HeliSurveys Airborne Earthcare

Helicopter Lifting Information

Experience

Company and Pilot Experience

Heli Surveys has enjoyed a decade and a half of accident and incident free history across what in many circles has always been regarded as a high risk activity. These roles include but are not limited to aerial crane, long lining (using lines of up to 200 ft to deliver loads into densely vegetated sites), animal surveys, low level surveys, aerial firefighting, aerial incendiary hazard reduction, thermal imaging, power line surveys and fault finding missions as well as insertion of specialist teams to remote locations.

As a minimum, our pilots must have at least 2,000 hours and relevant experience in low level surveys, aerial work and utility flying before commencing work with the organisation. This is one of the many reasons for our strong safety record and our solid, long lasting professional relationships. Heli Surveys is approved by the NSW and VIC State Air Desk, under the ARENA system, for government agency work and is regularly contracted by - DPI, LLS, NSW RFS, NPWS, SES, ACT RFS, ACT TAMS and other agencies / organisations.

Heli Surveys has recently been responsible for the lifting and personnel transport services on the Snowy Hydro 2.0 Project. This project required precision aerial lifting on a daily basis and during its peak period we were operating 3 aircraft and employed 6 pilots and over 11 qualified dogman/load masters. The prime contractor was GHD and a reference from Helen Barbour-Bourne and Steve Moses can be found in reference section.

Heli Surveys provided all the lifting services for the Carruthers Peak walking track upgrade from 2016 to present. The prime contractor was Jindabyne Landscaping and a reference from the owner, Andrew Downing, can be found in the reference section. This project required us to fly from the same helipads that are proposed to be used for this project and this demonstrates our ability to operate at high altitude, our local knowledge of the area and weather and our experience with working with the local NPWS office and staff.

For the previous 3 years Heli Surveys has provided all the lifting services for the construction of the Thredbo Valley Track (TVT). This has required long lines of up to 200 feet and demanded precision placement of steel (up to 12m in length), rocks, tools, equipment down through 150 feet high trees.

These are just 3 example of some relevant work we have performed. Aerial lifting is one of Heli Surveys primary tasks year round. At the end of this document in Appendix B are some references from just some of the recent work we have undertaken.

Aircraft Choice

Aircraft Choice

Heli Surveys operates multiple types of aircraft that all have different lifting capabilities. The final choice of aircraft will depend on the most efficient load weights for that day of work. By operating the different types, we can offer the absolute most cost effective machine for that days lifting. It also allows for redundancy and backup for times of high workloads.

By owning three AS350 'Squirrels' and a Bell 206L 'Longranger,' Heli Surveys has enough aircraft to support acceleration of a project as well as have backup aircraft in the event of an unserviceability. All our aircraft are approved for use by the NSW RFS, NPWS and other government agencies.

All our aircraft are certified for passenger transport so inserting / extracting people to/form the staging and work areas requires no modifications to the aircraft. As an approved operator by NPWS we have permission to land within the National Park when working on certain projects. The exact landing areas will however have to be approved by NPWS.

Aircraft Choice

Table of Aircraft

Make / Model	"Max" Lift Capability at 1500 meters	"Working" Lift Capability at 2000 meters	$ / kg / hour (for comparative use only)	Number of helicopters owned by Heli Surveys	Maintenance Programme
AS350 B3 "Squirrel"	1100 kg's	750kg's	$3.313 / kg	1 (Access to 1 more)	150 Hourly inspections
AS350 BA "Squirrel"	600 kg's	500 kg's	$3.700 / kg	2	150 Hourly inspections
Bell 206L3 "Longranger"	500 kg's	450 kg's	$3.931 / kg	1 (Access to 1 more)	100 Hourly inspections

"Max" Lift capability - This is the max load that we have actually lifted, with that actual machine and at the project altitude. This weight was lifted under ideal conditions (cool temperatures, light gentle breeze, last lift of the fuel cycle i.e. very light fuel load). This is to give an example of what can be lifted in certain special circumstances. When lifting with helicopters a lighter than "max lift" load can mean a much faster pick up and placement. Although it seems you are "wasting" lifts by not carrying the max load, over the course of a day, the efficiency gained by doing multiple lifts quickly, greatly outweighs the "wasted" lifts, that is why we have listed the;

"Working" Lift Capability - This is the load weights we recommend planning with for this project. These weights come from experience and real world jobs at actual project locations and are where we believe the best compromise of weight / efficiency is. Working to these loads will allow about 1 hour fuel cycles, possible longer on ideal weather days.

