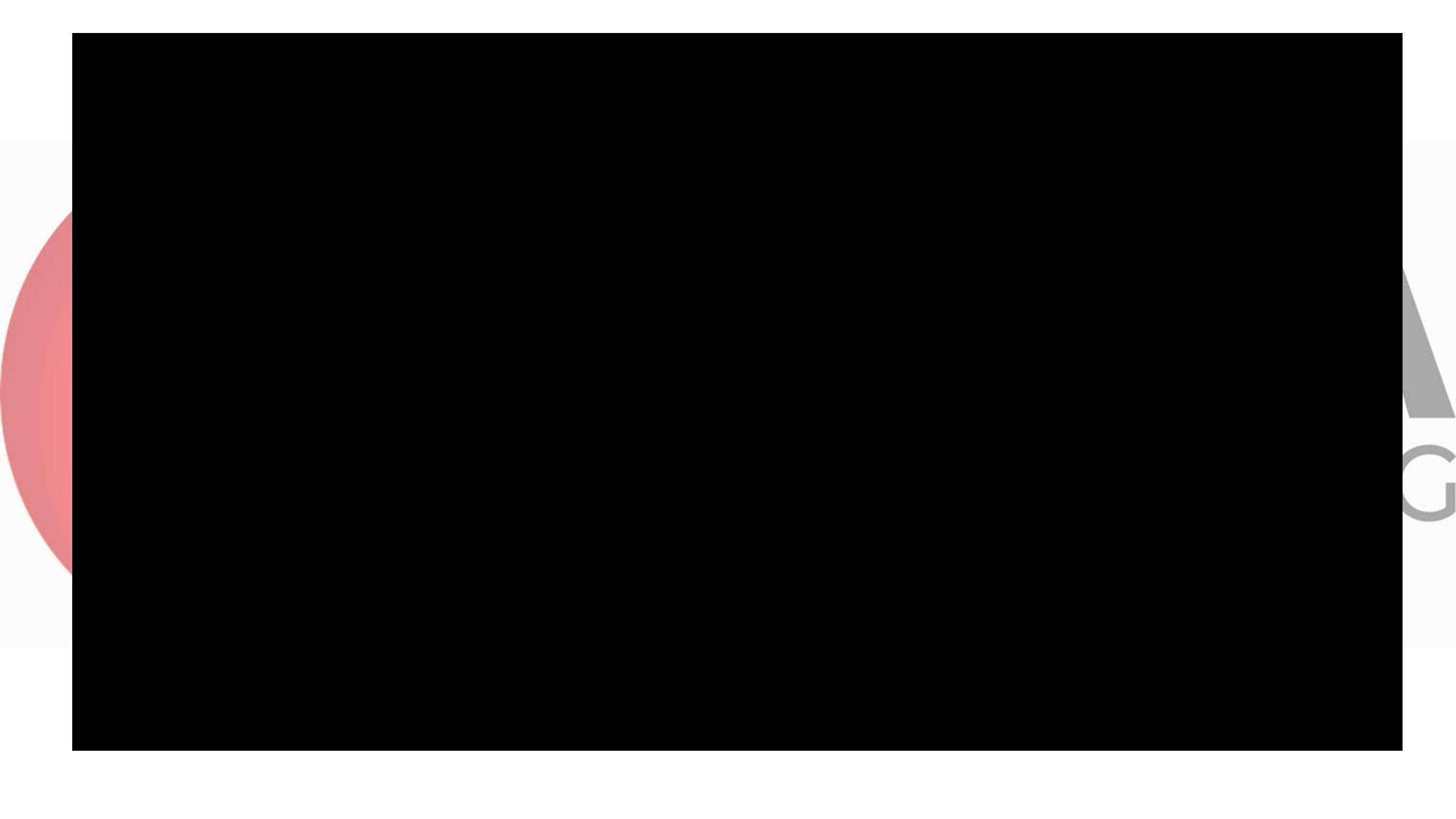
### DESIGN AND DEVELOPMENT PROJECT

- **This proposal by Regona Manufacturing's is for a project with the aim of enhancing the capability of the UAV helicopter by means of:**
  - The design, develop and manufacture a unique intermeshing gearbox prototype. This gearbox will increase the payload capability of the UAV helicopter from 3kg to 15 kg.
  - Secondly, the redesign and manufacture of a prototype 2 stroke muffler. The noise reduction muffler will enhance the stealth capability of the UAV helicopter with the increased payload capability.

### INNOVATION/ORIGINALITY/CREATIVITY

- The unique intermeshing gearbox for the UAV helicopter will increase the payload capability significantly, by at least 400%.
- This will greatly improve the sensor combinations which the UAV can carry during a single mission, improving the time required to capture data and related operating costs.
- This enhanced payload capability will also be used in the future to transport payloads such as emergency medical supplies, emergency equipment etc during disaster operations.
- The redesigned 2 stroke muffler will enhance noise reduction, manage exhaust gas back pressure and flow this will optimise the stealth capability of the UAV helicopter during security missions (environmental asset management[coastal and inland], forestry and agricultural security).





# CURRENT STATUS OF THE PROJECT

Drone gearbox and muffler Project Plan															
MILESTONE	WBS	DESCRIPTION	DELIVERABLE	DELIVERY WEEKS	DELIVERY SCHEDULE										STATUS
					FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1		Design intermeshing gearbox and muffler system	CAD files	1 to 4	28										SUBMITTED TO TUKS AND CLOSED
	1	Design gearbox			28										
	2	Design muffler			28										
2		Develop intermeshing gearbox and muffler system	Prototype intermeshing gearbox and muffler system	5 to 46						30					WIP - 60%
	3	Source muffler materials									19				
	4	Redline complete bill of material for production - Main assemblies									19				
	5	Develop muffler components									19				
	6	Deliver exhaust/engine manifold									30				
	7	Deliver integration muffler mounting points on drone									30				
	8	Manufacture muffler components and assemble									30				
	9	Source gearbox materials and machining tools									16				
	10	Deliver gearbox mounting flange onto drone frame									30				
	11	Deliver gearbox output shaft/clutch mounting flange onto main rotorhead									30				
	12	Deliver gearbox and rear rotor interface coupling									30				
	13	Deliver drone helicopter shroud									30				
	14	Machine gearbox components									16				
	15	Assemble gearbox									30				
	16	Develop test procedure									30				
	17	15 Kg drone ready for fitment of gearbox/engine/main rotor/muffler - READY FOR FITMENT										10			
3		Testing of intermeshing gearbox and muffler system	Test report	46 to 49										30/11-10/12	OPEN
	18	Integration of muffler system onto drone helicopter													
	19	Muffler factory testing													
	20	Integration of intermeshing gearbox onto drone helicopter													
	21	Report - Redline of datapacks													
	21	Intermeshing gearbox factory testing													
	22	Field testing of helicopter drone fitted with intermeshing gearbox and muffler system													
	23	DEMOSTRATION OF GEARBOX AND MUFFLER TO STAKE HOLDERS													
	24	Compile test report													
	24	Acceptance/delivery of test report													

## OTHER PROJECTS





REGONA  
MANUFACTURING

Thank you