

**Annex A. Physical targets based on Operations Plan submitted by Regional Offices**

Region	Protected area	Proposed drone/s	Proposed sensor/s	Protected area management activities where drone
CAR	Banao PL	1 medium multi-rotor + accessories  1 small multi-rotor (concurrent with BMB)	<ul style="list-style-type: none"><li>• Survey-grade camera/RGB</li><li>• Multispectral camera</li><li>• Thermal/RGB</li><li>• LiDAR/RGB</li><li>• RGB (Packaged)</li></ul>	Resource Assessment, Law Enforcement Activities, Wildlife Protection, Wildlife Tracking, Management Zoning, and Rehabilitation of Protected Areas
1	Regional Office	2 medium multi-rotor + accessories	<ul style="list-style-type: none"><li>• Survey-grade camera/RGB</li><li>• Multispectral camera</li><li>• Thermal/RGB</li><li>• LiDAR/RGB</li></ul>	Mapping extent of ecosystem/habitats; Mapping of flora-fauna species; Monitoring of Land Cover change and Land-Use change; Analysis of hazards; Fire incident monitoring; Vegetation Health and dynamics; Monitoring of IAS; Mapping extent and change of extent of homelots and farmlots; Monitoring of PACBRMA, SAPA, CBFMA sites in PAs; Processing of Tenure applications; Hazard assessment; Assessment of extent of damage to vegetation; and Monitoring of Infrastructures/ Ecotourism Facilities.
2	Regional Office	1 VTOL	<ul style="list-style-type: none"><li>• Survey-grade camera/RGB</li><li>• Multispectral camera)</li><li>• Hyperspectral camera</li></ul>	Resource Assessment, Management of Tenured Areas, Habitat Protection, Disaster preparedness and response, Ecotourism and Rehabilitation
2	Batanes PLS	1 medium multi-rotor + accessories	<ul style="list-style-type: none"><li>• Survey-grade camera/RGB</li><li>• Multispectral camera</li><li>• Thermal/RGB</li><li>• LiDAR/RGB</li></ul>	
2	Peñablanca PLS	1 medium multi-rotor + accessories	<ul style="list-style-type: none"><li>• Survey-grade camera/RGB</li><li>• Multispectral camera</li><li>• Thermal/RGB</li><li>• LiDAR/RGB</li></ul>	
2	Northern Sierra Madre NP	1 VTOL	<ul style="list-style-type: none"><li>• Survey-grade camera/RGB</li><li>• Multispectral camera</li><li>• Thermal/RGB</li><li>• LiDAR/RGB</li></ul>	
2	Casecnan PL	1 medium multi-rotor + accessories	<ul style="list-style-type: none"><li>• Survey-grade camera/RGB</li><li>• Multispectral camera</li><li>• Thermal/RGB</li><li>• LiDAR/RGB</li></ul>	

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3	Bataan NP	1 VTOL (to be lodged at the Regional Office and deployed in all PAs)	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera)</li> <li>• Hyperspectral camera</li> </ul>	Inventory of Facilities/Infrastructure, SAPA Holder/Area in 24 PAs in the Region, Monitoring of PACBRMA Holders in Bataan Natural Park, Pantabangan Carranglan Protected Landscape and Mt.Arayat Protected Landscape, Resource Mapping for all the 24 PAs in the Region, Delineation of Management Zones, Law Enforcement and Wildlife Protection Activities for all the 24 PAs, wetlands, caves and other ecosystems in the Region.
4A	Regional Office	1 medium multi-rotor + accessories To be used in all PAs	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera</li> <li>• Thermal/RGB</li> <li>• LiDAR/RGB</li> </ul>	Resource Assessment on the Mapping of extent ecosystems, Mapping of extent of habitats, Mapping of flora species, Vegetation health, Vegetation dynamics and Monitoring of land cover change and land-use change; Community Management on the mapping of extent of homelots and farmlots; Management of tenured areas for the processing of SAPA and PACBRMA applications and Monitoring of SAPA and PACBRMA areas; Habitat protection on the fire prevention, fire monitoring, law enforcement, BMS photo documentation and Monitoring of anthropogenic activities relative to management zones; Disaster preparedness and response for the assessment of extent of damage to vegetation (typhoon, volcanic eruption, landslides and flashfloods) and assessment of damage to infrastructure and search and rescue; and rehabilitation in connection to the National Greening Program – Survey, Mapping and Planning and Monitoring of rehabilitation sites.
4A	Upper Marikina River Basin PL	1 medium multi-rotor + accessories	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera</li> <li>• Thermal/RGB</li> <li>• LiDAR/RGB</li> </ul>	
4A	Mts. Banahaw-San Cristobal PL	1 medium multi-rotor + accessories	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera</li> <li>• Thermal/RGB</li> <li>• LiDAR/RGB</li> </ul>	
4B	Mts. Iglit-Baco NP	1 medium multi-rotor + accessories	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera</li> <li>• Thermal/RGB</li> <li>• LiDAR/RGB</li> </ul>	
		1 small multi-rotor (concurrent with BMB)		Monitoring of CBFMA Areas in protected areas, Habitat protection in relation to fire prevention and fire monitoring.
5	Ticao-Burias Pass PS	1 VTOL	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera)</li> <li>• Hyperspectral camera</li> </ul>	Mapping of extent of ecosystems, Mapping of extent of habitats, Mapping of flora species, Vegetation health, Vegetation dynamics, Monitoring of land cover change and land-use change, Mapping of existing homelots and farmlots, Change in extent of homelots and farmlots, Processing of SAPA and PACBRMA applications, Monitoring of SAPA areas, Monitoring