$ / kg / hour rate - This is to show the comparative efficiencies of the 3 types of aircraft. It in no way reflects real world costings and should NOT be used for any budgetary purposes. It is to demonstrate, that even though the more powerful helicopters have a higher hourly rate, they work out more economic overall. On shorter days however, the less powerful aircraft can work out more economical once the ferry to/from Jindabyne is taken into account.

Ground Crew / Dogmen

All Heli Surveys ground crew are qualified dogmen at a minimum and have extensive experience with rigging loads specifically for helicopter lifting. We propose to supply all ground crew/dogmen required for each days work, leaving the aviation side of the project to Heli Surveys and allowing for you to concentrate your staff and efforts on the ground side of things.

In addition to holding the required qualification in the contract, Heli Surveys' ground crew all hold current first aid certificates, have full PPE (including custom built ground to air communications built into our helmets), and thoroughly understand financial implications of an in-efficient helicopter lift job.

Training

Our contract manager and line pilot Matt O'Brien is a Certificate IV trainer and assessor and is able to provide training courses to your staff that are relevant to helicopter operations. Matt provides all training courses with Heli Surveys under the Risk Response + Rescue training certificate. Matt is able to run training from introductory level courses such as "Work Safely Around Aircraft (PUAFIR209B)", to advanced courses such as "Search and Rescue observation". Heli Surveys ability to provide this service can make your planning much easier as often a requirement by NPWS and other government agencies, is for all its staff and contractors to hold at least a "Work Safely Around Aircraft (PUAFIR209B)" qualification.

Heli Surveys would propose that a group training and briefing session be held before the commencement of helicopter operations. This training should be attended by all members of crew that are likely to be in or around the helicopter during the project. We understand it is likely that not everyone will be able to be available for the group training session and individual training can be provided to those unable to attend.

Ground Support

The majority of Heli Surveys operations are in remote areas. We specialise in being able to operate independently and away from an airport/staging area. The level of service we are able to provide is only possible because of our background in working in and around inhospitable terrain. Customers such as the National Parks and Wildlife Service in NSW and ACT, RFS, Snowy Hydro, TransGrid, and many others continue to use our services because of our proven history to operate and perform to a very high standard.

Heli Surveys owns several fuelling vehicles / solutions and the most appropriate would be used for this project. This is likely to be our 4WD fuel solution that can supply up to 2600 litres of Jet A1 via 2 IBC's. We also own 25,000 and 10,000 Litre Jet A1 fuel trucks. All trucks / vehicles are EPA compliant and NSW Government 'call when needed' approved. We also own fuel drum 'bunds' which allows fuel to be prepositioned in strategic locations for efficient refuelling of the aircraft even within the National Park.

Lifting Equipment

Heli Surveys owns an extensive amount of certified lifting equipment for all types of loads you can imagine. We will supply all equipment required to complete the job with enough spares that needing to retrieve all the equipment isn't necessary each day. This allows heavy items to be placed without having to worry about extracting slings/ shackles etc.. That can save minutes each load which can add up to hours each day, and literally tens of thousands of dollars over the course of a project. All lifting equipment is inspected by suitably qualified person each 3 months and/or before/after each lifting day. During the planning process we will discuss exact lifting equipment requirements to ensure that nothing will reduce the efficiency of each lift. Heli Surveys maintains a lifting equipment register in its cloud based SMS. A copy of this register can be provided on request.

Health and the Environment

Heli Surveys takes its responsibility to health and the environment very seriously. We have developed our procedures and manuals with these in mind and they provide the foundation to our safety culture and philosophy.

Environment

We understand the importance of looking after the environment and the risks that our operation can pose if not managed correctly. Our dedication and respect for the place we live in and the flora and fauna that surrounds us and our constant vigilance to the threat and impact that an operation like ours can cause, puts us a step above other operators. Heli Surveys has mature strategies and systems in place to prevent the transfer of seeds, propagates and pathogens.

Helicopters require certain chemicals and fluids to make them run. These chemicals can and will do damage to the environment and people if not handled correctly. All our pilots and crewmen are trained in the handling of these chemicals and understand the importance of following SOP's especially when operating in an environmentally sensitive area, such as National Parks and protected areas. All our fuel vehicles, trucks and trailers are equipped with spill kits and we have bunding for various fuel drums, containers and vehicles that are used at all times when operating inside a National Park. As one of our main customers is NPWS and our main are of operation is within the Kosciuszko National Park, we are familiar with the stringent requirements that we be placed on you and us for this project. At all times we guarantee to meet or exceed these requirements.

