

LOFOTEN ISLANDS

CLIMBING AND SAILING

SUMMER · 2023



IMPERIAL COLLEGE LONDON

Sponsored by Imperial Exploration Board, Old Centralians Trust,
Royal College Science Association, and the Jeremy Willson Charitable Trust

In the summer of 2023 we, a handful of Imperial students and alumni, set our sights on the beautiful fjords and mountains of Lofoten, Norway (located 1198 km north east of the Faroe Islands).

We planned an expedition with two objectives: to explore challenging climbing opportunities on long multi-pitch trad routes, and to adopt sailing as a low-carbon travel approach. The expedition was purposefully designed to prioritise these goals, offering an ideal platform for skill development in climbing, sailing, safety and logistics.

This report provides an account of the planning and successful execution of our remarkable journey to combine climbing and sailing adventures in Lofoten. We are grateful to the funding bodies who made this possible, notably the Imperial Exploration Board, Old Centralians' Trust, Jeremy Willson Charitable Trust, and the Royal College of Science Association.



Photos, from left: Kat and Gil fishing; Sailing around Henningsvær

Photos, from left: Landscape view from Henningsvær; Gil climbing the chimney on Nordryggen

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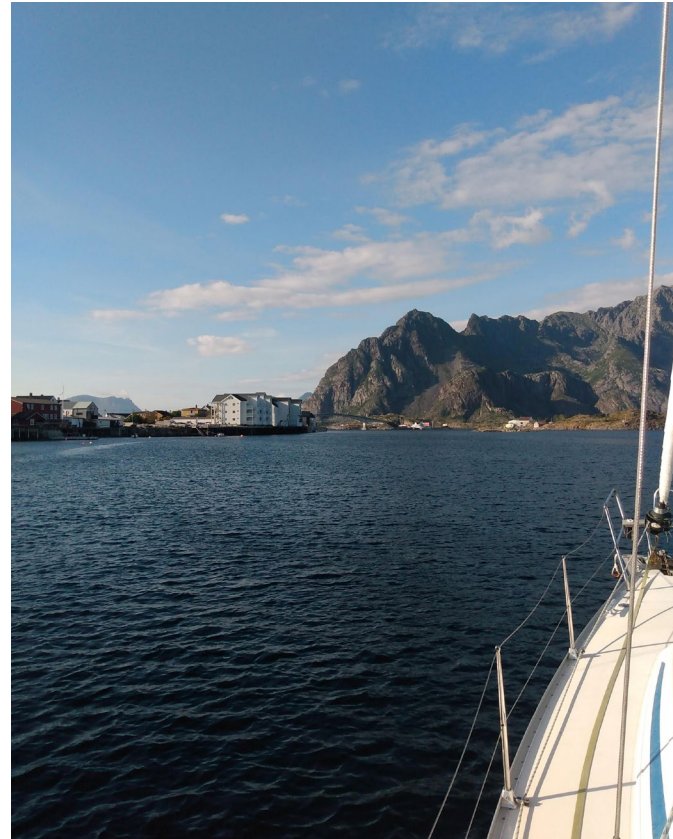
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1 OVERVIEW

Introduction to trip objectives and itinerary.

The Lofoten Islands are an archipelago of islands composed of volcanic rocks (gneiss and granite) in the northwest coast of Norway, north of the Arctic Circle. They belong to the county of Nordland and consist of 7 main islands, separated by a series of fjords and the Norwegian Sea. As one of the most remote parts of Norway, with a unique scenery of dramatic mountains, beaches, fjords and untouched land, sailing provides an attractive means of travel there and for getting around. There are easier-access single-pitch sport and trad crags as well as more remote islands, long multi-pitch trad routes, ridge traverses, crack climbing and slabs.

The mild climate (maintained by the Gulf Stream) combined with the midnight sun, makes June to August the perfect window to attempt a variety of climbing objectives. However, even if faced with less favourable weather, there are plenty of other activities such as surfing, hiking or whale watching.



Photos, from top: Sailing around Henningsvær; Luke, Rory, Gus and Viet tacking



Photo: Rory seconding a pitch on 'Vestpillaren Direct' (N6)

OBJECTIVES

MULTI-PITCH TRAD

- Develop skills to safely navigate day long multi-pitch routes
- Learn rescue techniques to help in case of incident while climbing
- Climb Nordryggen - an alpine style ridge with 12 pitches, scrambling and walking

SINGLE PITCH TRAD

- Build up confidence on lead to push individual grades
- Develop slab and crack climbing technique

SAILING

- Gain skills for competent crewing of yacht including sailing, navigation and mooring
- Develop competency for day and night passages

ITINERARY

DAY 1

Fly from Heathrow to Bodø

DAY 2

Access boat
Buy food for trip
Overnight sail to anchorage near Paradiset

DAY 3

Single-pitch climbing in Paradiset

DAY 4

Morning sail to Djupfjord anchorage
Multi-pitch climbing and Norddryggen alpine ridge
overnight climb

DAY 5

Sail around Djupfjord
Sail to Svolvær marina

DAY 6

Multi-pitch climbing in Svolvær

DAY 7

Rest day
Sail to Paradiset anchorage
Visit aquarium

DAY 8

Single-pitch climbing in Paradiset

DAY 9

Sail to Djupfjord anchorage
Multi-pitch climbing in Djupfjord area

DAY 10

Multi-pitch climbing in Djupfjord area (the Priest)
Sail to Henningsvær marina

DAY 11

Multi-pitch climbing in Djupfjord area
Sail to Djupfjord anchorage

DAY 12

Multi-pitch climbing in Djupfjord area

DAY 13

Single-pitch climbing in Djupfjord area
Sail to Reine marina
Overnight sail to Bodø

DAY 14

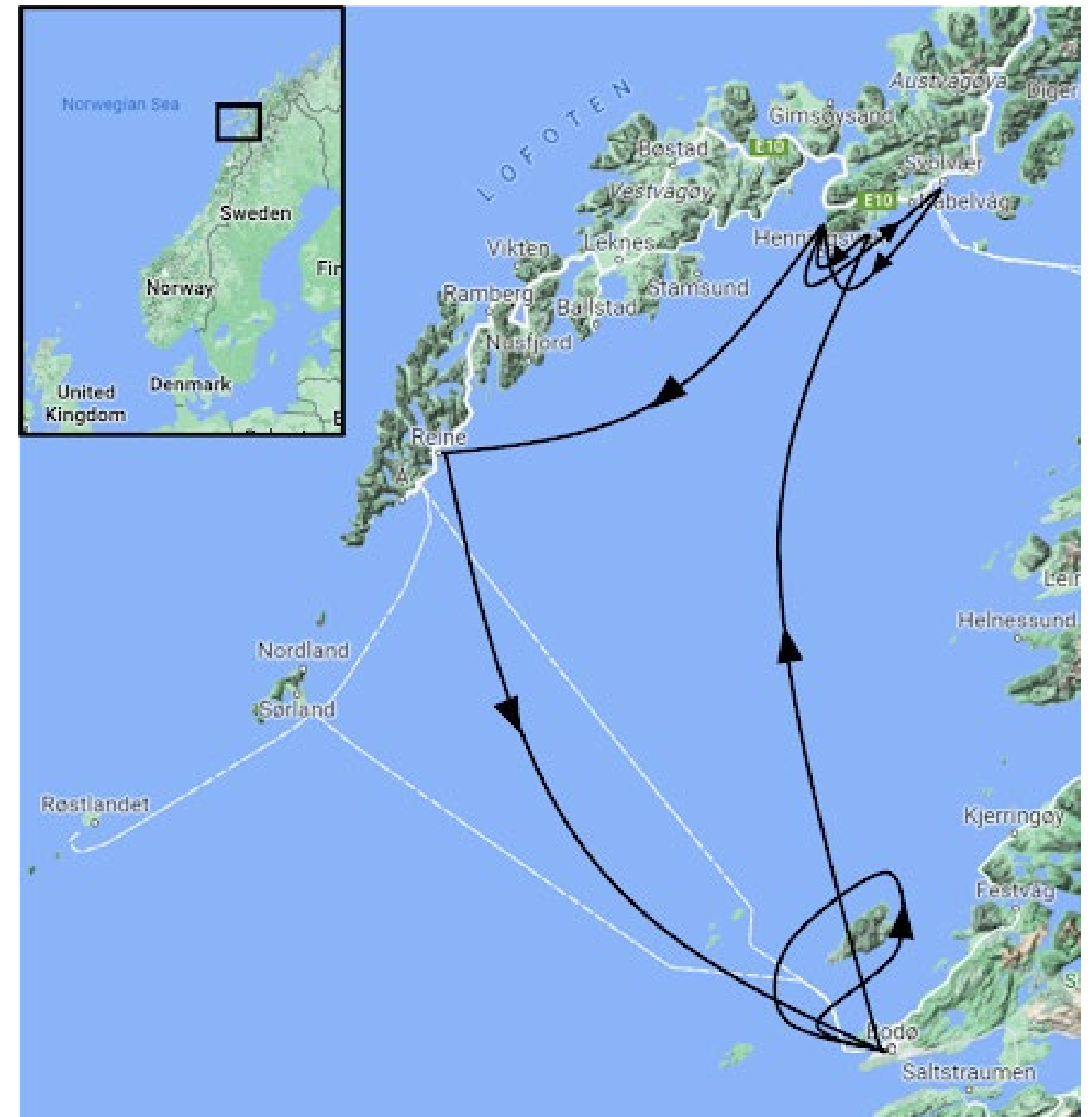
Visit to Saltstraumen
Sail around Landegode island

DAY 15

Hand back boat

DAY 16

Fly from Bodø to Heathrow



Map of the sailing route starting and ending at Bodø

EXPEDITION LEADER COSIMA GRAEF

- Age: 22
- 2nd Year PhD Student (AI for Healthcare)
- Trad: HVS. Sport: 6b+. Scottish Winter: Grade II. Trad/Alpine multi-pitch up to 500m in Alaska, Chamonix, Canada, Wales, Norway.
- Alumnus of Alaska 2022 expedition.
- Experience bolting sport routes and remote climbing.



KATERINA FOKA SANDOVAL

- Age: 25
- MSc Sustainable Energy Futures Graduate 2022
- Trad: E1. Sport: 7a+. Trad/Sport multi-pitch up to 400m in Wales, France, Switzerland, Mexico, Spain.
- Sailing: Coastal sailing in France, 2-month transatlantic crossing from Gran Canaria to St Maarten and through Cape Verde.



MIGUEL BOLAND

- Age: 29
- 3rd Year PhD Student (Mathematics)
- Trad: E3. Sport: 7a. Trad/Alpine multi-pitch in Alaska, Chamonix, Wales, Canada.
- Sailing: 7-day sail from Azore Islands to Portugal. Dinghy sailing.
- Alumnus of Alaska 2022 expedition.
- Experience bolting sport routes and remote climbing.



RORY ROSE

- Age: 23
- Materials Science PhD Alumni
- Trad: E2. Sport: 6c/7a. Multi-pitch: Sport and trad lead.
- Sailing: Lots of competition sailing in dinghies and sport boats. Recently, Etchells Youth Academy. Some cruising experience including day skipper qualification (2017).
- RYA first aid qualified. RYA Power Boat Level 2 (inc ICC)



ROWEN LEE

- Age: 29
- MSc Computing Graduate 2022
- Trad: HVS. Sport: 6b+
- Hiked to the summit of Mount Kinabalu, the highest peak in Borneo. Extensive indoor climbing training experience: on-site level 7a (sport), V5 (boulder)



LUKE CHEESEMAN

- Age: 29
- 3rd Year PhD Student (Computing)
- Trad: HVS. Sport: 6a+. Multi-pitch: Sport and trad lead in Spain and Wales up to 250m.
- Hiking, climbing and more adventures inside and outside the EU. Once attempted to ice climb a tree, bolted a route on it instead.



VIET PHAM NGOC

- Age: 28
- 3rd Year PhD Student (Computing)
- Trad: HVS. Sport: 6c. Multi-pitch: Sport and trad in France, Greece and Wales.
- Multiple treks across the UK.



GIL RIBEIRO

- Age:21
- 4th Year MEng Aeronautics with Spacecraft Engineering
- Trad: HVS. Scottish Winter: grade I lead, grade IV second.
- Previous planning and execution of a week-long solo hike in Scotland, amongst others. RYA Competent Crew.