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				of PACBRMA areas, Monitoring of CBFMA areas in PAs, Fire prevention, Fire monitoring, Law enforcement,
5	Catanduanes NP	1 medium multi-rotor + accessories	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera</li> <li>• Thermal/RGB</li> <li>• LiDAR/RGB</li> </ul>	
5	Mt. Isarog NP	1 medium multi-rotor + accessories	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera</li> <li>• Thermal/RGB</li> <li>• LiDAR/RGB</li> </ul>	Mapping of extent of ecosystems, Mapping of extent of habitats, Mapping of flora species, Vegetation health, Vegetation dynamics, Monitoring of land cover change and land-use change, Mapping of existing homelots and farmlots, Change in extent of homelots and farmlots, Processing of SAPA and PACBRMA applications, Monitoring of SAPA areas, Monitoring of PACBRMA areas, Monitoring of CBFMA areas in PAs, Fire prevention, Fire monitoring, Law enforcement, Easement monitoring, BMS photo documentation, Monitoring connectivity and fragmentation, Analysis of coastal erosion, Monitoring of anthropogenic activities relative to management zones, Monitoring of large mammals (e.g. tamaraw), Monitoring of habitats of priority species, Monitoring of invasive alien species, Hazard assessment, Assessment of extent of damage to vegetation (typhoon, volcanic eruption, landslides, flashfloods), Assessment of damage to infrastructure, Search and rescue, Ecotourism Impact Monitoring, National Greening Program-Survey, Mapping and Planning, Monitoring of rehabilitation sites
6	Northwest Panay Peninsula NP	1 Medium multi-rotor + accessories	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera</li> <li>• Thermal/RGB</li> <li>• LiDAR/RGB</li> </ul>	Resource assessment and monitoring of extent of ecosystems, habitats and flora species; Habitat protection on the vegetation health, vegetation dynamics, monitoring of landcover change and land-use change, fire prevention, analysis of fire hazard and fire incident monitoring, easement monitoring, monitoring connectivity and fragmentation and analysis of coastal erosion; Species protection for the monitoring of large mammals and monitoring of invasive alien species; Rehabilitation of the National Greening Program-Survey, Mapping and Planning; Community Management on the mapping of the existing homelots and farmlots, monitoring change in extent of homelots and farmlots, monitoring of PACBRMA areas as well as CBFMA Areas within PAs; Disaster preparedness and response on the

