



Finnmark Ski/Sail – April 2025  
Expedition Report

CALLUM HARGROVE, LIAM BAGLOLE, GEORGE ALEXANDER, SOLLY KURZMAN

Support by:



## Abstract

This report documents a backcountry ski touring expedition undertaken from March 13<sup>th</sup> to March 24<sup>th</sup>, 2025, in the remote Finnmark region deep in Arctic Norway. The trip combined sailboat-based logistics with daily ski touring in challenging maritime alpine terrain. Over the course of 11 active days, the team covered 103.5km and ascended over 9,000m of elevation, with highlights including potential first descents, fjord-to-fjord traverses, and self-guided summit tours.

A key feature of the expedition was the significant mid-trip reroute due to rapidly warming weather and increased avalanche risk, which forced a pivot from the original objectives around Seiland and Stjernøya toward safer terrain in Sandland and Bergsfjord. The report outlines both the technical and experiential aspects of the trip, including avalanche preparedness, group dynamics, decision-making under uncertainty, and remote trip planning. It concludes with key takeaways and recommendations for future teams operating in similar high-latitude, weather-sensitive environments.



Figure (1) Skins drying in the sailboat "Moondance"

This report was written by Callum Hargrove, leader of the expedition team.

# Contents

<b>1 Introduction</b>	<b>3</b>
1.1 Aims and Objectives . . . . .	3
1.2 Location . . . . .	3
1.3 Expedition Members and Their Experience . . . . .	5
<b>2 Support</b>	<b>10</b>
2.1 Expedition Grants . . . . .	10
2.2 Expedition Supporters . . . . .	10
<b>3 Logistics</b>	<b>12</b>
3.1 Itinerary . . . . .	12
3.2 Travel . . . . .	12
3.3 Currency . . . . .	12
3.4 Insurance . . . . .	14
3.5 Fitness and Training . . . . .	14
3.6 Environmental and Social Impact Assessment . . . . .	15
3.7 Documentation . . . . .	16
3.8 Food & Water . . . . .	17
3.9 Budget . . . . .	17
<b>4 Expedition Log</b>	<b>18</b>
4.1 Summary and Achievements . . . . .	18
4.2 Timeline and Trip Diary . . . . .	19
<b>5 Equipment</b>	<b>32</b>
5.1 Touring Equipment . . . . .	32
5.2 Other Equipment . . . . .	33
<b>6 Medical</b>	<b>34</b>
6.1 Incident Response . . . . .	34
6.2 Emergency Contacts . . . . .	37
6.3 Medical Facilities . . . . .	37
<b>7 Risk Assessment</b>	<b>38</b>
<b>8 Conclusion and Recommendations</b>	<b>40</b>
<b>A Appendix</b>	<b>41</b>
A Strava Segments . . . . .	41
B Outdoor Active Segments . . . . .	41
C Expedition Team Contact Details . . . . .	41
D Gear List . . . . .	41
<b>References</b>	<b>43</b>

# 1: Introduction

## 1.1 Aims and Objectives

We are a group of passionate skiers, mountaineers, and sailors, brought together by a shared drive for exploration and adventure in some of the world's most remote and challenging landscapes. As final-year students at Imperial College London, we see this as the perfect moment to channel our skills, resources, and networks into realising our dream of a ski-and-sail expedition in northern Norway.

Our proposed expedition to Norway's far north, specifically the islands of **Stjernøya**, **Seiland**, and the fjords of **Øksfjord** in Finnmark, represents a bold and innovative approach to combining alpine exploration with sustainable practices. Through extensive consultation with local guides and industry experts and detailed analysis of snow conditions, we selected these regions for their potential to push the boundaries of ski touring and sailing in Europe. This expedition is designed not only as a physical challenge but also as a platform to redefine what modern exploration can achieve in terms of sustainability and environmental responsibility.

Our approach is grounded in innovation, using carbon-conscious travel methods and offsetting our emissions through certified reforestation projects. Alongside this, we aim to document new ski lines and contribute to the growing body of knowledge on sustainable adventure travel. Through film and storytelling, we will bring this unique experience to wider audiences, inspiring both adventurers and conservationists to explore ways of engaging with the natural world responsibly.

The team, composed of qualified ski instructors, experienced sailors, and highly motivated students, will integrate their diverse expertise to execute this expedition. By facilitating skill-sharing in Arctic sailing and ski touring, we aim to elevate each member's technical ability while emphasising safety and efficiency.

Ultimately, this expedition reflects our commitment to adventure, sustainability, and innovation. It stands as an opportunity to break new ground in the fields of ski touring and Arctic exploration, offering a compelling case for investment and support from organisations that share our vision for responsible and forward-thinking expeditions.

Through this journey, we are committed to personal and team development while leaving a positive impact on one of Europe's last wilderness frontiers. Our objective are as follows:

- Ski-tour/Splitboard remote, unexplored areas in Finnmark
- Obtain a new set of skills to document first descents of ski lines in a remote region
- Pass on ski touring / splitboarding / sailing and trip organisation experience between members
- Be environmentally carbon-neutral and self-sufficient
- Return home safely and have fun!

## 1.2 Location

Norway's major selling point as an end-destination for ski touring is the easy access to stunning and "untouched" natural scenery combined with the heavy amounts of high quality snow in most parts of the country.[7] We narrowed down the region to Northern Norway due to historical snowpack data ([5]), as well as The Eagle Ski Club UK's extensive webinars on and their Nordic Touring [13] and Ski Touring in Northern Norway[12]. The latter has some key information on where is yet to be discovered.

Our expedition focuses on the Finnmark region in Northern Norway, specifically the area surrounding Stjernøya island near Alta. The route follows a clockwise trajectory around Stjernøya, encompassing four distinct zones: Øksfjord East, Øksfjord Proper, Stjernøya, and Seiland. While Øksfjord East is an optional staging area, its moderate terrain and accessible lines provide an ideal environment for team acclimation and equipment testing before progressing to more technical objectives. Using CalTopo (<https://caltopo.com/m/BDQ8FOJ>),



### 1.3 Expedition Members and Their Experience

The core group consisted of four MEng Design Engineers at Imperial College London, with combined experience in Expeditions, Climbing, Skiing, Snowboarding, Touring and Sailing, as well as three crew members, two trainee guides and a ski touring enthusiast.

#### 1.3.1 Callum Hargrove

**Role:** Leader (and sole splitboarder)

**Age:** 21

**Academic Background:** 4th Year MEng Design Engineering Student, pursuing Master's in Circular Ski Boot Design with Dalbello

**Relevant Experience:**

- Previously been on an expedition to Iceland in 2022 doing First Ascent Bouldering
- NICAS and FUNDAS trained climbing coach, currently coaching at Bethwall and have been for the past couple years
- Former sponsored climber and snowboarder
- Keen snowboarder and splitboarder, with ski experience from 3-11 years old and ski racing for school in mid-late teens
- Snowboarded for the past decade, experience in East-coast Canada and Alps regions
- Completed sailing RYA Levels 1-4 including Advanced level, with experience sailing dinghys and catamarans in East-coast Canada and in the Mediterranean
- Operating with half the number of ACLs and lateral menisci...

**Relevant Positions:**

- Team Member and Coach at Bethwall
- Team Captain of Imperial's Climbing Team (for past three years)



Figure (1.2) Callum Hargrove

### 1.3.2 Liam Baglole

**Role:** Terrain Scout

**Age:** 21

**Academic Background:** 4th Year MEng Design Engineering Student

**Relevant Experience:**

- CSIA Level 1 Certified Ski Instructor
- PMBIA Level 1 Certified Mountain Bike Instructor
- CPR C Certified
- Extensive skiing and backcountry experience across Eastern Canada, Northeastern US and the Alps (France, Germany, Austria)
- Expedition experience including canoe camping in Algonquin National Park (Ontario) and wild camping across Great Britain, with notable completion of a 3000 m MTB elevation gain challenge in Scotland's Tweed Valley (sub-7 hour moving time)

**Relevant Positions:**

- Committee Member for Design Engineering Department Ski Trip to Les 2 Alps
- Head Counsellor and Trail Builder at Camp Fortune Trail Centre, Ottawa
- Former Ski Instructor at Mount Pakenham



Figure (1.3) Liam Baglole

### 1.3.3 George Alexander

**Role:** Sailing Lead

**Age:** 21

**Academic Background:** 4th Year MEng Design Engineering Student

**Relevant Experience:**

- RYA Dinghy Instructor with 5+ years experience coaching sailing across all levels of experience, ages and conditions
- 5+ years experience coastal and offshore yachting inc. leading overnight crossings of English Channel and double-handed yacht deliveries.
- 10 years skiing experience across European alps.
- Notable expedition experience includes leading cycling endurance challenges across Norway, Denmark and Italy unsupported. Responsible for route planning, navigation and kit maintenance.