GUS COX

- Age: 22
- MEng Design Engineering Alumini 2023
- Sailing: Sailing for 18 years. Experienced UK based delivery skipper, specialising in the South coast (Falmouth - Ipswich). Have raced yachts for the past 9 years, on inshore and offshore basis, with multiple cross channel races.



3 LOGBOOK

Diary of events throughout the trip, including detailed information on routes and summits.

ARRIVAL

Day 1 - Friday 21st July

Everyone arrived at Gatwick carrying somewhere between 20 and 30 kg on their back. After nearly a year of preparation, setting off on this trip felt unreal, the team was excited and nervous.

Luke was immediately stopped at security for attempting to smuggle juggling balls inside a hiel bottle, but the staff were merciful and, after thorough questioning, they let him through (as well as Gus and his CO2 canister).

The team flew to Oslo and then Bodø without any issues and enjoyed the first smell of the sea as they walked down to the Airbnb (remember the 30kg). The sky was still bright at night, and a grey sky mirrored the quiet grey houses we walked past. The first Norwegian night was spent in a Liverpool FC fan's house, 'You will never walk alone' indeed.

PASSAGE

Day 2 - Saturday 22nd July

We woke up to the smell of Gus and Rory's pancakes, and fuelled up for a day of preparation for our first overnight passage of the trip. We walked into town, which was eerily quiet, and explored the marina pier, before heading back to the house for lunch.

The team split up - some buying food and fishing gear for the days ahead, some setting off for the boat owner's induction, and Viet going into hiding to make our team look like a group of only 8. For what would a sailing voyage be without a stowaway?

After carrying our hefty luggage to the marina, we discovered our home for the next two weeks, Muligheten. It looked beautiful and spacious, little did we know the struggles that the leaky water tanks and faulty anchor would cause - we were delighted. We stocked it up with food and water, gulped down some carrot soup and set

Photos, from left: Our first sight of Norway; Testing the warm embrace of the bothy bag

Photo, right: All ready and packed up



off... for a motoring marathon as there was virtually no wind for the next 8 hours.

Exciting events from the overnight passage to Paradiset include a couple of dolphins, one tiny puffin, mistaking the depth metre's setting for a fault, starting the engine in reverse causing the tender's line to wrap around our rudder, and of course, slowly seeing the Lofoten archipelago appear through the mist during the morning shift.

We did the following shifts, getting a few hours sleep here and there:

	SHIFT 1	SHIFT 2	SHIFT 3
	9PM-12AM	12AM-3AM	3AM-6AM
LEADER	Gus	Rory	Kat
SUPPORT	Viet	Gil	Cosima
	Luke	Rowen	Miguel



Photos, from top: Luke showing off his crack climbing skills at the marina; The first breakfast in Lofoten: pancakes!



Photos, from top, left: A view of the marina; Gus and Miguel taking out the tender for a first ride; On our way to board the boat.



Photos, from top: A few bags waiting to be boarded; Gus and the boat owner ironing out the last details

Photos, from top: Luke, Rowen and Gil getting ready for the night passage ahead; And we are sailing! Well, motoring... (Viet looks happy helming while Luke looks scared of Viet's helming). Photo, next page: The Lofoten Islands revealing themselves bit by bit after our night passage.





Photos, from left: Gil showing his best profile, smiling after the long night passage; View during the passage



Photo, top: Rory freeing the rudder from the tender line, come hell or high water. (couldn't find a better idiom involving water)



Photo: Cosima and Kat enjoying a well deserved nectarine, also smiling after the long night passage. Cosima showing her multitasking skills by helming at the same time.



Photo, bottom: The Lofoten islands in the early morning following the night passage. Photo on next page: Cosima, Miguel, Rory and Rowen aboard the tender for the first day of climbing, also called "rest day". The stunning background will be that of the boat for the next 24 hours.



PARADISET

Day 3 - Sunday 23rd July

After seeing Nordryggen emerge from the clouds, and catching our first glimpses of Paradiiset, we decided to anchor just east of the crag. The water was a crystal-clear turquoise, allowing a direct view to the bottom of the sea, where jellyfish and starfish had made their homes.

Our original plan to rest for a day was quickly forgotten as we immediately set off for the terracotta-coloured granite walls of Paradiiset. Each team carefully loaded racks and ropes and people into the tender, trying to keep everything dry, and were dropped off at the base of Strosvæet by Gus. This cut our approach walk from 30 minutes to 30 seconds.

Most teams warmed up on 'Back to Paradise' (N3+) and 'Too Wide for Paradise' (N3+), happy to find solid and grippy rock. Rory, Miguel and Kat lead 'Strosvæet' (N4), a pleasant slab where micros were ideal, which Rowen, Cosima and Gil then seconded.

Luke and Viet - Luke lead 'Back to Paradise' following which they decided to climb 'Demonstranten' (N4) but got lost on their way to the area. What was supposed to be a short stroll quickly became an adventure on its own. They finally managed to reach the wall where Viet lead the route. Rory and Rowen followed up the same route.

Cosima and Miguel - Cosima lead 'Back to Paradise' (N3+) and 'Butter Fingers' (N5), whilst Miguel lead 'Strosvæet' (N4). The pair then went on a quest to find Dammen, a 'short' walk away, which turned into an hour of boulder hopping before they gave up and returned to the boat after a pick-up by Gus.

Gil and Kat - Kat led some un-mapped line to the left of Back to Paradise. An easy start up the ledges, left to a dirty crack with pro and ending in a thin traverse move below a huge and hollow flake.

The team felt happy and confident. Luke and Viet cooked delicious chicken, lettuce and yoghurt wraps for dinner, which definitely helped keep spirits up! Ambitious

plans were made for the next day, where we would all be attempting 'Nordryggen' (N4+) up Vagakallen - a 943 metre peak and the tallest in the area.

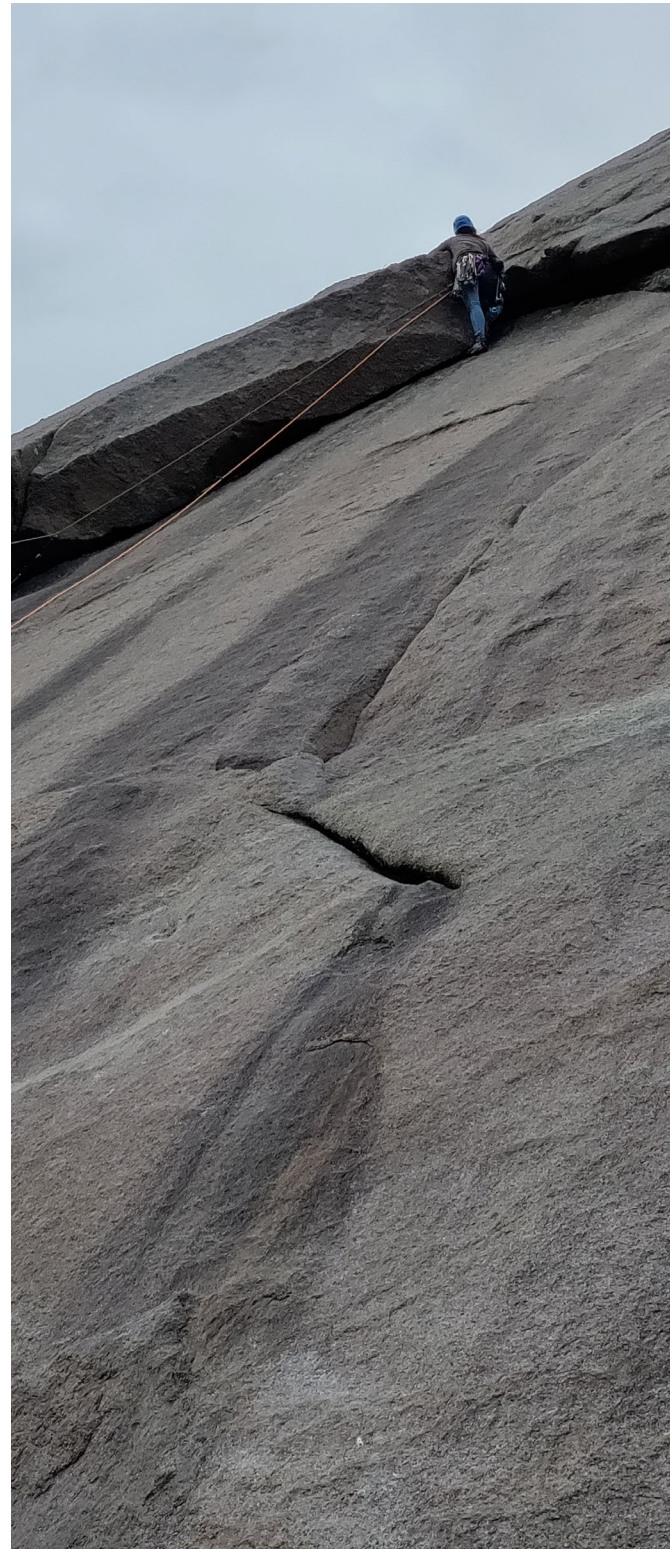


Photo: Rowen leading 'Back to Paradise'



Photos, from top: Rory watching Miguel and Viet on the boat; Rowen belaying Rory on 'Strosvæet'. Photo, next page: Rory inspecting the anchor.







Photos, from top: Gus rowing the tender in for a pickup; Cosima finding her balance up the first climb of the trip.



Photos, from top: Viet making his way to the shore; Viet and Luke getting lost between the buttresses of Paradiset





Photos, from top: Pebble beach at Paradiset; Cosima and Miguel taking a break from a climb



Photos, from top: Gus navigating into the anchoring in Paradiset; Our beautiful boat. Photo, next page: The cloud covered summit of Norddryggen.





THE NORDRYGGEN TRAVERSE

N4+, 505M

Day 4 - Monday 24th July

Rory and Gus rose at 6am to start the journey to our new anchorage at the base of the Presten wall in Djupfjord. The pairs for the day were the following, Viet-Luke, Cosima-Miguel, Rowen-Gil, Rory-Kat. The first three groups decided on an early departure to the Nordryggen traverse, leaving around 8am from the boat via a tender lift by Gus. The last team opted to climb a shorter multi-pitch before aiming for the traverse.

The team of 6 started the long approach walk to the ridge. What was estimated to be a 1-2 hour hike, turned into a gruelling 3 hour, chossy, exposed scramble up 600 metres to the start of the ridgeline. The start of the hike was boggy, and once we got to the loose rock, guided only by tiny cairns, we started to wonder if this supposed top 50 route would really be worth it.

Miguel and Cosima started swinging leads up Nordryggen, followed by Rowen and Gil, and then Luke and Viet. Each team had their dedicated channel with a common channel for all of the teams which facilitated communication and coordination later on.

Apart from two proper climbing pitches, one in a chimney, and the other in a crack, most of the pitches were not particularly pleasant, and after a few hours of choss, we were starting to lose hope on the veil of clouds around us lifting and to at least give us a good view of the sea below.

After a few pitches, the gap between the first two teams widened, resulting in Luke, Viet, Rowen and Gil sticking together for route finding. At around 2am, they finally reunited with Cosima and Miguel at the top where they found Cosima fast asleep (her fitbit confirms 1 hour and 5 minutes of sleep!), wrapped in survival blankets. However, there was still a wide jump separating the groups. Fortunately, Cosima and Miguel had set up an abseil and top rope for those who were not willing to make it across airily.

With all said and done, the 6 of us started the descent at 3am and at 8:30am, and finally made it back to the boat - not having eaten anything in 15 hours. A 23 hour adventure, boat to boat, taking full advantage of the nordic summer night light.

The team arrived on the boat, utterly fatigued, caked in dirt, and unquestionably parched. Gus revitalised us with a hearty serving of sausage pasta and Coke, resurrecting our energy levels.