Noise Impact

Helicopters can impose on members of the public indirectly by producing high levels of noise. We are aware that members of the public can be sensitive to helicopter noise, especially when trying to enjoy the Snowy Mountains. Heli Surveys will operate in a way that will reduce the impact of noise to members of the public for all flights. As the local operator we are aware that any noise complaints will be directed at us, this gives us further reason to avoid undue noise impact and attention.

Safety

A comprehensive and full description of our Aviation Safety Management System, Flight and Duty Management System, Quality Management System, Emergency Response Plan (ERP) and Drug and Alcohol Management Plan would have already been provided to NPWS, but a copy can be supplied again upon request.

Heli Surveys Aviation Safety Management System (SMS) is a custom build, cloud based system that is second to none. GHD, a major multinational geotechnical company, are now looking to employ some of the same systems we developed during the Snowy 2.0 project.

As part of the Snowy 2.0 project, Heli Surveys underwent several full and partial audits. These audits covered all aspects of our operation but were specifically targeted at our lifting operations. The audits comprised of both office and on the job components. Our cloud based SMS is designed in house from the ground up. The auditor mentions our outstanding SMS, OH&S manual and policies several times in the audit reports. The audit report found 0 findings and is one we would be very proud to share with you on request.

We realise that it is not the SMS itself that makes a workplace safer, but the staff's attitude, training and understanding of the systems in place. Heli Surveys encourages and fosters a "no blame", "just" culture and believes in transparency and education over threats and termination. A copy of our SWMS can be provided upon request.

Heli Surveys has a nil accident record for it's entire 15 years of operations.

Cold Climate and Mountain Operations

Heli Surveys Head Office and main base of operations is in Jindabyne at 1050 metres above sea level. The core body of work we conduct is centered on the Kosciuszko and Namadgi National Parks. Our helicopters are regularly required to land and work at unprepared landing sites at elevations as high as 2220 metres above sea level, year round. As a result of our location, we believe we are the leading Australian operator in terms of cold climate conditions and mountain experience in mainland Australia.

Our local knowledge will not only ensure efficient flight paths between sites each time but, in times of adverse weather, it ideally equips us to choose the safest possible flight path from or to the site. All Heli Surveys' aircraft are equipped with at least one GPS and have our GPS database loaded onto them. Our GPS database has hundreds of user waypoints including Snowy Hydro infrastructure, fire helipads, emergency landing spots, fire trails and other locations that become useful in unique circumstances. Essentially this is 15 years of documented corporate knowledge on escape routes and safe landing sites.

Cold climate conditions can be prevalent all year round when operating in the mountains. Heli Surveys aircraft are configured for winter operations, including on snow landings. Each helicopter we operate is equipped with 'bear paws' (helicopter snowshoes), a snow survival pack, a snow shovel, snowshoes and poles. Flight crews are provided with a clothing system that allows them to operate at sub zero temperatures, falling rain, falling snow and in windy conditions safely and effectively.

Heli Surveys pilots receive training specific to the geography and meteorology of the Snowy Mountains. Each pilot is trained for on snow operations. Their training incorporates the following:

- On snow operations: White out conditions and how to avoid it. Low visibility and poor depth perception due to full cloud cover and low light. Operations in falling snow. Dynamic aircraft rollover prevention due to frozen aircraft landing gear.
- Aircraft husbandry: Safe overnight storage of aircraft, Aircraft operations in sub zero temperatures, Anti ice and de-ice operations, Removal of frost, ice and snow from aircraft.
- Aircraft operations: Aircraft cabin heating systems (prevention of CO2 poisoning), operations in strong wind and wind shear particularly flight routes that avoid wind shear and turbulent zones. Meteorology, forecasts and forecast interpretation.

Heli Surveys pilots receive Alpine survival training conducted by Snowy Hydro. This course combines both theory and a practical component where each participant is required to build a snow shelter and sleep in it overnight. This course is designed to foster good decision making. It provides skills and knowledge designed to allow crews, and personnel in their care, to operate in a hostile environment and to overnight on site and on snow in bad weather if required.