**Relevant Positions:**

- President of Imperial College Cycling Club. Responsible for planning, funding and delivering overseas summer tour, also design and procurement of team kit.

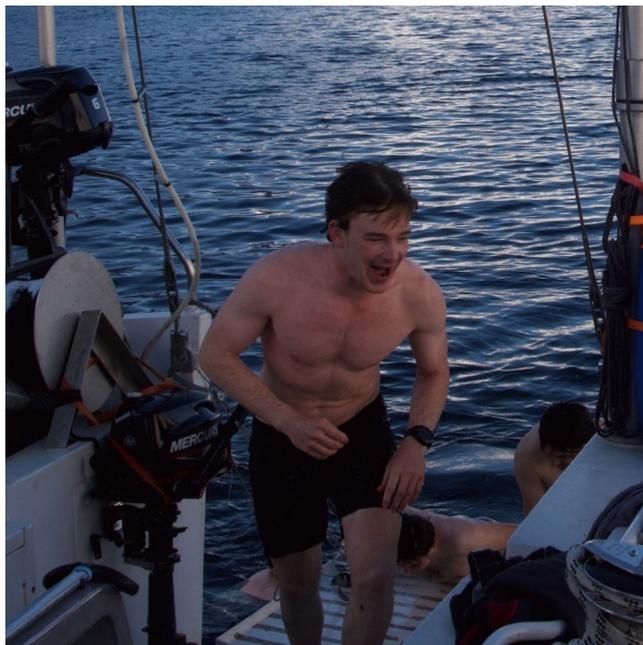


Figure (1.4) George Alexander

#### 1.3.4 Solly Kurzman

**Role:** Gear Master

**Age:** 21

**Academic Background:** 3rd Year Design Engineering

**Relevant Experience:**

- CSIA Level 1 Certified Ski Instructor (Canada)
- Skied Canadian Backcountry Terrain regularly over a 6 month period
- Extensive skiing experience across Canada, US and Europe
- Previously a member of BC Alpine Ski Association
- Previous multi day expedition across Dartmoor in Devon, North Wales, etc.

**Relevant Positions:**

- Worked for 6 months for Panorama Mountain Resort Ski School
- Coached ski racing for Windermere Valley Ski Club
- Treasurer (23/24) and President (24/25) of Imperial College Snowsports



Figure (1.5) Solly Kurzman

### 1.3.5 Supplementary Team

For funding, safety and experience reasons, the team partnered with highly qualified guides and IFMGA trainees Jack Thompsett [11] and Chris Andrews [1], as well as a friend of theirs, James Healey, an experienced ski tourer and adventurer. The guides were found by directly contacting the BMG (British Mountain Guides Association) [3].



(a) Jack Thompsett



(b) Chris Andrews



(c) James Healey

Figure (1.6) Other Expedition Members

We were also joined by three dutch crew members on board the Moondance sailing vessel: Sanne, Roy and Hugo. All were experienced sailors, excellent skiers and (luckily!) great fun to have on board!



(a) Sanne



(b) Roy Lefranc



(c) Hugo Vrolijk

Figure (1.7) Crew Members

## 2: Support

### 2.1 Expedition Grants

We'd like to offer a big big thank you to our sources of grant funding who made this expedition possible:

- Imperial College Exploration Board
- Old Centralians' Trust
- Jeremy Willson Charitable Trust
- The Scottish Arctic Club
- Young Explorers' Trust
- The Alpine Ski Club
- The Eagle Ski Club

### 2.2 Expedition Supporters

Our expedition planning has been greatly enriched by the guidance and support of several distinguished members of the mountaineering community. Their expertise and endorsement have been invaluable in shaping our approach to this challenging endeavour.

#### 2.2.1 Morten Christensen

We had the chance to speak to Andy Malton from Backcountry Books [6] who gave us more information about the region and recommendations on skiable lines, as well as many guides, from mountaineering guides in Iceland/Norway (Nat) to local guides such as Mikael af Ekenstam and Morten Christensen, "the guy" to speak to. Morten, often regarded as the quintessential local guide of Finnmark and member of the Norwegian Mountain



Figure (2.1) Morten Christensen [4]

Guide Association, has been an invaluable resource in validating and refining all aspects of our expedition[4]. With deep expertise in navigating Finnmark's challenging landscapes, Morten has provided essential guidance on avalanche-prone terrains, shelter locations, and optimal landing spots for ski access, especially around Seiland and Øksfjord. His insights on digital mapping resources, like beta.regobs.no from the Norwegian avalanche service, have enabled us to better understand terrain risks and select safer routes. Morten's philosophy, which emphasizes a guidebook-free approach to preserve the spirit of exploration, aligns with our expedition's aim to embrace the untamed wilderness of Finnmark. His local knowledge of weather patterns, snow conditions,

and suitable anchorages has been crucial in shaping both our logistics and the primary objective of sustainable adventure in this remote region.

### 2.2.2 Stephen Venables

Stephen Venables, current President of the Alpine Club, brings an extraordinary wealth of experience to our advisory team. As the first Briton to climb Everest without supplementary oxygen, his achievement of reaching the summit alone via the challenging Kangshung Face speaks to his exceptional mountaineering expertise.

Beyond his remarkable Everest accomplishment, Stephen has conducted numerous first ascents throughout the Himalayas, from Afghanistan to Tibet. His extensive experience spans the Rockies, Andes, Antarctic island South Georgia, East Africa, and the European Alps, where he has spent over four decades climbing and skiing. Stephen's insights, particularly regarding expedition planning in remote locations and managing challenging conditions, have been instrumental in shaping our approach to the Norwegian Arctic.



Figure (2.2) Stephen Venables [14]

### 2.2.3 Dave Wynne-Jones

Dave Wynne-Jones, former President of the Eagle Ski Club, has provided invaluable guidance drawn from his extensive expedition leadership experience. With an impressive record of leading 20 out of his 27 expeditions and achieving 30 first ascents of unclimbed summits or new routes, Dave brings practical wisdom to our planning process. His recent focus on documenting and sharing expedition knowledge through his writings, including comprehensive works on Alpine climbing and skiing expeditions, has helped us develop a more thorough and systematic approach to our expedition planning. Dave's expertise in combining skiing with exploratory mountaineering has been particularly relevant to our objectives in Seiland and Øksfjord.



Figure (2.3) Dave Wynne-Jones [15]

### 3: Logistics

#### 3.1 Itinerary

We planned our trip for mid-April, from 13-24th, with both initial and final days being used solely for travel. We planned to sail from the 14th-20th, being picked up in Alta and sailing from there, finishing in Øksfjord before the team split up, and the core team of design engineers would spend a few more days in a local hut in Øksfjord to practice the skills we'd learnt from the more experienced guides.

We flew in from London Heathrow to Alta via an internal flight from Tromsø, and back from Øksfjord via a lift from a local followed by a five hour bus journey from Burfjord to Tromsø, flying back to London Heathrow.

See the planned region of exploration here 1.1 and itinerary shown in Table 3.1.