Rory and Kat went up Skåningen for a 3-pitch adventure which took them over 4 hours of leafy, tense and fun climbing, where they tested the grip of Lofoten granite and the strength of its vegetation (lots of attacking cracks with a nut key to expose holds/placements). They set off on the Nordryggen around 2pm, and reached its base at 3:30pm. They climbed it in alpine style, covering ground quickly and reaching Gil and Rowen about halfway through. After discussion with the other teams it was agreed they would follow-on as their energy levels were too low to deal with the exposure of waiting for everyone to go to the top. They therefore passed the teams, sharing food and water, jumped over the gap and returned to the boat at 2am after an insecure descent in the scree.

Nordryggen proved to be a slow and long ridge, with plenty of choss and sand, with great climbing pitches dotting the day and night, thank god for the midnight sun!



Photos, from top left: Kat has finally seen the light; Gus navigating into our mooring; Kat, Cosima and Miguel excited (ignorance is bliss)





Photos, from top: Our anchorage outside Presten; Cosima, Miguel and Rowen on the approach walk to Norddryggen



Photos, from top: Ominous clouds on the approach to Norddryggen; The team looking excited on the approach with Rowen already feeling unsafe (note the helmet)





Photo: Miguel navigating the chossy and exposed scramble to the start of the route, followed by Cosima.



Photos, from top: Looking back down the approach; Luke and Viet enjoying the lake-side views before the epic.





Photos, from top: Cloudy ridges seen from Norddryggen; Gil contemplating the scramble he just finished.



Photo: Viet's original beta to climbing the chimney pitch. 10/10 creativity.



Photos, from top: Miguel high up on the crack pitch, one of two pitches with solid rock in the entire ridge; Rowen following up the scrambling pitches



Photo: Gil navigating the chimney pitch. Power screams were reported 3 pitches above this point.



Photos, from top: Cosima enjoying the view from Norddryggen; Cosima and Miguel trying to stay warm while waiting for other teams to reach the summit.

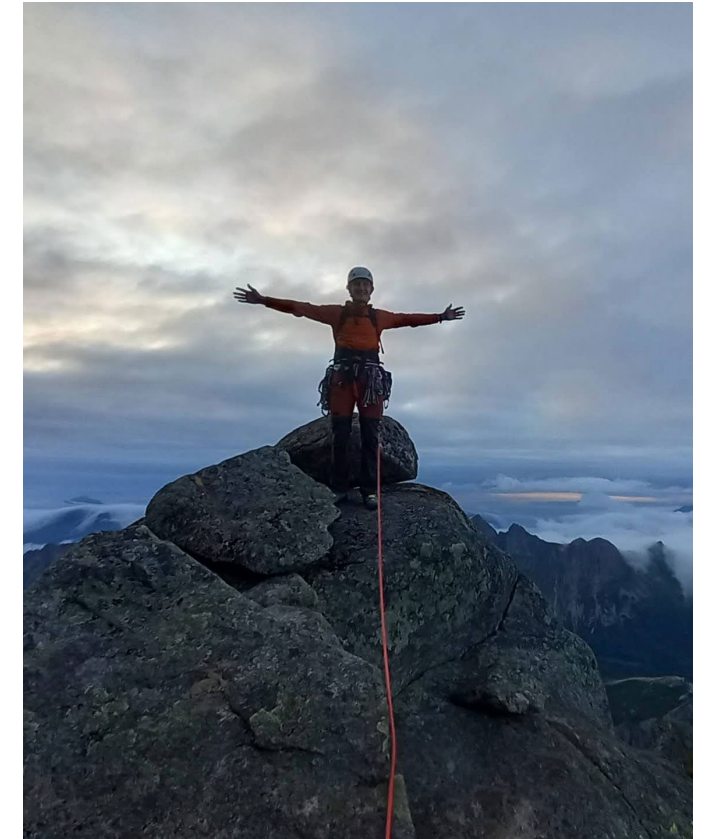


Photos, from top: Views from high on the ridge; Viet making the jump at the top of the ridge. Note the amount of slack, as he made a split-decision to attempt the jump after hesitating.





Photo: Kat on the 3-pitch route, Skåningen.



Photos, from top left Rory enjoying a break before taking on the Norddryggen ridge; Rory celebrating summiting Norddryggen; Kat on the final pitches of Norddryggen.

HENNINGSVÆR AND SVOLVÆR

Day 5 - Tuesday 25th July

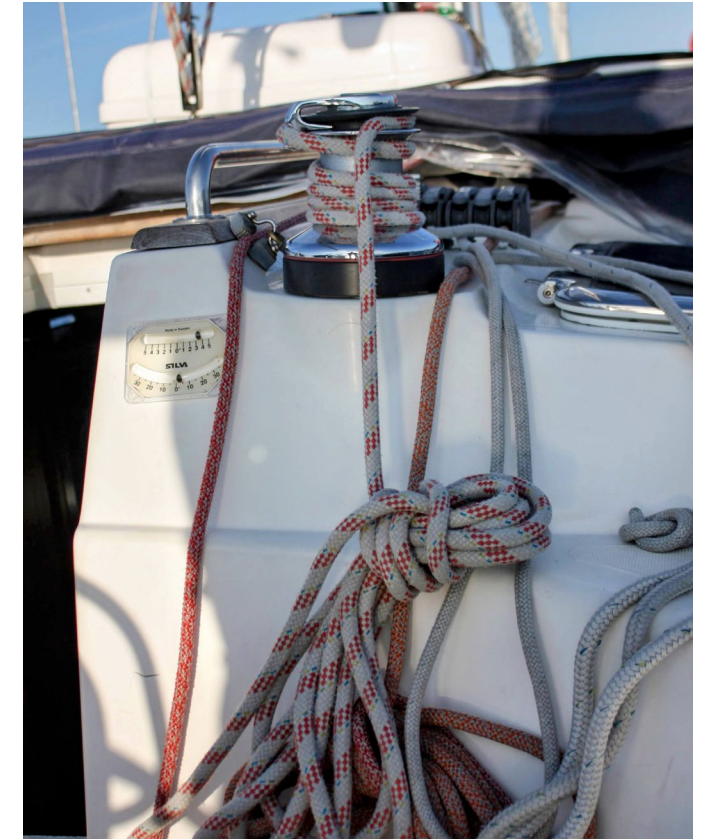
The team slept until midday (a paltry 4 hours) only rising as the wind was picking up. We embarked on a picturesque sail around Henningsvær, where our yacht's reputation for glamour was momentarily tarnished by a rather unglamorous incident: one of our toilets decided to spill waste water onto the floor. It's amusing how yachts are often associated with luxury and opulence, yet the less glamorous aspects, like having to stash toilet paper in plastic bags or dealing with overflowing toilets, tend to go unmentioned.

The water tank was dangerously low so we headed to Henningsvær in hope of finding power and water on the impressive canal, which formed the high street of the town. The guest pontoons were sadly full but we did not set-off before leaving a positive impression as Rory

and Luke failed to start the engine of the tender and drifted along the marina under the watchful eye of the local restaurant's clientele. Luckily, we were able to make our escape, motoring and sailing to Svolvær's marina 2 hours away. There was no closer harbour with berths free.

Upon our arrival at the Svolvær marina, we were welcomed by the harbour master, a character who exuded a rugged charm, speaking to us with a cigarette dangling from his lips and sporting a formidable beard. We took some very expensive, but very warm, 7 minute showers and ate tuna egg salad with rice for dinner.

Photo: Gus, Miguel, Viet and Cosima enjoying the sun after their epic on Norddryggen



Photos: Sailing around on our 'rest' day and making use of ropes to travel horizontally for a change... Photo, next page: Gil, Viet and Kat sailing







Photos, from top: Gus takes his power stance to assert his captain status; Gil and Kat in matching outfits enjoying the wind



Photos, from top: Our beautiful bathroom view; Viet ringing harbours to find us a berth for the night





Photos, from top: Gus relaxing in the sun; Luke and Rory prepare to find a berth



Photos, from top: Rory making the best of the weather; Miguel realises he hasn't thought through his staring contest with Rory. Photo, next page: Gil has some alone time as the sun 'sets'







Photos, from top: Miguel is weary after long days and little sleep; The sailing compass.



Photos: Sailing around Lofoten with Gil at the Helm.



THE GOAT

Day 6 - Wednesday 26th July

We arose at around 8 am and deliberately took our time preparing, determined not to repeat the mistake of clustering like we did on Norddryggen. Our goal for the day was to ascend the iconic Svolvær pillar, famously known as "the Goat". To reach this towering rock formation, we had to walk through a cemetery (spooky) and up a hiking path with stunning views of the, mostly floating, town. The hiking path was built by Nepalese Sherpas and dubbed 'The Devil's Staircase'. We soon saw why. Our legs were still sore and climbing up big rock steps under the sweltering sun was not easy. Still, we overtook most of the many (many, many, many...) hikers and tourists going up them.

Rory led Rowen and Gus up 1910 Ruta (N4+) on the North side of the pillar. It is reported that Gus happily jammed his way up and was only flustered by the abseil where he lowered off in the wrong direction and was

stranded on the wrong side of the cliff. He thankfully regained climbable ground with the help of a sacrificed young tree and a friendly local guide. Rowen accidentally stole someone's ab tat.

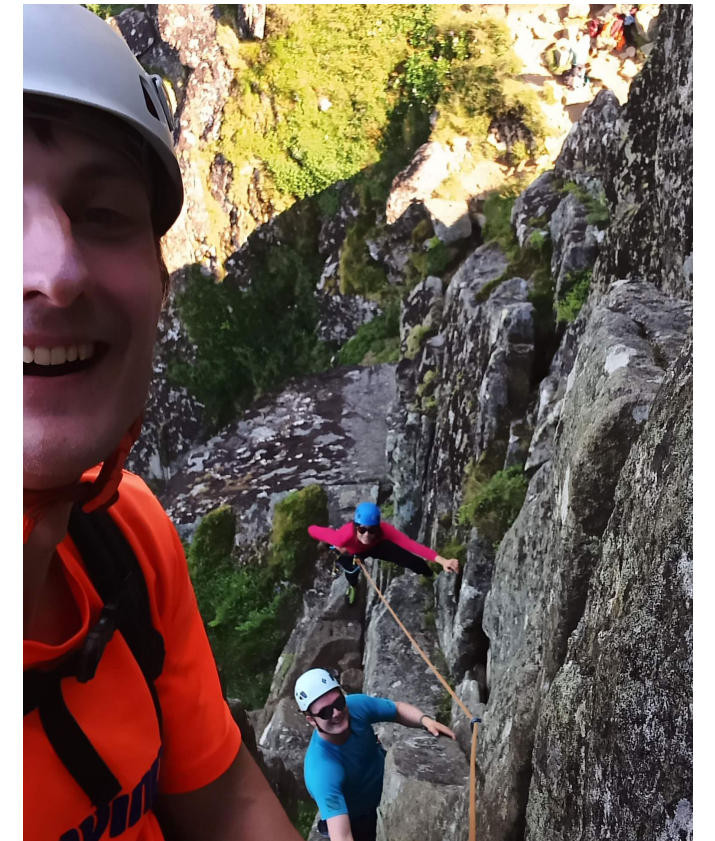
Cosima, Luke, Gil, and Viet followed up the same route, comfortably making their way up if it weren't for the traffic and some rude local guide.

Kat and Miguel swung leads on Forsida (N5+), enjoying some finger cracks, slabs and a surprising offwidth on an enjoyable and memorable line. Rory later lead up this route as well, followed by Rowen.

The busy summit had a few of the group waiting in a queue, with legs painful from sitting in a harness and straddling arrêtes.

The evening had us trying the recommended local snacks of cinnamon wraps, brown cheese and dried cod, it was a bit hit-and-miss.

Photo: Everyone a bit sweaty from the staircase.



Photos: Rory, Rowen and Gus making their way up the 1910 Ruta.





Photo: Kat climbing 'Forsida' in Svoelvaer



Photos, from top left: Luke on the '1910 Ruta'; Rowen and Gus waiting to abseil from the top of the pinnacle; View of 'The Goat' - the summit of 'Forsida' and the '1910 Ruta'

THE AQUARIUM

Day 7 - Thursday 27th July

We set sail (though it was mostly motoring once again) to reach the aquarium and watch the seals and otters being fed. The spectacle was very endearing, and we spent just an hour looking at the local sea life, before returning to the boat for a satisfying lunch and well-deserved afternoon nap.

Our original intention had been to continue our adventures with an afternoon climbing session at Paradiset. However, as fate would have it, we all succumbed to a shared bout of sleepiness, leading to a very long nap instead of climb.