Aircraft configuration

All our aircraft are fitted out for utility and charter work as standard with the ability to be reconfigured for specific tasks very quickly. As standard all our helicopters are equipped with:

- Up to date first aid and general and snow survival equipment on board at all times.
- Full internal intercom between flight crew and passengers via voice activated microphones and headsets.
- Ability for all passengers to hear all radio communications as well as front and rear-right passenger (monitor's seat) to transmit on any radio installed on helicopter. Radios installed are 2 x VHF, UHF, NSW Government agencies radios including NPWS and the RFS. The 2 monitoring crew can also transmit and receive on their own dedicated radio, independent of the pilot's radio in use, enabling full communication between the ground and helicopter even when the pilot is required to communicate with Air Traffic Control or other aircraft/ground crew.
- Ability for any crew or passenger to make and receive phone calls, on their own mobile, via Bluetooth at any point during the flight.
- 405 MHz Emergency Locator Transmitter (ELT), EPIRB, PLB, Satellite phone as well as the latest satellite tracking technology.
- Side mounted Cargo baskets/pods are available for the carriage of extra equipment and goods that are not permitted in the cabin, e.g. Chainsaws, additional fuel and batteries.
- "Bear paws" for snow and soft surface landings. These help spread the load of the aircraft to reduce the amount the aircraft settles into the snow or soft surfaces. Heli Surveys views these as mandatory for all mountain operations

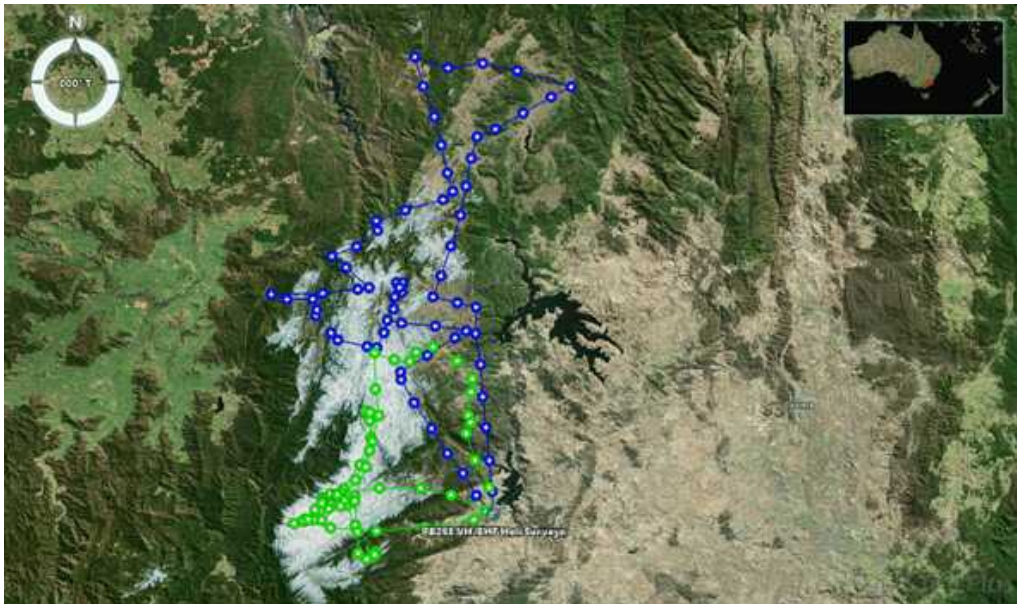
Heli Surveys provides flight following and SAR watch from our office and with the ground crew. Heli Surveys operates on a 30 minute "Ops Normal" schedule by direct communication and has its satellite tracking system set to update every 15 seconds. Contained in our "Emergency Management Plan" is the procedure for overdue, lost and crashed aircraft.

Our Longrangers have a litter kit installed and the Squirrel has enough room for a stretcher to enable medevacs from drill sites to ambulances, if required. Heli Surveys is approved and has been accepted under a 'call when needed' contract with the NSW Government. Our Contract Manager and line pilot, Matt O'Brien is also a pilot of the Westpac Rescue Helicopter service based in Sydney and Moruya. His experience and knowledge in aero medical services would further enhance the safety of any project and he would make himself available for consultation when planning Emergency Response Plans.

Satellite Tracking

Heli Surveys has satellite tracking installed and running on all its aircraft at all times they are working in remote areas. This allows real-time tracking that can pinpoint the exact location of the helicopter and give information such as speed, direction, height and GPS coordinates.

As well as providing this information, it can overlay the position onto Google Earth giving the viewer an up to date visual image of the current location as well as displaying the track taken by the aircraft. By using this technology it not only offers peace of mind for the crew in the helicopter knowing they have someone watching them, but also allows your staff to monitor the progress and help to make logistical decisions based on actual information rather than estimates.



Screenshot of online Satellite tracking view

Performance Monitoring

We actively seek client feedback. We treat every flight as an opportunity for the client to provide honest and critical feedback to the pilot and company. Our company will continue to encourage and foster our relationship with its customers in a transparent, 'just culture' environment. All or any of the company personnel will make themselves available for performance reviews depending on your requirements. Heli Surveys, upon request, can provide a report for the completed work or program. This program would include a summary of work completed, any issues and potential improvements for future work/programs.