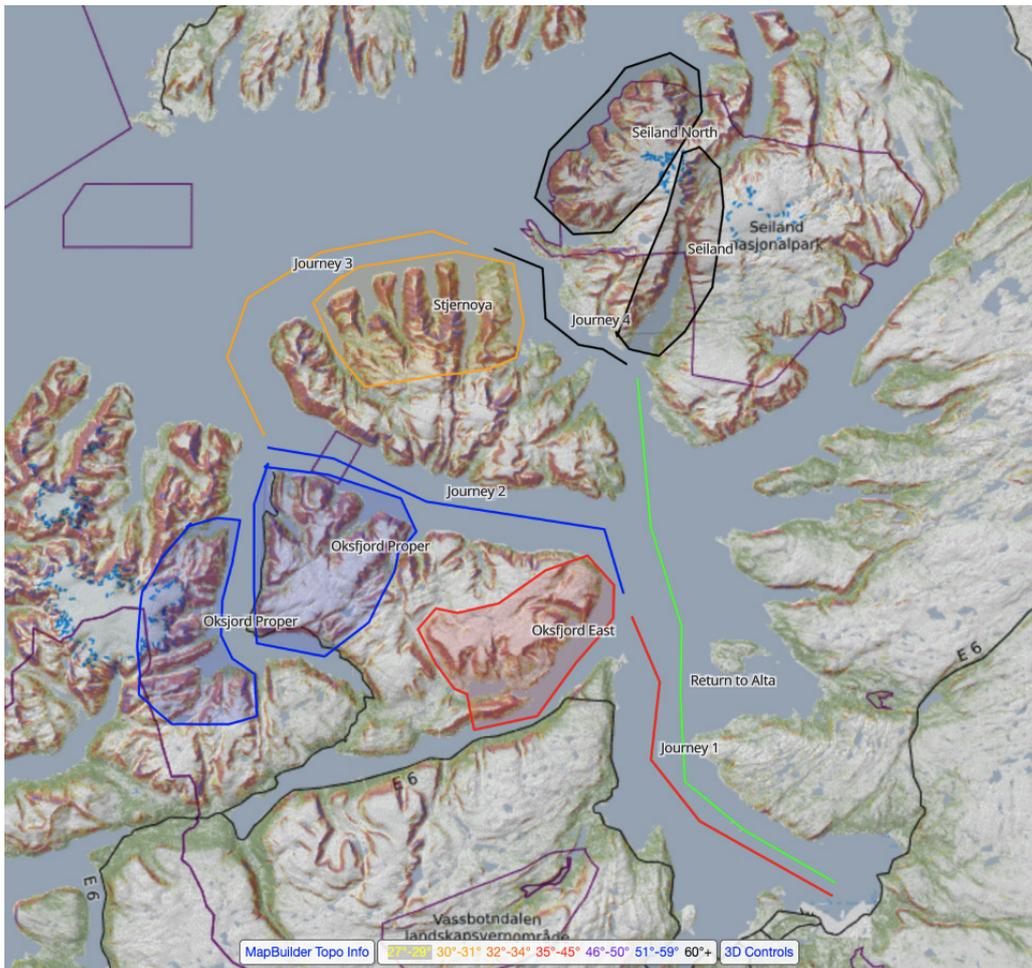


Figure (3.1) Overview of sailing journey distances between zones

#### 3.2 Travel

There were no restrictions on travelling to and from Norway on holiday for UK and Canadian Nationals (Callum, Solly and George and UK Nationals and Liam is a Canadian National) - we had 90 days visa-free.

#### 3.3 Currency

As of 17/07/2025, the exchange rate from GBP to NOK is approximately 1:13.85. Contactless payment was widely accepted across Norway, with transactions up to 500 NOK commonly processed without a PIN. For larger amounts, chip and PIN or mobile payment options such as Apple Pay were used without issue.

Given the absence of foreign transaction fees with banks like Monzo and Revolut, there was no need to withdraw

Dates	Plan
April 13th	Fly from London Heathrow at Alta Airport (ALF) via Tromsø Obtain supplies and sleep on board
April 14-15th	Travel to Øksfjord East base (27.01 km) Øksfjord East warm-up lines (500-600m)
April 16th-17th	Øksfjord Proper objectives Hellefjellet peak and surrounds Sail to Stjernøya (27.14 km)
April 18th-19th	Stjernøya spine lines and Kjerringa (930m) Sail to Seiland (13.91 km)
April 20th	Seiland interior zone and couloir objective Return to Øksfjord (+20km return)
April 21-23rd	Explore different tours around Øksfjord, across Vassdalsvatnet lake Develop skills as a core group of young, independent ski tourers
April 24th	Departure from Øksfjord via Tromsø

Table (3.1) Table outlining the expedition itinerary

large amounts of cash in advance. When required, cash could be withdrawn from ATMs in Alta, such as this one, which did not typically charge extra fees, depending on the card provider.

Nonetheless, we carried a small amount of physical currency as a precaution. This proved useful in isolated areas where card payments were not accepted and ATMs were unavailable.

### 3.3.1 Language

The official language in Norway is Norwegian. However, we found that almost everyone we interacted with spoke fluent English, as it is compulsory to learn it in school. Many locals also spoke a second Scandinavian language. As a result, we did not encounter any significant language barriers during the expedition.

Prior to departure, we familiarised ourselves with basic Norwegian phrases, though the majority of communication took place in English. In an effort to show cultural respect and minimise misunderstandings, we made a conscious effort to pronounce place names correctly and, where relevant, named new ski lines in both English and Norwegian.

### 3.3.2 Sailing (and Public Transport)

Sailing proved to be an effective and low-carbon mode of transport from Alta for our expedition. The topology of the surrounding landscape offered natural protection from strong offshore breezes (with quieter winds in fjords), and during April, the maritime conditions were generally favourable and steady.

At the planning stage, we pursued two possible methods of water-based travel. Our primary option—a **sail-ski yacht charter**—was successfully arranged in collaboration with a local skipper. This enabled us to explore remote fjords and ski accessible terrain directly from the water. Each day, while the skipper navigated between anchorages, we accessed nearby lines by using a small tender for shore transfers. The arrangement cost approximately £1000 per person, covering both transport, relevant insurance and accommodation.

Originally planned voyage legs are detailed in Table 3.1. Based on a cruising speed of 5–6 knots (around 10kph), each journey—including return legs to Alta—took under three hours. Given the extended daylight hours typical of early spring in the Arctic Circle, these passages were comfortably undertaken after a full day of ski touring. This allowed us to reposition overnight and begin touring in a new region the following morning.

As a contingency, we leveraged Norway’s extensive **public transport network**, as recommended by Morten [4]. The system offered reliable access to key locations throughout the region, though certain routes required advance booking. To support our planning, we collated a number of resources detailing local schedules and transit options.

This flexibility proved essential in ensuring we could meet the expedition’s objectives even if sailing logistics were disrupted. Figures above illustrate several of the transport links we had at our disposal. Snelandia [10] provided a range of viable connections that aligned closely with our intended route, requiring minimal itinerary changes.

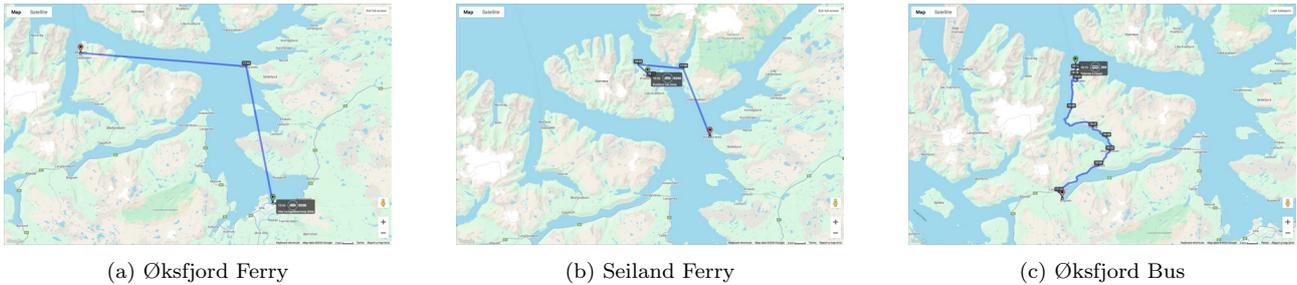


Figure (3.2) Comparison of (some) public transport routes [10].

## 3.4 Insurance

### 3.4.1 BMC Alpine Insurance

Insurance for all group members was secured through membership with the British Mountaineering Council (BMC). This policy provided comprehensive coverage for activities in remote and Arctic regions of Norway. A quote was obtained to ensure that the policy covered the full scope of our planned ski-mountaineering activities, including off-piste terrain and yacht-based access in remote arctic terrain.

### 3.4.2 State-Supplied Healthcare

Each group member carried a valid state-supplied healthcare card—GHIC, EHIC, or OHIP—depending on their nationality. These cards provided access to essential medical treatment while abroad, including within Norway.

## 3.5 Fitness and Training

### 3.5.1 First Aid Training

All participants completed relevant first aid training prior to the expedition, ensuring redundancy in essential medical knowledge across the team. This training was funded through Imperial College London. It provided foundational skills for managing incidents in remote environments.

### 3.5.2 Avalanche and Touring Training

To build shared competence and align skill levels across the team, all members participated in a dedicated avalanche and ski touring training course. This was especially important given the varying levels of prior touring experience within the group.

The course was delivered by British Backcountry in the Cairngorms on the 13th and 14th of February, following a drive from London via Sheffield to collect equipment and team members. We stayed at Aviemore Youth Hostel and were instructed by Yaz from British Backcountry, whose guidance was instrumental in preparing us for the demands of the expedition.

The two-day course covered avalanche awareness, safe route planning, emergency procedures, winter navigation, and techniques for efficient movement in alpine terrain. It also served as an opportunity to test personal equipment and begin to build team cohesion. The course cost £220 per person and was considered essential preparation for operating safely and independently in Arctic conditions.

### 3.5.3 Fitness Plan

All group members maintained a high level of fitness through regular participation in endurance and strength-based sports prior to the expedition. In the lead-up to the trip, we followed targeted training plans with a focus on ski touring-specific strength and aerobic endurance.

Additionally, each team member spent time skiing in the weeks preceding departure to refine technique and regain confidence in variable snow conditions. This ensured that all participants entered the expedition with the physical capacity and technical readiness to perform sustained touring across demanding terrain.