Kat, Luke, and Gus ventured into town to buy some fresh fruit, while Gil, Miguel, and Cosima set off fishing with the tender.



Photos, from top: Approach to the Aquarium's dock; Happy seals; Miguel, Cosima and FBI agent Rowen pretending to be tourists

Photos, from top: The seal feeding time; The aquarium



Photos, from top: Viet threatening to club Norwegian fish; Gil and Miguel showing off their catches



Photo: The boat anchored near the aquarium



Photos, from the top: Rowen hiding from the sun; Gus working on his tan



Photos, from top: Kat freezing in the sun; Brunost (brown cheese) on rye crackers - a Norwegian snack

PARADISET 2.0

Day 8 - Friday 28th July

A day out in Paradiiset! Cosima and Miguel headed back to the central crag, where Cosima led up Living in Paradise (n5+).

Rory and Kat spent the morning teaching Gus how to place trad gear and build anchors. He set off for his first lead with Rory at the belay and Kat on a rope, closely following him and providing gear commentary. He did so well he was put on to 'Too Wide for Paradise' (N3) and broke it into 3 parts for his first multi-pitch!

Gil and Miguel then headed further inland to send Svenske Diedret (n6+), where they were joined by Rory and Kat (who will need to come back for the clean ascent).

Cosima and Rowen hiked across the crag towards the Boulders area, but ended up on some scary scrambling terrain and were delayed. A few single pitches were climbed, before Gus found his way to the group with the tender and took everyone back to the boat.

Rory and Kat then returned to Living in Paradise to climb 'Too Late for Paradise'. Kat established the first "boat-up" ascent, closely followed by Rory and later Miguel and Gil. Kat may have belayed them or may have been distracted by a jellyfish.

Luke and Viet explored 'The Boulders' area of Paradiiset, where they tackled a few single pitches of varying difficulties.

Viet and Luke cooked burritos, which devolved into a chilli with sides but was delicious nonetheless.



Photo: Rory at the top of 'Living in Paradise' with Kat and Gus belaying from the dinghy



Photos, from top: Cosima leading up the crack in 'Living in Paradise'; The dinghy attached to rocks to ensure we could get back to the boat. Photo, next page: Gus leading his first trad route - not bad for a sailor!





Photos, from top: Gil, Gus, Rory and Miguel on top of 'Living in Paradise'; Gil seconding 'Living in Paradise'



Photo: Mars or Paradieset?



Photos, from top left: Rory leading 'Svenske Diedret' (n6+); Rory belaying Kat up 'Living in Paradise'; Kat supervising Gus's first outdoor lead



Photos, from top: Rory and Kat at the top of 'Svenske Diedret'; Life inside the boat

DJUPFJORD MULTIPITCHING

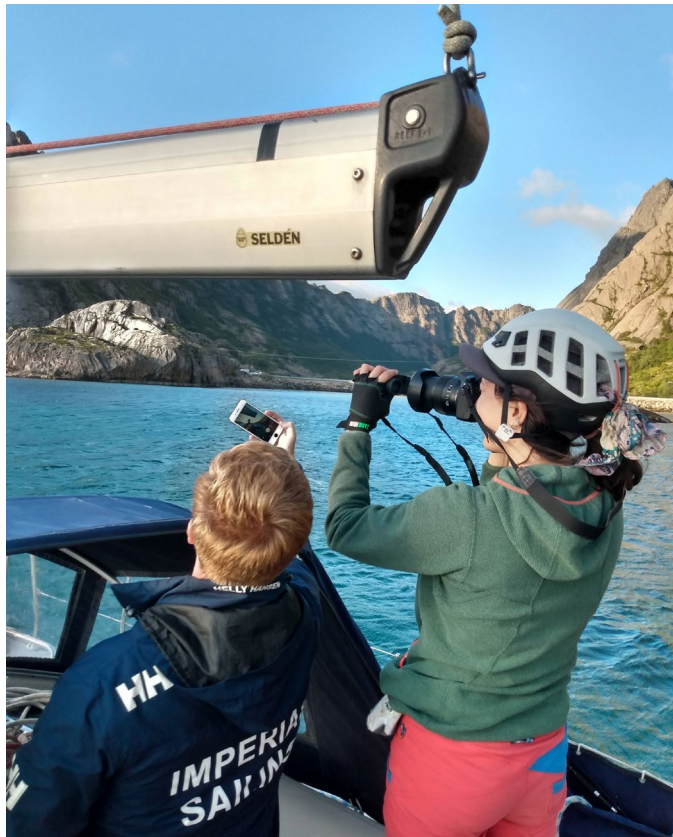
Day 9 - Saturday 29th July

After a morning of sailing from Paradieset to Djupfjord, the team set out on a few short multi pitches in the afternoon.

Cosima and Miguel headed to Gandalf in Gollum (n5)

Luke and Kat headed up Applecake Arete (n5+) in Pianokrakken.

Rory and Rowen climbed the same route (Applecake arete) after. Rowen was leading the final pitch when she fell (not once, but twice) after placing her last protection (a microcam) a body-length away. This was accompanied by the customary scream (on both falls). Thankfully the microcam (and her sanity) remained intact after the fall.



Photos, from top: Kat abseiling down 'Applecake Arete'; Miguel getting picked up by Gus via dinghy; Gus and Kat comparing photography skills

Photos, from top: Miguel and Cosima after their multipitch; Viet with his two bodyguards. Photo, next page: Happy sail.



BIG DAY OUT VS. RESTFUL SIGHTSEEING

Day 10 - Sunday 30th July

Miguel and Rory headed up the Vestpillaren Direct (n6), an ultra-classic route which snakes up Presten for 470m. The route is composed of 12 pitches, amongst which are intermingled 4 hard sections at N6-/N6. Following some time waiting for an earlier team to head up the route (6am wasn't early enough!), the pair swung leads and managed to link the two short easy pitches. This allowed them to split the harder N6 pitches between them and overtake a slow team ahead of them (with their kind permission). Miguel's upset stomach failed to prevent the team from finishing the ascent, thanks in part to Rory's spare 'wag bag', which was used while on lead to permit Miguel some privacy (and Rory some safety). No further details of this incident will be shared. The N6 pitches were passed without too much trouble, albeit Miguel dropped his smallest microcam mid-cru. The pair climbed swiftly,

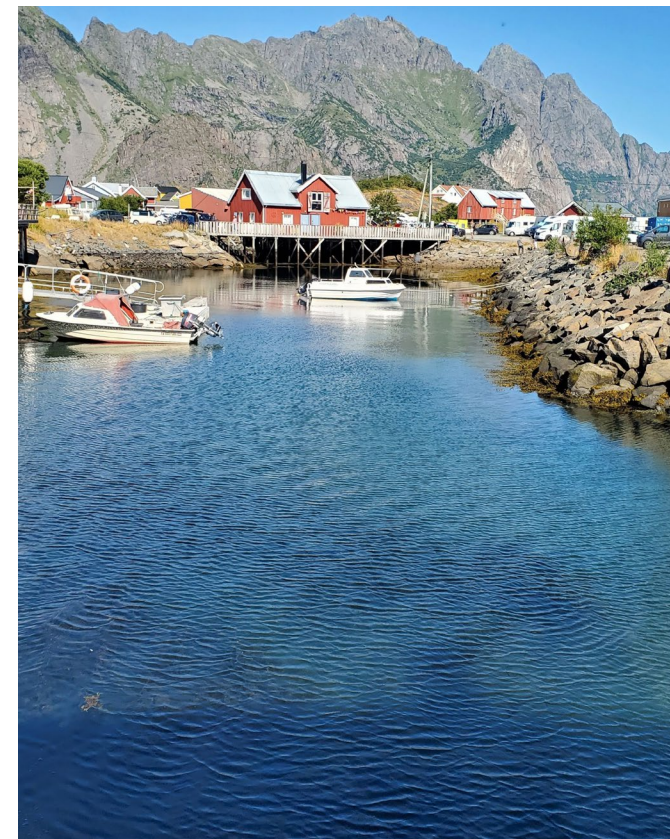
Photo: Rory seconding up the 2nd n6 pitch on Vestpillaren Direct.

and managed to finish the climb and descent in under 7hr, making the ascent a highlight of the trip for both climbers.

Viet and Kat swung leads on the Ant Line and its Extension, under an increasingly unbearable heat. Kat wiggled through creative chimneys while Viet did an excellent job at climbing cracks despite his historical dislike for them.

Gus, Cosima, Luke, Rowen and Gil sailed to Henningsvær for some well-earned rest, resupplying and coffee.

The team re-united in Henningsvær, and enjoyed some live music and food at the Norwegian Climbing cafe.



Photos, from top left: Viet avoiding the crack on Ant line (N5+); Luke, Gil, Rowen and Gus: would-be vikings; Somewhere in Henningsvær; The ugly and the beast. Photo, next page: Miguel on the second to last pitch of Vestpillaren direct





Photos, from top left: Miguel leads a crux pitch of Vestpillaren Direct; Somewhere near the top of Ant Pillar Extension (N5+) with the magnificent sea as a backdrop; Walking along the road between Henningsvær and Pianokrakken.



Photos, from top: The calming atmosphere of Henningsvær's marina; Luke, Gil, Cosima and Gus enjoying a Norwegian breakfast

HITCHHIKING CLIMBERS

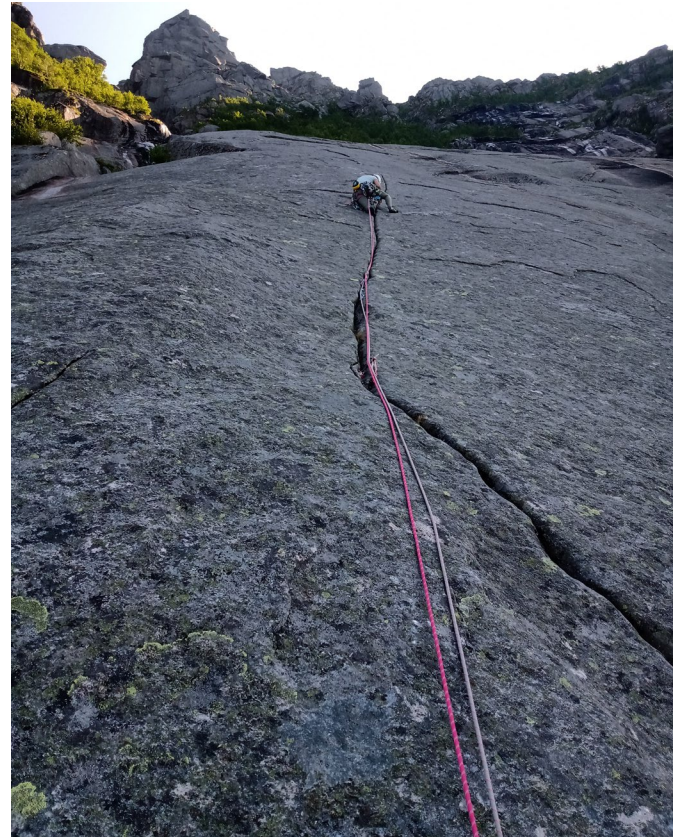
Day 11 - Monday 31st July

More short multi-pitches in Djupfjord Area

Cosima and Rory swung leads up Solens Sønner (n6), an amazing 4-pitch route with perfect friction slabs (albeit, a little run out...) and finger cracks. They then climbed the 3-pitch route, 'Dagens Rett' (n6-), which included an ant infested crack lead by Rory (ouch), and a bold roof lead by Cosima. The pair hitchhiked back to Henningsvær with a friendly couple who were heading into town for the festival.

Miguel, Luke and Gil swung leads on the Ant Line (n5+), but decided against doing the extension due to the heat, and swam in the lake in Djupfjord before hitching a ride back in a vintage VW van.

Rowen, Viet and Kat rested.



Photos, from top: Cosima leading a finger-crack slab on Solens Sønner; View across Djupfjord from Solen Sønner



Photos, from top left: Luke leading up a pitch on Ant line'; Gil on 'Ant line'; Cosima seconding up Solen Sønner





Photos, from top: Kat practising her navigation skills; Gus contemplating if sharing a boat with 8 smelly climbers was such a smart idea...