Region	Protected area	Proposed drone/s	Proposed sensor/s	Protected area management activities where drone
				Hazard assessment (landslide and flooding vulnerability), assessment of the extent of damage to vegetation, assessment of damage to infrastructure and search and rescue; Management of tenure areas on the
6	Northern Negros NP***	1 Medium multi-rotor + accessories	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera</li> <li>• Thermal/RGB</li> <li>• LiDAR/RGB</li> </ul>	processing of SAPA and PACBRMA applications, and Monitoring of SAPA areas; and Monitoring of anthropogenic activities relative to management zones in relation to law enforcement.
7	Talibon Group of Islands PLS	1 medium multi-rotor + accessories  1 small multi-rotor	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera</li> <li>• Thermal/RGB</li> <li>• LiDAR/RGB</li> <li>• RGB (Packaged)</li> </ul>	Resource Assessment (i.e. Mapping of extent of ecosystems, habitats, flora species, vegetation health, vegetation dynamics, monitoring of land cover change and land use change); Community Management (i.e. Mapping of existing homelots and farmlots, Change in extent of homelots and farmlots); Management of tenured areas such as the SAPA, PACBRMA and CBFMA areas in PAs; Habitat Protection (i.e. Fire prevention, fire monitoring, law enforcement, easement monitoring, BMS photo documentation, monitoring connectivity and fragmentation, analysis of coastal erosion, monitoring of anthropogenic activities relative to management zones); Species protection (i.e. Monitoring of large mammals, habitats of priority species, invasive alien species);
7	Rajah Sikatuna PL	1 medium multi-rotor + accessories  1 small multi-rotor	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera</li> <li>• Thermal/RGB</li> <li>• LiDAR/RGB</li> <li>• RGB (Packaged)</li> </ul>	
7	Balinsasayao Twin Lakes PL	1 medium multi-rotor + accessories	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera</li> <li>• Thermal/RGB</li> <li>• LiDAR/RGB</li> </ul>	Disaster preparedness and response (i.e. Hazard assessment, Assessment of extent of damage to vegetation (typhoon, volcanic eruption, landslides, flashfloods), Assessment of damage to infrastructure, search and rescue); Ecotourism impact monitoring; Rehabilitation thru NGP-Survey, Mapping and Planning; and Monitoring of rehabilitation sites
8	Regional Office	2 VTOL (Regional Office)	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera)</li> <li>• Hyperspectral camera</li> </ul>	Mapping of extent of ecosystems, habitats, flora species, vegetation health and vegetation dynamics, monitoring of landcover change and land-use change, mapping of existing homelots and farmlots, change in extent of homelots and

Region	Protected area	Proposed drone/s	Proposed sensor/s	Protected area management activities where drone
		4 medium multi-rotor + accessories (PAs)	<ul style="list-style-type: none"> <li>Survey-grade camera/RGB</li> <li>Multispectral camera</li> <li>Thermal/RGB</li> <li>LiDAR/RGB</li> </ul>	farmlots, mapping of fire prone areas, BMS photo documentation, Monitoring of connectivity and fragmentation, Monitoring of anthropogenic activities relative to management zones, mapping of invasive alien species, hazard assessment and assessment of extent of damage to vegetation (after disaster).
		4 small multi-rotor (PAs)	<ul style="list-style-type: none"> <li>RGB (Packaged)</li> </ul>	
9	Regional Office	2 medium multi-rotor + accessories	<ul style="list-style-type: none"> <li>Survey-grade camera/RGB</li> <li>Multispectral camera</li> <li>Thermal/RGB</li> <li>LiDAR/RGB</li> </ul>	Mapping of ecosystem extent, flora species, Assessment of suitable areas for the possible expansion of NIPAS areas, Updating of PA management zones, and Monitoring of ecosystem extent change; Monitoring of land cover change and land-use change, Easement monitoring, Monitoring of habitats of priority species, Analysis of coastal erosion, Patrolling (thru. Drone), National Greening Program-Survey, Mapping and Planning, Monitoring of rehabilitation sites, Mapping of existing homelots and farmlots, Monitoring change in extent of homelots and farmlots, Monitoring of land uses adjacent to PA, Monitoring of existing infrastructures within PA, Monitoring of PACBRMA areas, Monitoring of CBFMA areas in PAs, Monitoring of SAPA areas, and Surveillance of illegal PA/Environmental activities (Kaingin, logging, poaching, mining, occupation, etc)
		2 small multi-rotor (all to be lodged in the Regional Office)	<ul style="list-style-type: none"> <li>RGB (Packaged)</li> </ul>	
10	Regional Office	1 VTOL	<ul style="list-style-type: none"> <li>Survey-grade camera/RGB</li> <li>Multispectral camera)</li> <li>Hyperspectral camera</li> </ul>	Identification of potential hotspot areas for illegal activities or natural threats, Identification of areas requiring environmental rehabilitation, detailed mapping of road networks within the protected areas, location identification of existing infrastructures, detection of important wildlife habitats, including nesting sites of the Philippine Eagle, Mapping of disaster-prone areas, and identification and/or of possible encroachers or illegal occupants and wildlife illegal hunters.
		2 medium multi-rotor + accessories	<ul style="list-style-type: none"> <li>Survey-grade camera/RGB</li> <li>Multispectral camera</li> <li>Thermal/RGB</li> <li>LiDAR/RGB</li> </ul>	
		2 small multi-rotor (concurrent with BMB)	<ul style="list-style-type: none"> <li>RGB (Packaged)</li> </ul>	
11	Aliwagwag PL	1 medium multi-rotor + accessories	<ul style="list-style-type: none"> <li>Survey-grade camera/RGB</li> <li>Multispectral camera</li> <li>Thermal/RGB</li> <li>LiDAR/RGB</li> </ul>	Mapping of extent of ecosystems; Mapping of extent of habitats; Mapping of flora species; Vegetation health; Vegetation dynamics; Monitoring of land cover change and land-use change; Mapping of existing homelots and farmlots; Change in extent of homelots and farmlots; Map of fireprone areas; BMS photo documentation; Monitoring connectivity and
		1 small multi-rotor	<ul style="list-style-type: none"> <li>RGB (Packaged)</li> </ul>	