(a) Skis on with the team and Yaz

(b) Skis off on typical Scottish terrain

(c) Car Packing Antics

Figure (3.3) Scotland Avalanche and Ski Touring Training Course, Cairngorms February 2025 [10].

### 3.6 Environmental and Social Impact Assessment

#### 3.6.1 Leave No Trace

Throughout the expedition, we adhered strictly to Leave No Trace (LNT) principles. All waste, including food wrappers and packaging, was carried in and out of the areas we accessed, with no materials left behind. Given the low-impact nature of ski touring, our land-based activities left no lasting environmental footprint. This approach ensured that our presence did not disturb the fragile Arctic environment we travelled through.

#### 3.6.2 Equipment and Resource Use

To minimise the environmental cost of outfitting the expedition, we sourced second-hand gear wherever possible, including skis, splitboards, avalanche equipment, and clothing. This significantly reduced the carbon footprint associated with new product manufacturing and shipping. Additionally, we borrowed essential technical items—such as crampons, ice axes, harnesses, and expedition-grade first aid kits—from the Imperial College Mountaineering Club, reducing both costs and material waste.

Our food strategy also reflected our low-impact ethos. While onboard and ashore, we purchased locally sourced ingredients, including fish and bread, helping to support the regional fishing economy and reduce the need for imported or packaged goods. By choosing local products and patronising independent shops and services, we aimed to leave a positive economic footprint in the communities we visited.

#### 3.6.3 Global Warming Awareness

Operating in the Finnmark region, which lies within the Arctic Circle, made us acutely aware of the local effects of global warming. Arctic Amplification has caused the region to warm nearly four times faster than the global average since 1979 [8]. This warming trend is driven by feedback loops including reduced sea ice, altered ocean circulation, and increasing atmospheric greenhouse gas concentrations.

According to projections from SeNorge [9], areas in Finnmark are expected to lose 60 to 120 days of annual snow cover between 2031–2060 compared to present levels. This reduction has profound implications for local ecosystems, permafrost integrity, traditional livelihoods, and outdoor recreation access.

Our experience on the ground reinforced the urgency of addressing these trends. Warmer-than-expected conditions at certain altitudes and the retreat of spring snowpack illustrated the tangible effects of climate change in Arctic environments.

#### 3.6.4 Carbon Offsetting and Travel Emissions

While we operated with a low-carbon transport model within Finnmark—sailing between anchorages on a yacht—our flights to Alta represented the highest-emission component of the expedition. Due to academic constraints surrounding our Master’s project timelines, flying was necessary, generating an estimated **1700 kg CO<sub>2</sub>e** in total.

To address this, we offset our flight-related emissions through The Eagle Ski Club, which facilitates carbon

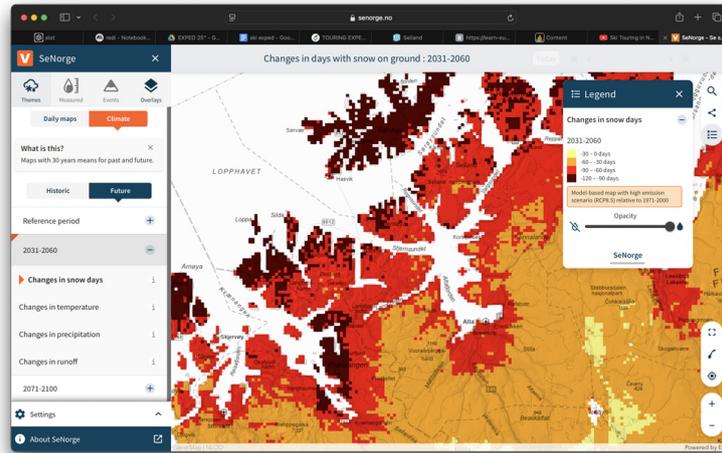


Figure (3.4) Projected reduction in days with snow on the ground: 2031–2060 [9]

credit purchases from the **Cochabamba Project**, a verified initiative under the wider **ArBolivia** programme. This project works with smallholder farmers in the Bolivian Amazon to deliver long-term, community-led reforestation and sustainable land-use management. Priced at £18 per tonne, the credits we purchased represented carbon already sequestered by growing trees, making the offsetting both tangible and verifiable.

By supporting this initiative, we contributed not only to global carbon reduction but also to the livelihood of rural communities managing vulnerable ecosystems, reinforcing our aim to integrate environmental and social responsibility into the expedition’s core.

### 3.6.5 Wildlife Considerations

We planned carefully to avoid negative impacts on local wildlife throughout the expedition. Species native to the region include moose, reindeer, Arctic foxes, and—in rarer coastal cases—polar bears. No bear deterrents were required, though local guidance was followed closely.

Encounters with moose and reindeer were managed respectfully, with ample distance given, especially during spring calving season. Arctic foxes were observed at a distance but not approached; all food and waste were securely stored to avoid attracting them to our hut.

## 3.7 Documentation

### 3.7.1 Geographic Data Collection and Route Planning

Throughout the expedition, we documented all daily tours and descents using low-profile wearables such as Garmin watches. These devices provided a lightweight and reliable means of collecting GPS data, even in harsh Arctic conditions.

Prior to and during the trip, we used CalTopo’s advanced mapping tools to analyse slope angles, helping us plan routes that matched both our skill level and the prevailing avalanche conditions. This was supported by historical weather and temperature data, allowing us to make informed decisions that prioritised safety without compromising on exploration.

Our collected data was shared across multiple platforms:

- **Route Planning:** Verified routes were planned on CalTopo, including key waypoints, hazard zones, and descent lines. This created a valuable database for future winter touring expeditions in the region.
- **Daily Tours:** Each day’s tour was uploaded to Strava, including metrics such as distance, elevation, time, and weather conditions, along with photos taken throughout the day. These segments serve as personal records but also as public references of real-world conditions in remote Arctic terrain. A full list of Strava segments corresponding to each touring day is included in the appendix, with direct links to each activity for transparency and archival.

### 3.7.2 Visual Documentation

We employed a multi-layered approach to visual documentation throughout the expedition:

- **Digital Photography:** A mirror-less Fujifilm and personal smartphones served as our primary photography tools, used to capture portraits, route conditions, and landscapes.
- **Aerial Footage:** A drone was flown in suitable weather conditions to capture large-scale perspectives of the terrain, helping to contextualise our routes and give a broader sense of the surrounding environment, see Fig. 4.7.
- **Film Photography:** A DSLR film camera provided a power-independent backup and an alternative visual style. It proved especially useful on longer days when battery-dependent equipment was conserved.

All photos and GPS tracks were catalogued together post-expedition to create a comprehensive record of our journey. This record not only served archival and outreach purposes but also provided route context, snow condition reference points, and key visual landmarks for future expeditions.

### 3.7.3 Ethics

While documentation played a central role in our expedition, we remained conscious of the ethical responsibilities tied to exploring and sharing content from remote regions. As highlighted by Morten [4], areas like Seiland and Øksfjord maintain a low-key ethos, with a deliberate absence of published guidebooks to preserve their spirit of adventure and discovery.

In alignment with this philosophy, we took care not to over-publicise specific routes or sensitive locations. Our documentation was intentionally generalised where necessary, focusing on the broader experience, environmental awareness, and the ethos of slow, sustainable exploration.

We aimed to strike a balance between transparency and discretion—sharing insights that could inspire or inform future expeditions, while avoiding the promotion of the area as a mainstream tourist destination. This approach ensured that our presence and resulting outputs honoured the culture of the region, respected local communities, and minimised any potential for ecological or social disruption.

## 3.8 Food & Water

There were several supermarkets in Alta - with the Europris being closest - just an 18 minute walk between the airport, port and supermarket! Øksfjord has a supermarket as well, nearby to the port. This enabled to us to temporarily moor up and restock our supplies of food and water, as well as pic-up supplies on our hut stay in Øksfjord. Finally, there was a small supermarket in Store Kvalfjord, Stjernøya - perfect for our final top up of supplies.