Photos, from top left: Kat exploring Henningsvær; The sunset from Henningsvær marina; Gus looking fabulous and posing for his next Tinder profile. Photo, next page: Cosima abseiling down Solen Sonner



PARTNER EXCHANGE

Day 12 - Tuesday 1st August

No hitchhiking today, Henningsvær must've partied too hard the night before at the festival to be up in time for us

A logistical circus was about to ensue, the teams would begin as Luke + Miguel + Rowen, Kat + Rory, Cosima + Viet but, come lunch time, we planned to meet up and exchange to Luke + Rowen, Miguel + Rory + Cosima, Kat + Viet ... some of this went to plan

Luke, Miguel and Rowen climbed the three star Solens Sonner, starting far too low and adding an extra pitch. This mistake was repeated by Kat and Viet later when they mistook the start of the route to be where the previous team had left their bags. The route was a great long slab with a beautiful delicate and airy step, a finger crack and runouts, but took longer than expected. Viet did an excellent job on slab (despite a longstanding claim as one of his allergies). A few more Norwegian friends were also found on route.

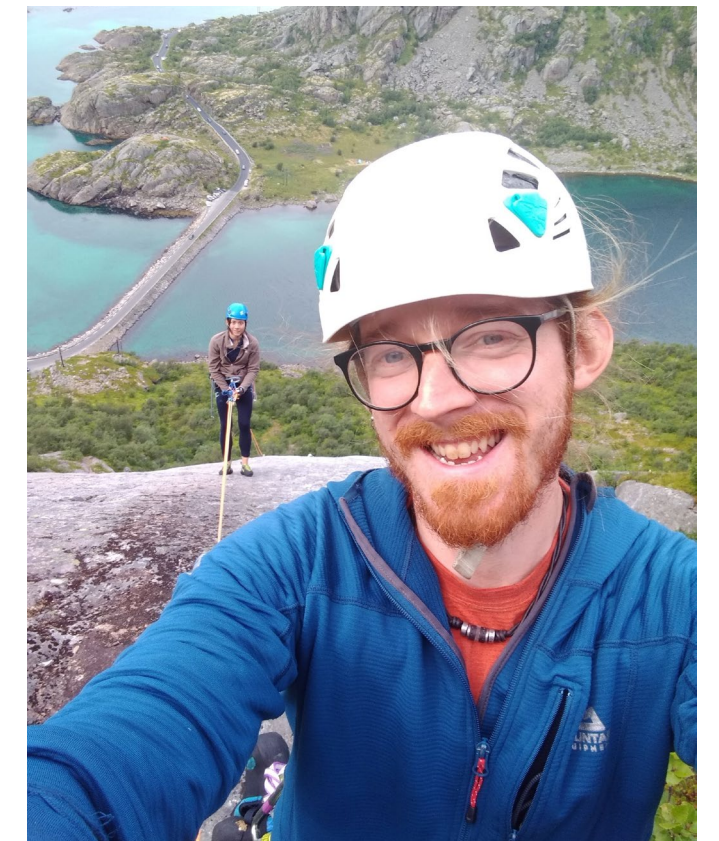
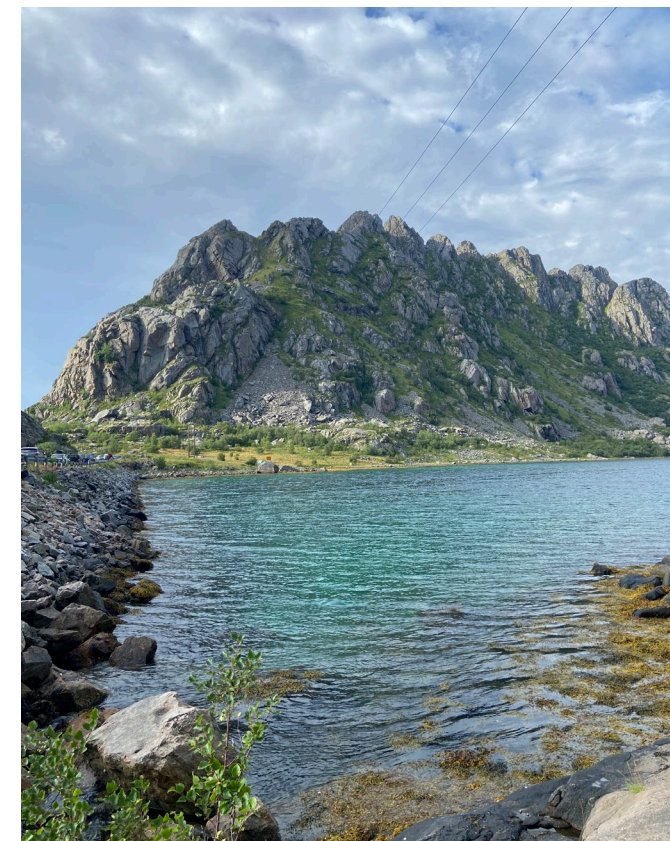
Cosima and Viet had an adventure on another three star route Lys og skygge. Kat and Rory's climbed 'Tromso ekspressen' (n6).

Rory gathered his gumption and flashed the three star technical N7- Tapir, his highest grade climb of the trip and of his career. Miguel would soon be on his heels also attempting the lead. Cosima and Luke got the send as well on top rope. A great effort.

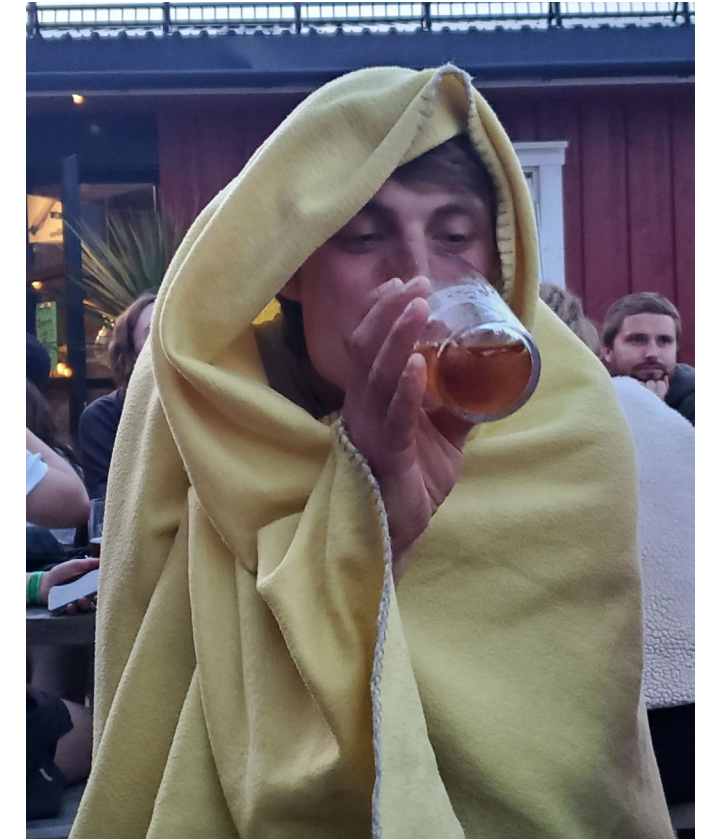
Back on the boat, we made plans for an early start to squeeze more climbing into our final day (we had sadly decided that the climbs in the west were too risky without aiding knowledge).



Photo: Miguel leading up 'Tapir' (n7-)



Photos, from top left: Cosima and Viet topping out on 'Lys og skygge'; The view across the lake towards Pianokrakken; Luke and Rowen near the top of 'Solens Sonner'.



Photos, from top left Miguel and Luke enjoying a snack on Solen Sonner, while Rowen catches up below; Miguel's all-natural bio-degradable anchor found in a bush halfway down Solen Sonner; Luke found all his courage to cruise up the run-out slabs of the top pitches.

Photos, from top: A very cozy Granny Ro-ro taking a sip of beer after a long day climbing; A view of the nearby islands.

THE FINAL CLIMBS AND A STORM

Day 13 - Wednesday 2nd August

The early start was indeed early. Kat + Viet had their eye on a burly N7- (perfect for Viet), but a mega effort later and it wasn't to be, both the climber and the gear were spent with a black totem giving up in what was later suggested to have been a passive placement.

Rory and Gus climbed 'Angermanland' (n5).

Luke was convinced he could lead an N6- and wanted to try. The climber was tired and without skin, the climb was pumpy. Yet, after some shouting, resting and arguing, it went!

The climbing was done and now we had to sail to Reine in the West

A fuel stop was required on route, and whilst we stood on the pontoon, Muligheten happily sipping away on the very necessary diesel, we learnt how the children of Lofoten passed the time. Child after child screamed out of the town on their boats, circling one another, daring to collide but dodging away at the last moment, it made our childhoods spent in dark rooms with games consoles seem a little tame.

We cruised along to Reine, spotting the climbs of the west on the colossal costal mountains as we went, they looked epic

We briefly explored the town and started on shopping and dinner.

The storm we had been monitoring for the last couple of days, and from which we had planned to shelter in Reine, was threatening to be a major feature of our return journey.

We decided we would get ahead of it, and with dinner barley cooked let alone consumed, we set off for Bodo

We would do an overnight sail with shifts. Things started okay, if not a bit choppy, but the winds picked up throughout the night, peaking at 40 knots, so we had our little handkerchief out to keep things as calm as could be but the Bimini was serving has a fairly effective sail. Gus

and Rory pulled a heroic overnight effort, considering where else we could find harbour, manning the boat, and getting us into Bodo by midday the next day. Some of us were feeling sick, some of us were sick, all of us were exhausted.



Photo: Last food shop of the trip by dinghy



Photo: Luke attempting his n6- , belayed by Miguel. Photo, next page: Luke on the same route with our boat in the background.





Photos, from top: Kat, Rory, Gus, Gil and Viet enjoying the sail before the storm; Rory monkeying around on the mast

Photos, from top: Miguel reflecting on the trip; Viet, Gil and Rowen having a giggle. Photo, next page: A different kind of view!



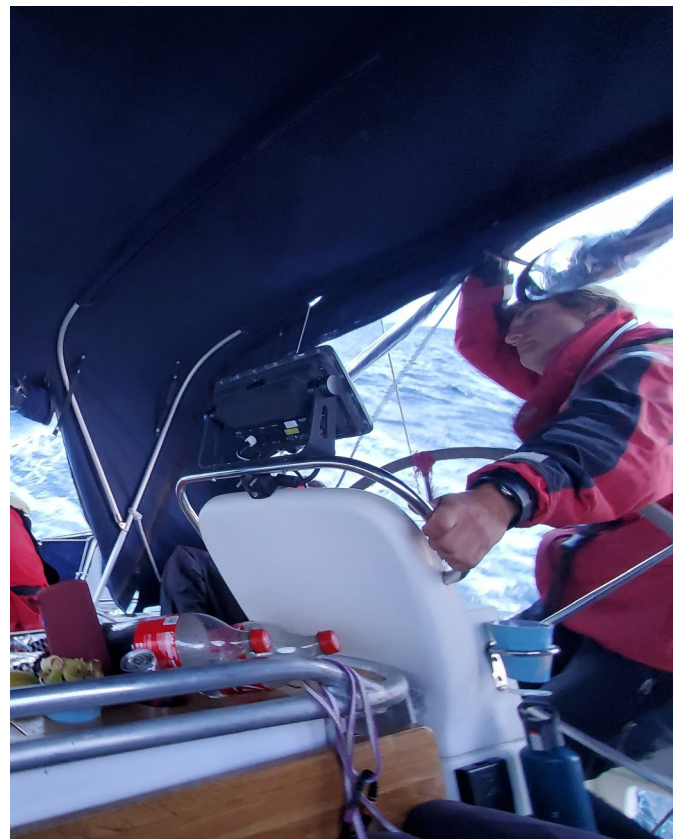
BACK IN BODØ

Day 14 - Thursday 3rd August

We got into Bodø around midday, got the boat into a reasonable state and then we all got some sleep.

Luke and Viet went off to the store to get supplies made pancakes, bacon and berries for us all to recover

Continuing with our restful day, we sat back and watched 'My name is nobody' in the evening. Perhaps restful was the wrong word, a truly absurd movie that elevated Rory and Gus' blood pressure.