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				fragmentation; Monitoring of anthropogenic activities relative to management zones;
11	Mt. Apo NP	1 VTOL	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera)</li> <li>• Hyperspectral camera</li> </ul>	Map of invasive alien species; Hazard assessment; and Assessment of extent of damage to vegetation (after disaster)
11	Mabini PLS	1 medium multi-rotor + accessories  1 small multi-rotor	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera</li> <li>• Thermal/RGB</li> <li>• LiDAR/RGB</li> </ul> <ul style="list-style-type: none"> <li>• RGB (Packaged)</li> </ul>	
12	Regional Office	1 VTOL with all sensors	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera)</li> <li>• Hyperspectral camera</li> <li>• LiDAR</li> </ul>	Conduct regular aerial survey to monitor forest cover, biodiversity, illegal activities such as poaching and illegal logging, encroachments and other threats to protected areas and NGP sites, Collection of data on environmental indicators such as water quality, land use changes and wildlife population, rapid response to environmental emergencies such as wildfires, natural disasters and illegal activities in protected areas, support to fire protection and reforestation efforts, conduct research flights to gather scientific data on ecosystems, wildlife habitats and environmental conditions, collection of data for biodiversity assessments, habitat mapping and ecosystems monitoring.
13	Regional Office	1 VTOL with all sensors  2 medium multi-rotor + accessories  2 small multi-rotor	<ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera)</li> <li>• Hyperspectral camera</li> </ul> <ul style="list-style-type: none"> <li>• Survey-grade camera/RGB</li> <li>• Multispectral camera</li> <li>• Thermal/RGB</li> <li>• LiDAR/RGB</li> </ul> <ul style="list-style-type: none"> <li>• RGB (Packaged)</li> </ul>	Resource assessment and monitoring of 12 PA's (i.e. Mapping of extent of ecosystems, Mapping of extent of habitats, Mapping of flora species, Vegetation health, Vegetation dynamics, and Monitoring of land cover change and land use change); Habitat protection within the PAs (i.e. Fire prevention/monitoring, Easement monitoring, Monitoring connectivity and fragmentation, Monitoring of habitats of priority species, Analysis of coastal erosion); Species protection (i.e. Monitoring of threatened species and Monitoring of invasive alien species); Rehabilitation (i.e. National Greening Program-Survey, Mapping and Planning, and Monitoring of rehabilitation sites); Community management (i.e. Mapping of existing homelots and farmlots, Monitoring change in extent of homelots and farmlots and Monitoring of PACBRMA areas); Disaster preparedness and response (i.e. Hazard assessment (landslide vulnerability,

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				flooding vulnerability), Assessment of damage to infrastructure, Assessment of extent of damage to vegetation and Search and rescue); Management of tenure areas (i.e. Processing of SAPA and PACBRMA applications and Monitoring of SAPA areas); and Monitoring of anthropogenic activities relative to management zones.