## 3.9 Budget

Below (Fig. 3.5) was the final budget for the trip, including living costs, training and insurance costs, food, etc. The only exemption was gear unable to be borrowed, to be bought individually where required.

	equipment	callum	liam	george	solly	group	total cost (£)	description / links
TRAVEL / ACCOMODATION / FOOD	flights (LHR-TOS) return					£ 838.88	£ 838.88	inc. baggage
	flights (TOS-ALT)					£ 290.58	£ 290.58	inc. baggage
	carbon offsetting					£ 54.00	£ 54.00	calculated, to Cochabamba Project
	boat & food					£ 8,514.94	£ 8,514.94	
	public transport					£ 91.04	£ 91.04	fisherman / public transport
	food					£ 222.55	£ 222.55	
	hut					£ 297.26	£ 297.26	445.88 total
INSURANCE	BMC alpine & ski	£ 124.62	£ 124.62	£ 124.62	£ 124.62		£ 498.48	<a href="#">here</a> (touring and avalanche)
TRAINING	course	£ 190.00	£ 190.00	£ 190.00	£ 190.00		£ 760.00	youth hostel aviemore
	accom	£ 269.60		£ 67.40			£ 337.00	return train london-aviemore
	petrol / insurance			£ 29.96	£ 237.72		£ 267.68	<a href="#">here</a> (touring and avalanche, inc rental gear)
OTHER	travel sickness pills					£ 6.75	£ 6.75	for the sailing!
	compeed					£ 6.36	£ 6.36	for comfort and rubbing on feet
	ski straps					£ 22.80	£ 22.80	black diamond
	region map					£ 25.08	£ 25.08	<a href="#">here</a> , eagleskiclub discount code
<b>TOTAL</b>		<b>584.22</b>	<b>£ 314.62</b>	<b>£ 411.98</b>	<b>£ 552.34</b>	<b>£ 10,370.24</b>	<b>£ 12,233.40</b>	

Figure (3.5) LivingCost

## 4: Expedition Log

### 4.1 Summary and Achievements

Across 11 ski days in remote Finnmark, we covered 103.5km and climbed over 9,000m of elevation. These numbers only hint at the breadth of the expedition, which demanded constant adaptation, tested our skillsets, and delivered some of the most memorable touring we've ever experienced.

Several days stood out — particularly the 15th, where we likely skied undocumented terrain during a fjord-to-fjord traverse, and the 22nd, where we self-navigated to a summit under challenging conditions. Later in the trip, operating without guides, the core team confidently planned and executed safe, rewarding days — a major step forward in our development.

A major turning point came mid-expedition, when warm maritime weather forced a full reroute. Rapid snowmelt, rain, and rising avalanche risk made original plans for Stjernøya and Seiland unviable. The decision to sail north toward Sandland and Bergsfjord involved real-time risk assessment, trust in the crew, and dynamic replanning. Far from a setback, this became a valuable learning experience in expedition flexibility and judgement.



Figure (4.1) View from Ytre Lokkarfjorden on the boat and rib

## 4.2 Timeline and Trip Diary

*Activities undertaken and a general diary of the trip, from accounts of myself (Callum) and Solly.*

**13th:** After some mixed amounts of sleep prior to our trip (no need to name names!...), we embarked from Heathrow around lunchtime, stopping off in Tromsø airport for a pint and burger, before landing late in the evening in Alta. From here, we walked across to the harbour, catching our first glimpse of the Moondance sailing vessel, meeting the team, and getting some well needed sleep prior to our first sail and ski day!



Figure (4.2) Sailboat docked in Alta



Figure (4.3) Beers, route planning and the "coffin" sleeping situation on board

**14th:** Sailed from Alta to the first fjord today (Indre Lokkarfjorden). After a 5 hour journey we arrived and headed ashore to complete a comprehensive test of our avalanche gear, make sure we knew how to use it and how to act as a team in the event of an avalanche. This was followed by a warm-up tour that covered 5k of terrain and 314m of vertical ascent, allowing us to make sure all our gear was working as planned before longer trips. Conditions were good and allowed us to scope out a longer route for the following day. We then headed back to the boat and got planning for the next day.



Figure (4.4) Getting in our first tour in the beautiful woods of Lokkarfjorden

Our first day touring with the whole crew, and what a beautiful landscape to be greeted with. A huge shout-out to guides Chris and Jack for their thorough and detailed explanation of all necessary avalanche protocols (see Fig. 4.5), ensuring the team was well prepared before embarking on tougher tours. A couple crew members joined us as the weather was good, with Sanne and Roy joining me [Callum] splitboarding - awesome to have some more experienced and keen people to learn from!



Figure (4.5) Off to shore in the rib, avalanche safety preparation and the first tour and descent of the trip (Liam)

**15th:** Our bluebird day! A longer tour today took us out and over the westerly crest of the valley into Ytre Lokkarfjorden where the vessel picked us up. The conditions were unbelievable and allowed us to find some incredible snow, after a long tour and ski we headed back up a shorter distance to make the most of the snow and weather and in total covered 13.7km of terrain and 1082 m of ascent.

For just the second ski day on the trip, we were blessed with some incredible weather and unbelievable views, with even better snow. Some of the most pleasant terrain in ascent, and the turns of our lives on the descent.



Figure (4.6) Beautiful gully scenery surrounding the team's tour

Crossing fjords from one to another, summiting a plateau and introducing lake crossings, this was a day to remember. With limited documentation for the area, this tour likely included pitches which had never skied before (and vice versa).



Figure (4.7) Beautiful fjord-fjord tours, deep powder turns (Callum) and a drone shot

Once we were back in the boat we sailed an hour to our next fjord (Tverrfjorden).



Figure (4.8) Traversing out of the bowl



Figure (4.9) Incredible views and lighting over Tverrfjorden

**16th:** We headed out early and toured up into the valley, the route initially took us past a lake before looping around the peak to cover a total of 10.7km travelled and 962m ascent. Conditions were harsher today but the team endured and finished on a natural plateau that gave us panoramic sea and mountain views over Tverrfjorden, here we were pretty exposed and really felt the harsher weather coming in. As we got below the harsher weather we skied a great tree line and finished right on the beach.



Figure (4.10) Mixed-weather tours today (likely due to maritime conditions)

It was at this point, however, that the upcoming weather charts were showing a drastic shift in weather, to warm above-zero temperatures with rain. This, unfortunately, put a huge spanner in the works - with the avalanche risk rising to a 2 and even 3 (out of 5) in most aspects. It was at this point that the team, guides and crew decided to divert the course of the expedition to accommodate this weather shift, to maximise touring and minimise long-distance sailing in low-wind warm weather, hence ruling out Stjernøya and Seiland, and travelling instead north towards Bergsfjord and Sandland.

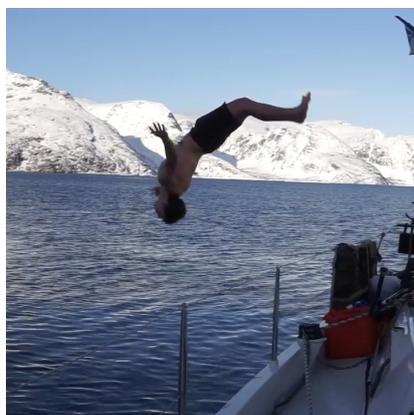


Figure (4.11) Tree line down to the beach, George going for a backflip and a snapshot of the inside of the boat during dinnertime

Still managed to keep morale up with some freezing cold arctic swimming!

**17th:** Despite sleeping with our toes crossed, we unfortunately we were limited by the avalanche risk meaning we weren't able to safely ski whatsoever. With some quick thinking from skipper Hugo and guide Jack, we headed to Sandland and pitched up for a sauna to take our mind off skiing for a day! The remote sauna (an upturned converted fisherman's boat) was well welcomed, with multiple hiatus' of arctic dips to cool off, on the sandy picturesque beaches of Sandland.



Figure (4.12) Mixed weather outside on the sailboat

On the way, we pulled out the fishing rods and were lucky enough to catch our dinner for that evening - a dozen cod or *skrei*. Liam's Canadian lumberjack fisherman spirit was channelled as himself, Jack, James and George caught fish, albeit with George having to throw his fish back into the sea as it was microscopic... Made for good entertainment nonetheless, a well-needed distraction from the rain and concurrent record-breaking snow-dump in the Alps [2].



Figure (4.13) Successful fishing, sauna scoping and arctic swimming to cap off the bad-weather day

**18th:** Again we were limited by the avalanche risk but sailed from Sandland to a remote fjord halfway to Øksfjord in preparation for a better forecast on Saturday. Cards (i.e. competitive Monopoly deal!) and less successful fishing got us through the day although some of us fared better than others did due to the rough sea (poor Solly...).



Figure (4.14) Transferring skills, conversing with all team members on sailing routes, avalanche risk, mitigation, etc.

We tried to make use of the day, by talking between guides and core team members and crew on transfer of skills, detailing how to proactively (night before, and earlier in season) get better at detecting avalanche risk before it happens, reading forecast night before and learning about aspects, wind slabs, gullys and chutes, wind loading, etc. We also got the chance to hear about the guides' journey to their expertise in their profession, and what best steps to take as young budding ski tourers keen to get more experience!



Figure (4.15) A Full English, Monopoly Deal and ice forming on salt-water (due to the warm weather and rain!)