Photos: Gus (top) and Rory (bottom) helping the boat safely before the storm; Luke sorting out the vast pile of trad gear



Photo: Rory protecting his tin of mackerel - there was never a more romantic couple!

SALTSTRAUMEN AND THE LAST SAIL

Day 15 - Friday 4th August

After a well deserved rest, the team visited Bodø. We made a short stop at a Norwegian bakery for some delicious pastries and sandwiches. We then continued on to our destination, the Salstraumen, which required a 30 minutes bus.

Once we arrived at our destination, we marvelled at the sight of the strong current, which then became the site of stick races. We then savoured the delicious sandwiches bought previously in this incredible place and then decided to go back to Bodø.

For some reasons the bus service back to Bodø was very sparse and terminated early in the day. This combined with the vast number of people from the cruise ship made the return journey trickier than expected.

After what appeared to be a long time and a few buses filling up before we could even get to the door, we decided to hitchhike our way back. Although it took a total of 6 cars to bring the full group back to the boat, the struggle was minimal.

The team then decided to go for one last sail in the evening, circling around the island of Landegode. What was supposed to be a short sail, no longer than a couple of hours, turned into a demanding 6 hour sail with great winds, albeit slightly stormy seas. Plans to anchor and have dinner watching the sunset had to be scrapped due to weather conditions, making the journey one large push back to the marina.









CLEANING UP

Day 16 - Saturday 5th August

We spent the morning cleaning up the boat before handing it over to its owner. We realised that we had a lot of leftover food, which we hauled along with our belongings to the Airbnb that would be our final abode before flying back to London.

We spent the afternoon writing and sending postcards to our friends and family. We also took advantage of the huge living space in the Airbnb to organise our climbing gear. Then we watched some TV together like one big happy family.

For dinner, we cooked leftover food from the expedition, which included an unreasonably spicy salad (in the chef's defence, there were no other options for salad dressing except for olive oil with chilli in it). Everyone was knackered but content and looking forward to having a restful night's sleep.

GOODBYE, AND UNTIL NEXT TIME!

Day 17 - Sunday 6th August

There was no more fitting option for a final group breakfast than pancakes, just like what we had on our first breakfast in Norway. We packed up and made our way to the airport. Thankfully, we had a smooth journey home despite multiple transits. After collecting our luggage at Heathrow, we exchanged our goodbye hugs and parted ways.





4 LOGISTICS

Training, travel arrangements, funding, insurance, communication, medical arrangements.

TRAVEL ARRANGEMENTS

The team flew together from London Heathrow to Bodø (via Oslo). A spare day was arranged to facilitate arriving / departing from the expedition, where the team stayed in an AirBnB in Bodø. The team travelled by boat for the rest of the expedition, alternating between safe moorings and harbours depending on the need for fuel, electricity and water. A small tender allowed the team to travel between the boat and the mainland.

FUNDING SOURCES

Funding was acquired from various sources as follows:

SOURCE	VALUE, GBP
Imperial College Exploration Board	6000
Old Centralians' Trust	3750
Royal College of Science Administration	500
Jeremy Willson Charitable Trust	500

PERMITS / PERMISSIONS

No permits were required for the expedition. All members had a visa-free entry / previous visas to enter Norway. Ocean fishing does not require a permit in Lofoten.

INSURANCE

We engaged the services of Snowcard, with Max Adventure as our level of cover. Thankfully, we didn't need them (although being covered did give us some peace of mind).

TRAINING FOR THE EXPEDITION

Peak District - 27-29th January 2023

Our first trip out as a team! We drove up to peaks on Friday evening, the car loaded with racks and ropes for some trad, arriving at a little bunk house in Hathersage late into the night (we learnt we needed to be a bit quicker out the door with shorter breaks on the drive). This trip was a refresher experience for some, an opportunity to push grades for others, and an adventure for all. We climbed in Rivelin Edge for the first day, and Froggatt Edge for the second, ticking some great routes.



The team plans the first day



Luke follows Rory's misadventure up Valkyrie

Swanage - 10-12th February 2023

Swanage, Dorset, was the next destination. A weekend of sea cliff climbing had everyone excited but a little intimidated. What we were not expecting was how much faff we would create: deciding on racks; bringing only a single static rope for abseiling; abseiling over the edge without shoes, without ropes, without head torches, without reading the guidebook that was now 15m above us (a guidebook that turned out to be out-of-date). Definitely an experience from which we learned to be organised. Nonetheless, we got in a couple of great days of climbing which included: face climbing; slippy and wet chimney climbing; and Rowen's first multi-pitch! - which included an exciting traverse. All with the sea crashing imposingly beneath us. Plus, Kat's first adventure driving in the UK - an event some passengers called more noteworthy than the climbing.



The team takes a break from abseiling off the cliffs



Kat follows Viet's lead of Via Christina above the maelstrom

Westway - 17-19th March and 31st-2nd April 2023

The weather turned sour and waylaid our next couple of trips. We used this as an opportunity to practise rope and rescue skills: belaying from above, tying off a climber, escaping the belay, returning to the belay, lowering a climber on guide mode belay. Some of this proved trickier than the guides made out and would require a few weeks of practice and experimentation to get right. Also, as if Westway were our secret benefactor, the gym had just set their first crack climbing route - so we still managed to get in some expedition appropriate climbing.



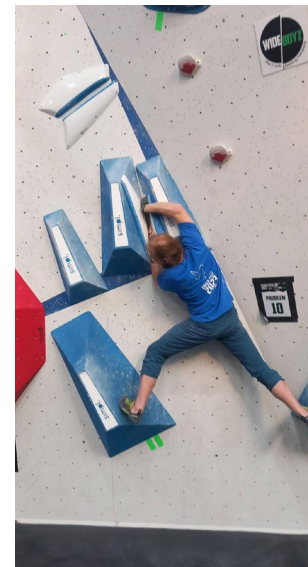
Luke and Viet discuss escaping the belay

Crackfest - 25th March 2023

A crack climbing festival? Perfect! The wideboyz took over Sheffield climbing gym for a crack climbing only festival. So, of course, the team made the journey to get stuck in and climb. The density and variety of crack problems was incredible and rapidly helped unlock and refine crack techniques.



Cosima, Luke, Rowen and Kat jam, span, and squirm their way up boulders



North Wales - 28th March - 1st May 2023

The long weekend was the perfect opportunity to get further afield. The team and friends made their way over to Wales to get on to some longer multi-pitch routes. With the weather looking a bit questionable, the shorter routes on Tryfan and Little Tryfan played host to practising multi-pitch techniques and adventure. With the weather looking very questionable, and feeling a bit wet, the team spent the next couple of days exploring the slate quarries of Gwynedd and limestone Castle Inn quarry - a mix of trad and sport.



Rory leads Looning the lube



Walking into the slate quarries of Gwynedd

North Wales - 26-29th May 2023

Back out to Wales for another long weekend, another long drive, and bunk beds in a little church in Bethesda. The weekend started with the revelation of a forgotten helmet and harness that required an early morning visit to a store. Undeterred, the team scrambled around Tryfan and had a great time climbing longer multi-pitches and ticking off long desired classics. A busy weekend for the mountain rescue team, who were out aiding a few unfortunate scramblers, made things a little tense and consequences seem more real. The weather was stunning all weekend, perfect for ending the days with a swim in the lake. The trip was wrapped up with a few short multi-pitches in Tremadog before heading back to London - itching for the next climb.



Rory, normally leader of the nonsense, can stand Kat's no more



Alice, Luke and Cosima walk down the hill, daydreaming about a swim

Millstone - 9-11th June 2023

The team rouses from their sleep, tired after a night in a hut accompanied by a guest who screams in their sleep and another who is unphased by their own 4:00am alarms. Things continue a little frustratingly when we arrive at the crag car park, locked with no explanation and a group of confused locals (some locked inside). But, we're in Millstone, we've got a brand new team member (Gil), and it's the first time we're focussing on crack climbing outdoors, so the excitement means our spirits are barely dampened. We got great mileage out of newly acquired crack gloves and there was a lot of trying hard - we even found a little crag swag. The sun was intense and without shelter, nor enough water, we retreated early each day to the river.



Gil embraced by the team as the catch of the day



Miguel begins his climb up Great Portland Street

Wye Valley - 30th June - 2th July 2023

The last weekend-trip before the expedition. We wanted more multi-pitch practice so we went over to Wintours Leap in the Wye Valley. The valley was looking beautiful, the path to the hostel in the valley was looking hostile - something we did not look forward to each day. We got plenty of mileage on some highly rated routes, some so pegged up we questioned whether it should be considered sport climbing. A couple of minor injuries that needed resting in the team meant there was an element of practising rope skills: with anchors constructed, we learnt and experimented with switching between ascending a rope and abseiling down (in case one misses their anchor on an abseil, or ends up hanging in free space). It was also this weekend that we became experts in solving crosswords.



Cosima abseiling down a rope



Gil and Viet ascending up a rope

Sailing - 21-23rd April 2023

We headed down to Portsmouth for a team sail - for some the first sail ever. We made a calm, mostly windless, overnight passage to Portland; a lot of snacks, tea and music were consumed. We experienced what it was like to be on a boat, imagining our - slightly smaller - boat in Norway filled with all of us and all our climbing gear. The expedition was beginning to feel tangible and exciting, and maybe a bit cramped. We rested in Portland, chatted, played games, and found a few boulders to climb on the coast. The wind picked up, and with it came the opportunity to sail out and back to Lulworth cove for dinner. With their first experience with sailing, some also got their first experience with sea-sickness and with the heeling of the boat. We sailed to Portsmouth the next morning and most of the team wearily, but with a smile, made their way home.



Gus effortlessly skippers his team of climbers



A Greek dinner in Lulworth Cove

Sailing - 16-18th June 2023

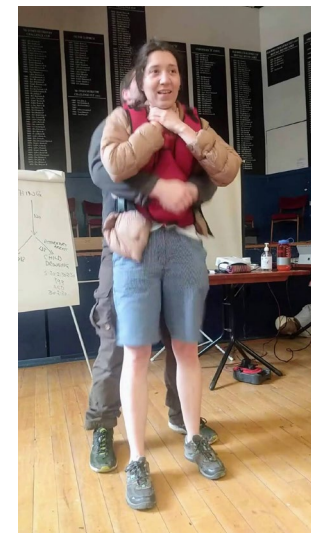
Gus, Kat and Cosima went on another sail, following an almost identical trajectory as the team's sail 2 months prior. Except this time, there was almost no wind... As a trade off for the lack of wind, much swimming and sunbathing was achieved and no one got sea-sick.



Photos, from left: Kat taking the wheel; Cosima and Kat doing a team building exercise by wearing matching outfits.

FIRST AID

Many of the group needed to complete their outdoor first aid qualification. We attended a weekend course in Camberley run by Will4Adventure. An excellent course filled with information and roleplay delivered by course leader Lizzy. Most of us went home and expanded our first aid kits and survival gear.



Kat is rescued from choking on a life threatening nerf dart



FOOD

We had initially budgeted for a total of £1296 for food at £3 per meal assuming 3 meals a day, for 9 people, for 16 days. We spent £1,367.05 in the end, which is ~£3.16 per meal. (this doesn't include personal costs such as cafes, bakeries and drinks).

Overall, we estimated fairly well.

ACCOMMODATION

For the first and last nights, the team rented an Airbnb in Bodø, allowing rest after/before the flight. Moreover, it was the only place where we would have enough space to comfortably sort gear, for both climbing and sailing, which was rather useful and the beginning and end of the expedition.

For the remainder of the expedition, the team stayed in the cabins in the boat, with some of us sleeping outside in hammocks, allowing for more space below deck.

COMMUNICATION

Further research previous to the expedition indicated there would be strong 4G cover in all the areas planned to be explored. Nonetheless, each team carried a back-up emergency device, Garmin Inreach Minis, allowing calls for help regardless of network coverage. Furthermore, a satellite phone was kept in the boat, with an updated SIM plan, ready if necessary. Lastly, communication between members of a climbing pair and between teams on the same area was done via hand-held radio devices, Motorola Talkabout T82 Extreme. These proved to be reliable and with enough coverage for the task at hand.

MEDICAL ARRANGEMENTS

(See appendix for list of first aid kit contents.)