**19th:** After a good call by our crew the night before, we were blessed to be able to ski today. Ullsfjorden's remoteness and poor visibility left us route finding exclusively with contour maps at first, but soon the weather cleared and we were treated to great visibility on the way down. Skiing into the beach of the fjord, we then transitioned again and headed back up twice, hitting different routes each time to maximise the good snow in the bottom half of the mountain (due to less sun exposure), with a total of 1551 m vertical meters for the day.



Figure (4.16) Lovely view over Ullsfjorden when the visibility improved

Throughout the tours, there was a growing emphasis on 'on-the-fly' avalanche mitigation, constantly testing snow types, assessing [compass] aspects, terrain traps and incoming weather, to ensure the correct choices were being made. This created an open conversation between team members - improving our skills.



Figure (4.17) Blizzards, transitioning and the boat's evening glow

We then headed back to Øksfjord for our last evening on the boat.

**20th:** Woke up for the last time on the boat and started moving our gear to our hut in Vassdalen near Øksfjord. We then scoped out the terrain available to us in the area and headed out the back of Oksfjord over the lake. The snow conditions and visibility were poor which meant we had to cut the tour short. Whilst the avalanche forecast was low clear signs that avalanche risk was high in areas meant that we were limited to an elevation gain of 304 m but still covered 6.76 km.



Figure (4.18) Crossing Vassdalsvatnet

We did, however, find ourselves with very limited food as the one supermarket within a 50 km radius was shut for the next couple days due to Easter Sunday and Monday... We were lucky enough to have the Moondance crew donate us some of their canned goods, and the hut's host gifted us a fresh cod in a shopping bag!



Figure (4.19) Transitioning to the hut, poor visibility and some improvised food!

Conscious that James, Chris and Jack were to leave the next morning (due to poor weather, alternative travel arrangements, and the uncertainty of food...), we made the most of their expertise - laying out our plans for the next few days. Despite the relatively poor projected avalanche and weather conditions, we pre-planned some tours based on the singular aspect we could safely ski on.

**21st:** With just the core team left (myself, Liam, George and Solly) we headed up north out the back of Oksfjord, touring up left before the lake on the only safe aspect. We headed over a crest and down into a bowl containing another frozen lake and skied its west facing aspect. The snow was great and we skied through some well spaced trees. We lapped this again before heading back out the bowl. This left us having covered 784 m of elevation over a distance of 8.96 km.



Figure (4.20) Lovely views over Rássejávri (frozen lake)

We had a lot of fun having more autonomy and sharing the decision making, applying the skills we'd learnt over the past week from Jack and Chris! We rounded off the day by building a kicker, utilising the deep snow, before heading home.



Figure (4.21) A sketchy approach, lovely views and turns, and teamwork to make the kicker after a shorter day!

**22nd:** An earlier start allowed for a longer day covering 10.88 km, with a reduced avalanche risk allowing us to ski a different area. We headed up a natural valley that stretched out beyond the Vassdalsvatnet lake and up the back side of the mountain. We travelled through the valley which lead us to 2 bowls, touring up the north west face of the first bowl we summited that peak and skied back down into the second bowl. Amazing skiing meant we chose to lap a short section of the bowl before heading back out and through the valley home for a total elevation of 798 m.



Figure (4.22) The Mariteng Plateau, Summiting

We were finally able to put our skills together on a longer tour, and achieving a summit we were all extremely proud of! I might have teared up a little, in a moment where all of the dreaming, training and hard work to get us there, all paid off. Speechless.



Figure (4.23) Prepping for the day, group photo at the summit and tasty home-made tacos to round off the excellent day

**23rd:** For our final ski day we travelled to a bowl that we had scoped out the day before to the East of the Vassdalsvatnet lake. Again travelling over the lake, we headed off to the right about halfway across. We travelled up to a summit point but due to poor visibility could hardly see anything. We then travelled back down the faces we had toured up and found a great patch of snow that lead down to the lake which we lapped a few times. Vis and snow through these varied but on the whole we got to ski some amazing hero snow through this section. Lapping allowed us to cover a total elevation of 1174 m and a distance of 11.12 km.



Figure (4.24) Our final view over the Vassdalsvatnet lake

Bittersweet to finish up our trip, with all our fitness levels increased and adjusted to the daily altitude training, we felt better than ever. We left Finnmark with some of our nicest tree dense turns, making the most of the amazing snow and scenery, before getting an early night in!



Figure (4.25) Callum in low visibility, George in great visibility and Liam at the summit of the western facing aspect on Vassdalsvatnet lake

**24th:** Woke up at 4am and, supported by the kindness of local Norwegians, grabbed a lift from our host to a bus stop by a petrol station in Burfjord, Norway, before grabbing a 5 hour bus to Tromsø (via the Lofoten Islands, small ferries and some beautiful arctic fjord landscapes across the north coast of the mainland!), arriving in Tromsø. After checking out the world's northernmost McDonald's amongst the most populated city in the arctic circle (and taking in the breathless views surrounding the city), we departed back to London Heathrow (after a struggle getting our ice axes and skis to fit within the maximum weight!).



Figure (4.26) The surrounding views from Tromsø

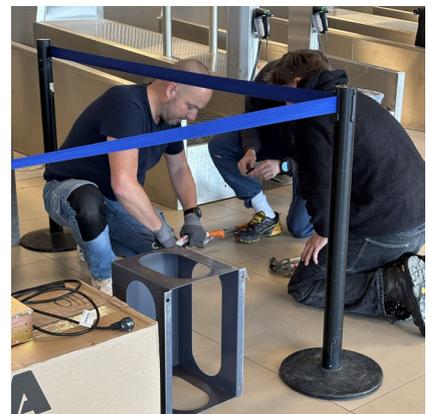


Figure (4.27) An early start in the car (4am), hotdog on the ferry and struggling to disassemble ice-axes for extra weight saving

## 5: Equipment

	equipment	quantity required	quantity owned	owned by	quantity to buy	item cost (£)	purchase cost (£)	description / links
SKI	touring boots	3	0		3	£ 400.00	£ 1,200.00	recommended by stephen venables
	skis (~102mm)	3	0		3	£ 500.00	£ 1,500.00	2nd hand, sustainable & high quality
	touring bindings	3	0		3	£ 150.00	£ 450.00	2nd hand, sustainable & high quality
	skins	3	0		3	£ 100.00	£ 300.00	2nd hand, sustainable & high quality
	crampons	3	0		3	£ 50.00	£ 150.00	2nd hand, sustainable & high quality
SPLIT	touring boots	1	1	callum	0	£ 300.00	£ -	own snowboard gear, not splitboard
	splitboard	1	0		1	£ 500.00	£ 500.00	2nd hand, sustainable & high quality
	bindings	1	0		1	£ 200.00	£ 200.00	2nd hand, sustainable & high quality
	pucks	1	0		1	£ 20.00	£ 20.00	2nd hand, sustainable & high quality
	skins	1	0		1	£ 100.00	£ 100.00	2nd hand, sustainable & high quality
	crampons	1	0		1	£ 100.00	£ 100.00	2nd hand, sustainable & high quality
TOURING GEAR	touring poles	4	0		4	£ 100.00	£ 400.00	black diamond telescopic
	touring pack	4	0		4	£ 120.00	£ 480.00	arcteryx micron 32 / equivalent
	ice axes	4	4	imperial mountaineering	0	£ 150.00	£ -	
	headtorch	4	0		4	£ 50.00	£ 200.00	Nitecore UT32
	gopro	4	4	everyone	0	£ 200.00	£ -	
	drone*	1	1	imperial snowsports	0	£ 400.00	£ -	
SAFETY GEAR	probe*	4	3	2x imperial exploration board, 1x imperial snowsports	1	£ 30.00	£ 30.00	
	transceiver*	4	3	2x imperial exploration board, 1x imperial snowsports	1	£ 250.00	£ 250.00	
	shovel*	4	3	2x imperial exploration board, 1x imperial snowsports	1	£ 80.00	£ 80.00	
	helmet	4	4	everyone	0	£ 100.00	£ -	
	satellite phone	1	1	imperial exploration board	0	£ 2,000.00	£ -	
	personal first aid kit	8	8	imperial mountaineering, imperial snowsports/exped fund?	0	£ 38.00	£ -	
	walkie talkies	4	0		4	£ 140.00	£ 560.00	Motorola TX2 Extreme
	GPS devices	2	2	imperial exploration board	0	£ 35.00	£ -	Garmin GPS 45
	binoculars	2	2	callum, liam	0	£ 50.00	£ -	
	compeed	8	0		8	£ 5.00	£ 40.00	for comfort and rubbing on feet
	factor 50 sun cream	4	0		4	£ 20.00	£ 80.00	
		tent	2	2	imperial exploration board	0	£ 500.00	£ -
LIVING GEAR	sleeping bag	4	4	everyone	0	£ 30.00	£ -	
	sleeping mat	4	4	everyone	0	£ 30.00	£ -	
	compactable pillow	4	4	everyone	0	£ 15.00	£ -	
	microfibre towel	4	4	everyone	0	£ 15.00	£ -	
	cook set	1	1	imperial exploration board	0	£ 50.00	£ -	
	camping gas	2	0		2	£ 5.00	£ 10.00	
	camping stove	2	2	imperial exploration board	0	£ 50.00	£ -	
	1l waterbottle	8	8	everyone	0	£ 18.00	£ -	2x each
	deck of cards	1	1	callum	0	£ 5.00	£ -	evening whist downtime
	travel sickness pills	2	0		2	£ 5.00	£ 10.00	for the sailing!
CLOTHING GEAR	waterproof shell jacket	4	4	everyone	0	£ 100.00	£ -	
	softshell trousers	4	4	everyone	0	£ 50.00	£ -	
	waterproof ski trousers	4	4	everyone	0	£ 100.00	£ -	
	goggles / sunglasses	4	4	everyone	0	£ 100.00	£ -	

\* 1 to be purchased by imperial snowsports

TOTAL KIT (TO PURCHASE) COST

£ 6,650.00

Figure (5.1) Equipment List

### 5.1 Touring Equipment

#### 5.1.1 Ski & Splitboard Touring Gear

For this expedition, we carefully selected gear suited to single-day summits and traverses in remote Arctic terrain, while adhering to sustainability principles wherever possible. Given that most of us did not previously own the specialist equipment required for such an environment, we prioritised investing in critical items such as lightweight touring boots designed for long-distance comfort and support.

To reduce environmental impact, we sourced second-hand touring skis, bindings, and splitboarding gear where feasible, aligning with our commitment to minimising waste and promoting a low-carbon approach to adventure.

The skiing team used touring skis (approximately 102 mm underfoot) fitted with touring bindings and climbing skins for efficient uphill travel. Callum, the team's sole splitboarder, used a splitboard with appropriate bindings, pucks, skins, and board-specific crampons to navigate equivalent terrain. Ice axes and collapsible poles were carried by all team members for added safety on steep sections and to allow for glacier travel or couloir climbing if required by conditions. Each member also carried a 30–40l touring pack designed for backcountry use, capable of storing avalanche safety gear and other essentials.

We borrowed several key safety and technical items from the Imperial College Mountaineering Club, including ice axes, crampons, expedition-grade first aid kits, and spare harnesses. This not only helped reduce our costs but also provided vital equipment redundancy.

To document the journey, we brought along a GoPro and a drone, with the aim of capturing footage for post-expedition outreach. High-lumen head torches (e.g. the Nitecore UT32) were issued to each team member and proved essential for early starts and low-visibility conditions.

All gear was packed in rugged duffle bags suitable for storage onboard a sailboat, alongside ski bags containing both technical and personal clothing to minimise checked luggage. Each member also brought a small daypack for use during ski touring days.

### 5.1.2 Safety Gear

Safety was a central consideration throughout the expedition, especially given the avalanche risk and the remoteness of our planned terrain. Each team member carried a full avalanche safety kit—transceiver, probe, and shovel—enabling fast and coordinated response in the event of a burial. Helmets were worn at all times during ski touring to mitigate injury risk on descents or in rocky terrain.

We used walkie-talkies for intra-team communication across split groups or poor visibility, and a satellite phone with GPS functionality provided a robust means of emergency contact and navigation in areas without mobile signal. Binoculars aided in scouting potential lines and assessing terrain for avalanche hazards from a distance.

Each participant carried a personal first aid kit with blister treatment (e.g. Compeed), bandages, and pain relief. Additionally, we brought high-factor sunscreen (Factor 50) to guard against UV exposure in high-albedo snow environments. These precautions collectively ensured a strong safety margin for the group across all touring days.

## 5.2 Other Equipment

### 5.2.1 Living Gear

Our primary accommodation was onboard a sailboat, offering protection from the elements and allowing mobility along the coastline. In preparation for potential overnight traverses or weather-related diversions, we also brought two two-person tents, supplied by the Imperial College Exploration Board.

Each team member used a three-season synthetic sleeping bag appropriate for cold and damp conditions, along with a foam ground mat and a small travel pillow for improved rest. Communal camping equipment—including a lightweight cookset, stove, and gas—was used for meals ashore or when away from the boat. Cooking equipment included a chopping board, wooden spoon, large knife, and a large pot for shared meals. For hydration, we carried several water bottles per person, along with a thermos for hot drinks in cold conditions.

Each member had their own eating kit (bowl/plate, cutlery, and mug), and we shared a small stockpile of communal gear, including paper maps, a compass, shared first aid resources, and a camera. For morale and downtime, we also brought a deck of cards and personal items such as travel sickness tablets.

All equipment was packed into rugged 40–60 litre duffles and ski bags.

### 5.2.2 Clothing Gear

Given the harsh and variable conditions of Finnmark in April, each team member adopted a layered clothing system suited for ski touring. This included softshell trousers, a waterproof hardshell jacket and trousers, a synthetic insulated jacket, and Gore-Tex boots for waterproof performance. Merino or synthetic base layers were worn under mid-layers and vented outer shells to allow efficient temperature regulation during exertion.

For additional warmth, we packed beanies, neck gaiters or balaclavas, and two pairs of gloves (liner and insulated) to adapt to changing weather. Helmets, sunglasses, and ski goggles were essential for both protection and visibility on descents.

In addition to touring wear, we each brought comfortable clothing for use in the evenings aboard the boat. This included spare T-shirts, track pants, socks, and a quick-drying microfibre towel. We also shared a few extra insulating layers suitable for use on deck during sailing transitions, helping to reduce individual pack volume.

## 6: Medical

### 6.1 Incident Response

#### 6.1.1 Minor Injury

Minor injuries are common in ski touring and can often be managed in the field. These injuries may result from falls, overuse, or environmental factors. Action will be taken to minimise these such as ensuring gear is appropriately fitted, planning routes to consider difficulty and environmental conditions and taking extra care when twisting in ways that pose a higher risk of straining.

Most minor injuries will be treated in location using medical equipment on person. However more severe cases will be assessed and in cases where immediate action is required to limit long lasting consequences the plan detailed in section 6.1.2 will be followed.

#### 6.1.2 Major Trauma

Major trauma is less frequent but possible due to incidents such as falls, avalanches or severe weather conditions and must be planned for to ensure that impact is minimised in the case of incident.

##### 6.1.2.1 Response Plan (adapted from a previous expedition completed by some group members)

###### 6.1.2.1.1 Step 1: Initial Response

- Initial assessment of casualty as per competency. This may include basic life support and some additional non-invasive steps (i.e. haemorrhage control techniques, spinal stabilisation).
- (C)ABCDE assessment:
  - Catastrophic Haemorrhage Control
  - Airway (and cervical spine control where appropriate)
  - Breathing and Ventilation (with oxygen where available)
  - Circulation and Haemorrhage Control
  - Disability or Neurological Deficit Extremity / Environment / Exposure
- **Call for help (112) as soon as possible (using satellite phone if necessary) and go to the next step depending on the following criteria:**
  - 2A: If self evacuation is not necessary and contact with emergency services has been established.
  - 2B: If self evacuation is required and the casualty is conscious and able to move safely.
  - 2C: If neither of the above are true.

###### 6.1.2.1.2 Step 2A: Communicating with, waiting for meeting and following instructions of emergency services

If contact is established with emergency services, communicate clearly:

- Situation
- Cause
- Timeline of events and interventions
- Current assessment
- Recommendations
- Specific terrain, landmark features, identifiable equipment

- Ground conditions
- Environment conditions
- Status of other team members

Update receivers as necessary.

Follow instructions of emergency services. This may involve sheltering in place and keeping the patient(s) stable and warm, transferring to more accessible/sheltered terrain or closer to a road or some guided interventions. Use of an emergency beacon, torches, whistles and bright clothing may aid search and rescue. Go to step 3 prior to evacuation.

#### **6.1.2.1.3 Step 2B: Mobile Casualty**

**Call for help (112) as soon as possible (using satellite phone if necessary)**

- You have assessed the situation; formulate a plan and act upon it.
- Discuss the plan with the casualty, but consider the extent of his/her injuries and factor this into how much they contribute.
- If separated from other team members, consider whether their assistance is needed, and how far away they are likely to be.
- If their help is needed and they are within earshot, send out a distress signal by sounding six sharp blasts with a whistle. Repeat this every minute until you hear six whistle blasts in return from the other expedition team members.
- If you are unable to use a whistle, then send out six flashes every minute using a head torch.
- If you detect a return signal, continue sending out the distress signal so those responding can pinpoint your location.
- If it becomes dark, try to use both a head torch and whistle as this will make it easier to pinpoint your location.
- If you receive no response, continue to send out the signal
- Continue to assess the ability to get to your destination (this is likely to be the closest vehicle, the location of the main first aid kit, or the location of the satellite phone). Remember, a tired, injured casualty can easily become an immobile or a dead casualty.