5 IMPACT

Environmental and social impact assessments.

TRANSPORT

- A European destination was selected to reduce the environmental impact of travel, especially given the two weeks duration of the expedition.

WASTE MANAGEMENT

To minimise environmental impact throughout the trip, the following consumables and waste management protocols were implemented:

- Filtered/tap water used in place of bottled water wherever possible.
- In line with Lofoten National Park's Leave No Trace ethics, human facilities were used and if none were available in the area, human waste was disposed using 'wag bags'.
- Aimed to minimise food packaging and non-recyclable waste, although options were sometimes limited due to small port supermarkets.
- Waste was stored on the vessel until it could be appropriately disposed of at a recycling and waste

management centre.

- Ocean friendly consumables, such as soap and sunscreen, were used to minimise damage to aquatic life.

DOCKING RESTRICTIONS

Due to the potential environmental impacts of docking, only signposted docking areas were used throughout the trip, to ensure minimal sediment disturbance and disruption to sensitive communities.

BIRD NESTING AND ACCESS RESTRICTIONS

At the time of this expedition, no widely available information regarding nesting birds and the bird nesting season could be found online or in the climbing guidebook which covers the mountainous areas of interest. As such, climbers and hikers are advised to seek guidance from local sources and to use their own intuition when selecting routes to cause minimal disturbance to any birds. We did not encounter any bird nests, or birds near climbing routes.

MISCELLANEOUS

- Used and second-hand gear was used for the trip as much as possible, sourcing equipment from the exploration board, Imperial College Mountaineering Club, Imperial College Yachting Club and 2nd hand sale sites/forums.
- Locally produced food, goods and services were preferentially used to ensure economic reinvestment, and to minimise logistical costs and impact.
- Interactions with the local animal population was avoided.
- Leave No Trace ethics were adopted wherever possible.



A seal from the Aquarium we visited

CARBON EMISSIONS

The greatest source of greenhouse gas emissions were the return flights to Bodø . The second is related to fuel consumption which we tried to mitigate by optimising our itineraries to reduce the use of diesel as much as safety allowed. All emission factors originate from the ADEME Carbon Database.

ITEM	EMISSIONS - CO2 EQ
Marine diesel oil	0.15
Gas cooking	0.01
Flights	9.3
Gear	0.22
Food	0.001
Water	0.0001
TOTAL	9.6811

6 CONCLUSIONS

Conclusions and recommendations for future similar expeditions.

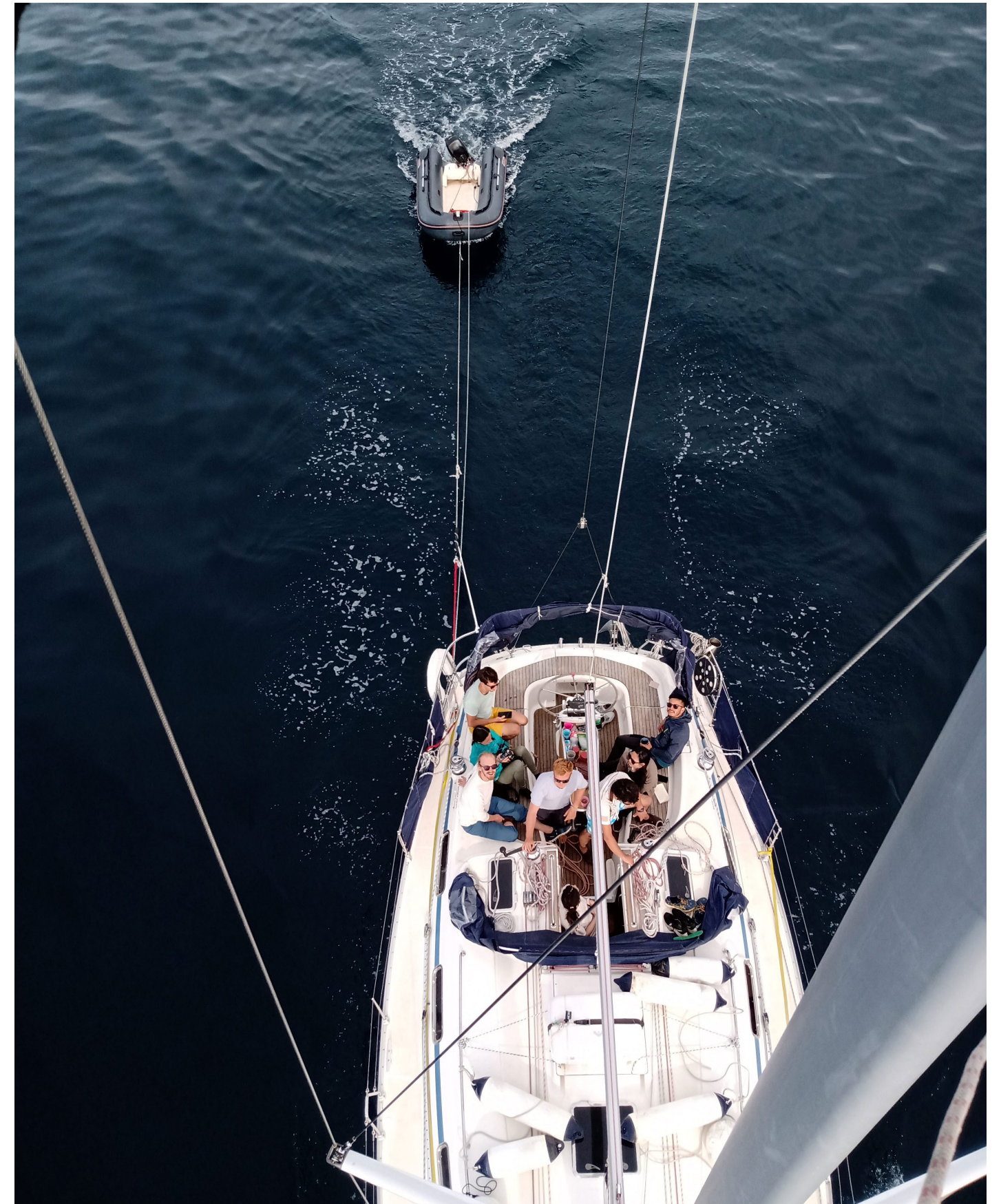
As this expedition has concluded, we take the opportunity to reflect on this journey. It is certain that the memories of exhilarating sailing, world-class climbing on solid (when not crumbling) granite and living on a boat (with limited holding capacity) for two weeks, all in the breathtaking backdrop of the Lofoten Islands will stay with us. Yet, more than just memories, this expedition and its careful planning has provided us with an invaluable set of skills.

Each one of us is now a more competent sailor and trad climber thanks to the numerous hours spent sailing, climbing and practising specific techniques. In addition to these technical skills, the challenges we faced have enriched us with a resilience and adaptability that we will undoubtedly benefit from. Moreover, the bonds we have formed during this journey, forged upon the mutual trust that we had for each other, will be long lasting.

This expedition and its preparation have also been rich in lessons. We share the most useful ones for groups wishing to embark on similar expeditions.

- Because we had almost a training week-end per month and had to rent a car each time, we realised that it would have been less expensive to buy a used car at the start and then sell it.
- These regular training week-ends were instrumental to the group's cohesion as we learnt to live together, climb together and hence trust each other.
- The week-ends were also a good way to learn self-rescue techniques as they allowed us to discuss and benefit from each other's experience.
- The use of walkie talkies definitely removed a lot of faff during multi-pitch climbs as the leader and second were regularly out of voice range and the rope drag was such that rope signals did not work. They were also very useful to communicate between teams to coordinate and with the boat to arrange pick-up.
- Climbing gear and boat do not cohabitate nicely. We discovered that it is important to stow the gear properly during passages otherwise some metal bits might swing into some wooden bits with results akin to a game of "paper-scissors".

All in all, this expedition has met the objectives that we set when we started planning for it both in terms of climbing and sailing. Beyond just ticking a checklist of goals, it has allowed us to do what we love while exploring the magnificent Lofoten Islands in a way that is quite uncommon but also more sustainable. This Lofoten Islands climbing and sailing expedition can undoubtedly be described as a once-in-a-lifetime experience.



7

ACKNOWLEDGEMENTS

Thanking those who contributed to making the trip happen.

First and foremost, we would like to extend a massive thank you to the Exploration board for providing us with funding, support, equipment, and believing in the success of our expedition. On the board, we'd like to express our gratitude to Dr. Lorraine Craig, especially for promptly addressing any of our questions, as well as Philip Power and Chris Green. We are also deeply thankful to the Royal College of Science Association and the Old Centralians Trust for their generous support and funding.

Additionally, we would like to extend our appreciation to the Jeremy Willson Charitable Trust for their invaluable financial support. The Jeremy Willson Charitable Trust (JWCT) is a charity set up in tribute to and memory of Jeremy Willson.

We must also give a major thank you to all the mentors that the team has had over the years, who have imparted the necessary skills to us. Namely, the Imperial College Mountaineering Club and Imperial College Yacht Club, whose knowledge and resources were indispensable for the success of our expedition. A special thanks goes to Alice Josset, who played a pivotal role in planning and training for the initial stages of the expedition with us, and who consistently brought a positive spirit to our training weekends.

**Imperial College
London**



8

APPENDIX

Risk assessment and emergency action plan, equipment list, finances.

EQUIPMENT LIST

GALLEY SUPPLIES

Matches and lighter	Can opener	Bottle opener
Corkscrew	Dishes	Containers
Cooking Utensils	Eating utensils	Trash bags
Aluminium foil	Dish towels	Dish soap sponge
Paper towels		

INDIVIDUAL

shore jacket + gaiters	Thermal Layers	Life jacket
hiking boots	Warm Hat	Sun Hat
hiking Knife	Pocket/Head Torch	T-Shirts
goggles (polarised)	Other shoes	Travel Clothes
hiking Clothes	Towels	Toothbrush
Wallet/Money	Passport/Travel Documentation	Mobile Phone/Charger
socks	Toiletries	Sleeping Bags
down jacket	Blankets	Water Bottles
25L dry bag	Gloves	

NAVIGATION/ COMMUNICATION

Log book	Hand-bearing compass	Lights for hand-bearing compass
Tide tables	Eraser	Pencil
Dividers	Plotting ruler	Big bold protractor
Knotstick	Lead line	7x50 binoculars
Charts for appropriate areas	Coast Pilot	Tide current tables for areas
Tide current charts for areas	Nautical Almanac	Calculator with trig functions
Sextant	Cruising guide to appropriate area	Dutton on Navigation and Piloting
Book of knots	Arrival/departure checklists	

CLIMBING

Harness	Helmets	Climbing Ropes
Carabiners	Tape	Quickdraws
Belay Devices	Climbing Shoes	Guide Book / Topo
Belay Glasses	Nuts	Hexes
Cams	Clip Sticks	Slings
Chalk	Rock radios	

SAFETY

Rigging knives	Garmin Inreach Minis	Lifesling and tackle
Safety harnesses	Harness tethers	Jacklines
Radar reflector	Hauling gear	Ascenders
Scanner set for channels 13, 14, and 16	Portable VHF radio	Boat/Sail repair kit
Handheld spotlight and chargers	Flare kit (minimum required): 2 x red hand flare 2 x orange hand smoke 2 x red parachute flare	

FINANCES

Item	Cost (£)
Boat hire + fees	6401.38
Boat fees	616.98
Boat damage	139.73
Boat/tender fuel	186.94
Navionics map	29.99
Flights	3,950.82
Satellite phones	104.98
in-reach + zoleo subscription	120.00
Fishing gear	36.74
Marina fees	176.47
Aquarium entry	70.65
Currency exchange (of boat deposit)	342.86
Airbnb (Bodo)	431.26
Insurance	830.78
Showers / Laundry / Dryer	34.08
Food	1367.05
Toilet bags	15
Scooter hire	12.73
Bus tickets	54.38
Water jerrycans	24.38
Emergency abseil equipment (ab tat)	48.9
First aid course	672
Total	15668.1

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SAFETY

Risk assessment and emergency action plan.



OFFSHORE SAILING RISKS

General management of risk: two members of the team hold RYA Day Skipper qualifications. The lead skipper had an Offshore Yachtmaster qualification prior to the expedition. All team members had valid outdoor first aid qualifications.

HEALTH RISKS ONBOARD THE BOAT

HAZARDS	EFFECTS	CONTROLS/ACTIONS NEEDED	LIKELIHOOD-SEVERITY	RISK FACTOR
Man overboard	<ul style="list-style-type: none"> Risk of drowning Hypothermia Impact injury 	<ul style="list-style-type: none"> Follow safe practice when moving around the yacht above deck at all times. Implement and practice man overboard rescue 	2-5	10
Drowning	<ul style="list-style-type: none"> Brain damage Death 	<ul style="list-style-type: none"> Ensure buoyancy aids fitted and worn at all times while at sea Supervision of all members of the team by skipper Establish swimming ability prior to departure, discuss risks of open water 	1-10	10
Bad weather	<ul style="list-style-type: none"> Difficulty in navigation Unstable sailing conditions Increased risk of man overboard Increased risk of hypothermia above deck 	<ul style="list-style-type: none"> Research seasonal weather prior to departure Keep log of weather forecast and update every 6 hours Use barometer with ship log to document rapid changes in pressure indicating storm likelihood Note nearest 'safe-haven' locations for each passage plan If caught in bad weather, employ rigorous use of manual and GPS chart plotter navigation techniques 	6-4	24
Hypothermia	<ul style="list-style-type: none"> Loss of sensation Death 	<ul style="list-style-type: none"> Prepare sufficient clothing Maintain team awareness of conditions Rotate above deck team to mitigate risk to individual members 	3-5	15
HAZARDS	EFFECTS	CONTROLS/ACTIONS NEEDED	LIKELIHOOD-SEVERITY	RISK FACTOR
Dehydration	<ul style="list-style-type: none"> Sickness Death 	<ul style="list-style-type: none"> Frequent water breaks when above deck or in the sun Ensure water purification working while onboard the boat 	4-4	16

Trips and falls above deck	<ul style="list-style-type: none"> Increased risk of man overboard Loss of consciousness Sprains Fractures Other injuries 	<ul style="list-style-type: none"> Ensure adequate footwear worn at all times above deck Keep cockpit and deck clear of equipment and personal items Maintain three points of contact with the vessel while moving above or below deck 	6-3	18
Impact with solid objects	<ul style="list-style-type: none"> Increased risk of man overboard Loss of consciousness Head injuries 	<ul style="list-style-type: none"> Ensure team members have full understanding of boom-related hazards Keep members within cockpit boundary as much as possible while under sail Exercise care in access and egress areas Competent use of sails and rope work above deck through qualification and theory practice 	4-4	16
In relation to use of windlass / winches	<ul style="list-style-type: none"> Trapping fingers / toes / limbs in hauling mechanism Loss of fingers, toes, nails or bruising / breakage of other body parts 	<ul style="list-style-type: none"> Exercise correct rope handling technique when operating winches, windlass and handles Keep area clear of stray rope hazards Communicate effectively and monitor surroundings for hazards 	3-4	12

Collision with land	<ul style="list-style-type: none"> Permanent damage to vessel Threat to human life End of expedition 	<ul style="list-style-type: none"> Ensure a watch for land is kept at all times When passing close to shore, employ proper fending off techniques Keep constant watch of depth metre Plot adequate and safe routes around reefs and shallow underwater features If contact does occur, assess situation, limit further risks and notify the relevant authorities as soon as possible 	2-8	16
Handling vessel under engine	<ul style="list-style-type: none"> Damage to engine Damage to propeller/keep 	<ul style="list-style-type: none"> Conduct regular checks of engine each morning Never exceed vessel's maximum engine RPM Keep watch and avoid areas with floating debris 	1-5	5
Handling vessel under sail	<ul style="list-style-type: none"> Damage to sail Damage to onboard equipment 	<ul style="list-style-type: none"> Adhere to the directions of the skipper and safe sailing practices established through training and previous experience Understand the limitations of the vessel before departing Use the sailing forecasts and other tools available to make a safe judgement of sailing conditions Ensure the deck is kept tidy at all times for effective and safe equipment management 	2-5	10

LOGISTICAL RISKS ONBOARD THE SHIP

HAZARDS	EFFECTS	CONTROLS/ACTIONS NEEDED	LIKELIHOOD-SEVERITY	RISK FACTOR
Collision with other vessels	<ul style="list-style-type: none"> Permanent damage to vessel Threat to human life End of expedition 	<ul style="list-style-type: none"> Ensure a watch for other vessels at all times When passing close to other vessels, employ proper fending off techniques Maintain contact with nearby vessels at times of risk If contact does occur, assess situation, limit further risks and notify the relevant authorities as soon as possible 	3-7	21

Quayside moorings	<ul style="list-style-type: none"> • Collisions with land or vessels • Injury to team members 	<ul style="list-style-type: none"> • Ensure team members properly briefed on geo / hydrological features of the mooring area before approach • Allocate roles and communicate with members of the team • Communicate with staff / people onshore as needed 	4-2	8
Loss of equipment overboard	<ul style="list-style-type: none"> • High costs of replacement 	<ul style="list-style-type: none"> • Tie down equipment before being left unattended • Keep valuable below deck at all times if possible 	4-2	8
Anchorage	<ul style="list-style-type: none"> • Dragging of anchor at an unstable mooring • Collisions with other vessels or the shoreline 	<ul style="list-style-type: none"> • Employ similar prevention methods to quayside moorings • Once anchored, exercise observation techniques to identify possible dragging • Be aware of risks that may arise from changes in conditions over time • Maintain constant watch of vessel • Use an anchor alarm app, where a GPS sends an alert if the vessel has moved outside a pre-specified radius (length of chain) 	4-3	12
Improper dinghy management	<ul style="list-style-type: none"> • Loss of dinghy • Loss of outboard engine • Risk of solid objects impacted when untethered 	<ul style="list-style-type: none"> • Only use dinghy in periods of calm weather • Ensure outboard and dinghy are fully tethered down when under sail 	4-2	8

ROCK CLIMBING / OUTDOOR ACTIVITIES RISKS

HAZARDS	EFFECTS	CONTROLS/ACTIONS NEEDED	LIKELIHOOD-SEVERITY	RISK FACTOR
Loss of direction	<ul style="list-style-type: none"> • Unplanned exposure 	<ul style="list-style-type: none"> • Prepare adequate equipment • Frequently check climbing map • Ensure all members aware of the route and capable of navigation 	3-4	12
Exhaustion / Fatigue / Dehydration / Sickness / Hypothermia / Heatstroke	<ul style="list-style-type: none"> • Lower core body temperature • Sickness • Death 	<ul style="list-style-type: none"> • Frequent, adequate rests catering to weakest member of the group • Carry sufficient water, food, emergency shelter to account for unplanned exposure • Wear adequate clothing 	2-5	10
Bad weather	<ul style="list-style-type: none"> • Difficulty in navigation • Unsuitable climbing / hiking conditions 	<ul style="list-style-type: none"> • Refer to map / evacuate plan as needed 	3-4	12
Trips / falls	<ul style="list-style-type: none"> • Sprains, twists, fractured limbs • Other injuries 	<ul style="list-style-type: none"> • Assess injury and provide first aid • Follow evacuation plan as needed 	5-4	20
Group separation	<ul style="list-style-type: none"> • Delays • Increased likelihood of injury 	<ul style="list-style-type: none"> • All members should be able to navigate route and carry equipment to survive • All members carry personal first aid kit 	5-2	10
Hit by falling object	<ul style="list-style-type: none"> • Shock • Serious injury • Death 	<ul style="list-style-type: none"> • Maintain awareness of surroundings and climbing conditions • Wear correct safety equipment, prepare to raise alarm if required • Ensure all members have adequate knowledge of self-rescue procedures. 	3-7	21

Free fall from height	<ul style="list-style-type: none"> Shock Serious injury Death 	<ul style="list-style-type: none"> Ensure team members stay attached to rope / anchor at all times Inspect equipment for faults / defects prior to climbing Ensure equipment correctly fitted and worn 	1-7	7
Roped fall from height	<ul style="list-style-type: none"> Sprains, twists, fractures Other injuries 	<ul style="list-style-type: none"> Ensure all members trained to cope with roped falls when lead climbing and belaying. Ensure equipment correctly fitted and worn 	4-3	12
Trips / slips	<ul style="list-style-type: none"> Sprains, twists, fractures Other injuries 	<ul style="list-style-type: none"> Keep equipment and ropes tidy 	6-3	18
Equipment failues	<ul style="list-style-type: none"> Un-roped falls from height 	<ul style="list-style-type: none"> Follow team inspection procedures before beginning a climb 	1-8	8
Hair catching in equipment	<ul style="list-style-type: none"> Scalp injuries 	<ul style="list-style-type: none"> Tie back loose hair, cut if deemed necessary 	1-8	8
Rope burn	<ul style="list-style-type: none"> Blistering of skin in hands, affect ability to climb 	<ul style="list-style-type: none"> Use correct rope handling technique, gloves if necessary 	2-4	8
Incorrect climbing / belaying technique	<ul style="list-style-type: none"> Increased probability of harmful fall 	<ul style="list-style-type: none"> Ensure all team members trained and practise together prior to expedition 	2-4	8
Poor rock condition	<ul style="list-style-type: none"> Rock fall Risks of slip 	<ul style="list-style-type: none"> Only climb route in best possible condition Be aware of changing conditions and make safe judgements adequately 	3-4	12
Shoreline directed swell	<ul style="list-style-type: none"> Impact injury with rocks whilst approaching routes in dinghy Loss of consciousness Drowning 	<ul style="list-style-type: none"> Assess safety of procedure due to weather conditions before approaching rocks. Identify route location before attempting landing Setup safety line to avoid man-overboard issues. 	1-9	9

ACCIDENT AND EVACUATION PLAN

The Norwegian Search and Rescue Service (SAR) is a fully integrated set of services directed by a joint coordinating organisation responsible for all types of rescue operations (sea, land and air). These services are performed through a cooperative effort involving government agencies, voluntary organisations and private enterprise. SAR operations are managed by the the Northern Norway Joint Rescue Coordination Centre (JRCC) and are facilitated by helicopters and satellite systems.

LOCATION	PLAN OF ACTION
En-route to/from airport	<ul style="list-style-type: none"> Emergency calls can be made to 112 (police forces) or 113 (ambulance services). Provide first aid until the arrival of local help. Contact insurance 24h emergency medical assistance (with Snowcard insurance, Allianz Assistance +44 (0) 208 603 9693).
At sea	<ul style="list-style-type: none"> Emergency calls can be made via an emergency transmitter, maritime VHF channel 16. SAR provides sea rescues using helicopters if necessary. Transmit emergency beacons, which the JRCC can pick up from American GPS and Galileo satellites. Provide first aid until arrival of local help Evaluate current sailing situation, reroute to nearest safe haven in case of emergency
On climbing routes	<ul style="list-style-type: none"> Emergency calls can be made to 112 (police forces) or 113 (ambulance services). Contact boat using short wave radios and relay situation in case additional help is needed. Provide essential first aid. Abseil down route / climb up remaining pitches if necessary / possible.
Walking to and back from climbing areas	<ul style="list-style-type: none"> Emergency calls can be made to 112 (police forces) or 113 (ambulance services). Contact boat using short wave radios and relay situation in case additional help is needed. Provide essential first aid, transport casualty to nearest hospital (Lofoten Nordlandssykehuset Hf) if necessary.

MEDICAL SUPPLIES

Based on RYA medical first aid list.

TYPE	CONTENTS
Equipment	<ul style="list-style-type: none"> Gloves, thermal protective aid, triangular bandages, supporting (crepe) bandages, tough cut shears, tweezers, resuscitation pocket mask, tourniquet / isræli bandage, emergency blanket, thermometer, scissors
Medications	<ul style="list-style-type: none"> Sun cream, sea sickness tablets, paracetamol, ibuprofen, aspirin, antihistamine cream / tablets, indigestion tablets, Imodium (or alternative diarrhoea remedy), rehydration salts, EpiPen and medication relative to the crew needs e.g. asthma treatment, nut allergies
Wounds	<ul style="list-style-type: none"> Plasters, wound dressings, antiseptic wipes, cling film, eye dressing, surgical tape, finger tape