#### **6.1.2.1.4 Step 2C: Immobile Casualty**

**Call for help (112) as soon as possible (using satellite phone if necessary)**

- Don't try to be a hero – it requires real manpower to move an injured casualty.
- Movement of the casualty will require one of the cars, and the help of other team members is likely to be needed.
- Movement may also require the spinal board, and this will be a necessity if a spinal injury is suspected.
- Stay where you are and apply all your efforts to keep the casualty alive. Sound six sharp blasts with a whistle. Repeat this every minute until you hear six whistle blasts in return from other team members.
- If you are unable to use a whistle, then send out six flashes every minute using a head torch.
- If you detect a return signal, continue sending out the signal so those responding can pinpoint your location.

- If it becomes dark, try to use both a head torch and whistle as this will make it easier to pinpoint your location.
- If casualty in pain, give the analgesia carried in the personal first aid kit.
- Get the casualty into shelter if necessary.
- Apply first aid.
- For a cold and/or wet casualty, wrap them in the foil insulation blanket from the main first aid kit, then a down jacket, then a sleeping bag if available. Erect a tent if possible.
- Make sure you're also warm enough and eat and drink plenty.
- Continually assess the casualty and document these assessments on the chart in the first aid kit; this information will be very important once evacuated.

#### **6.1.2.1.5 Step 3: Medical Assistance and Evacuation**

- Document the following to communicate to medical staff or when consulting the medical helpline:
- Accident/illness description
- Clinical description:
  - Conscious level - AVPU
  - Airway
  - Breathing – respiration rate, depth
  - Circulation – bleeding, skin colour, pulse rate/rhythm
  - Disability – obvious injuries
  - Treatment given (e.g. splinting)
- Establish casualty priority:
  - Priority 1A Immediate evacuation from the accident area if possible
  - Priority 1B Immediate evacuation but can transfer from accident area
  - Priority 2 Urgent evacuation
  - Priority 3 Evacuation needed soon
  - Priority 4 Evacuation not needed, advice required
  - Should evacuation be required, follow the evacuation procedure.

#### **6.1.2.1.6 Step 4: Post-Incident**

- Each team member will write a personal report.
- Document the list of decisions made with approximate times and locations. Use the list to discuss how you felt prior to, during, and after the incident.
- Complete Imperial College incident reporting form.
- If required, speak to UK contact to discuss incident.
- Any major incidents will involve a full debriefing on return to London.
- Debrief to be led by expedition leader.

### 6.1.3 Extreme Environment

The extreme environment of Northern Norway presents environmental risks that must be planned for including extreme cold, avalanche danger and visibility issues. As a result specialist safety equipment to mitigate environmental risk will be used such as transceivers, avalanche safety kits and an iPhone (see Appendix D for full equipment list).

### 6.1.4 Individuals with Pre-existing conditions

Pre-existing conditions should be self-managed and group members are advised to contact their GP if they have any concerns that the expedition may impact their health. Where group members require personal medication, extra should be packed that covers 10 days of use to account for delayed transport or loss. Each individual is responsible for their own emergency plan in the case of an incident relating to pre-existing conditions and should ensure that all members of the group are aware of how to access this.

## 6.2 Emergency Contacts

The international dialling code for the UK is +44, and for Norway is +47.

Service	Telephone Number	Purpose
UK Emergency	999	To contact for emergencies in the UK
Norway Emergency	112	To contact in an emergency, police or medicine related
Satellite Phone Number	TBD	To provide to emergency services
BMC Insurance Claim Line	+44 1623 631 331	To make a claim (9am to 5pm, Monday to Friday)
Imperial College Security	+44 20 7589 1000	To contact as part of the incident response protocol to inform Imperial College of the incident
British Embassy in Oslo (Urgent Assistance)	+47 23 13 27 00	To contact if legal difficulties, etc.
Canadian Embassy in Oslo	+47 22 99 53 00	To contact if legal difficulties, etc.
Austrian Embassy in Oslo	+47 22 54 02 00	To contact if legal difficulties, etc.
UK Home Emergency Contact	TBD	To contact if emergency assistance from the UK is required

Table (6.1) Emergency contacts

## 6.3 Medical Facilities

**Always call 112 first in an emergency.**

### Hammerfest hospital

Nearest Hospital, open 24 hours, 7 days a week

Address: Sykehusveien 35, 9601 Hammerfest, Norway

Telephone: +47 78 96 70 00

### Helsestasjon for ungdom

Emergency room, open 24 hours

Address: Hankenbakken 26, 9550 Øksfjord, Norway

Telephone: +47 78 45 30 50

## 7: Risk Assessment

Activity	Hazards	Likelihood	Severity	Risk	Control Measures	Reassessed Risk
Sailing between ski areas	Severe weather systems	3	2	6	Actively check marine weather forecasts from multiple sources at intervals throughout the day and in advance of expedition, monitoring barometric pressure when on the yacht to recognise onset of weather system.	2
	Severe sea states	3	2	6	Mandate use of life jackets and safety lines when on deck. Ensure vessel contents are secured appropriately. Ensure all members are comfortable on layout and mechanics of vessel, with instruction to always secure themselves, avoid rigging danger areas. Ensure vessel has lifesaving equipment inc. life raft, EPIRB, flares.	2
	Sea-sickness	3	2	6	Stock sea-sickness medication	2
	Man-overboard	1	4	4	Brief and practice MOB procedure with all crew, ensuring each understand how to recover MOB. Mandate use of life lines on deck and no-one on deck in the dark without skipper's permission.	2
Tender transfer to shore	Capsizing in swell	1	4	4	Ensure tender is rated to carry 5x persons and associated gear, use multiple trips to shore otherwise. Load tender equally to optimise balance. Only launch if sea state is sufficiently calm.	2
	Cold water immersion (partial / full)	3	3	9	Life jackets to be worn in the tender at all times. Disembarkation completed 1x person at a time, with procedure for one person to stabilise tender. Any wet gear will be substituted if possible before beginning an ascent.	5
	Slips and falls on surfaces	3	2	6	Grippy footwear to be used for disembarking, to be advised to best practice here by experienced shore-landers in the area.	2
	Unstable or rough landing location	2	2	4	Avoid hazardous landing location, using charts and satellite maps to identify most sheltered and safe location, that also provides good start points for ascents. Lookout into the water over bow of tender to avoid submerged rocks. Same approach used for person recovery after skiing.	2
	Salt water equipment damage	2	1	2	Transport sensitive equipment in waterproof bags or protective covers, and secure them to tender under transit. Rig lifting sling on the yacht to support passing of gear between tender and yacht.	1

Activity	Hazards	Likelihood	Severity	Risk	Control Measures	Reassessed Risk
Ski touring	Avalanches	2	5	10	Avalanches are uncommon at the time we will be skiing, but training will be undertaken and refreshed on by all members before departure. Personal transceivers carried by all persons, as well as shovels, whistles and torches. We will use local avalanche advice and forecasts, extensive route planning to avoid hazard areas.	6
	Unstable snowpack	2	4	8	Risk of unstable snow is low at time of expedition (expt. Spring corn conditions), check avalanche forecasts, assess snowpack stability with tests, avoid steep slopes and terrain traps, travel one at a time, and carry essential rescue gear.	4
	Crevasses	2	5	10	Regional topography and landscape features will be studied extensively, with lines planned and evaluated for risk in advance of skiing. Features such as crevasses are uncommon and will be completely avoided.	4
	Cliffs and drops	2	5	10	As above.	4

Table (7.1) Risk Assessment

## 8: Conclusion and Recommendations

This expedition challenged us to take on more responsibility, adapt to volatility, and make informed decisions in a complex, maritime environment. Through close collaboration with guides and crew, and later through independent touring, we significantly improved our avalanche awareness, route planning, and group management.

Key takeaways for future expeditions include:

- Build contingency into route planning — weather can force complete reroutes.
- Prioritise avalanche education and on-the-fly decision making, not just technical fitness.
- Ensure team members are ready to take on greater autonomy if guides or support are unavailable.
- Plan resupply carefully — remoteness, closures, and limited stores can catch you out.

Beyond the physical challenge, this trip strengthened our confidence as emerging ski tourers and reinforced the value of teamwork, preparedness, and adaptability in the backcountry.

## A: Appendix

Instagram (required for some funding sources)

### A Strava Segments

George's documented Strava segments per day:

- 14/05: Alta Day 1
- 15/05: Indre - Ytre Traverse
- 16/05: Tverrfjorden loop
- 17/05: Loppa
- 19/05: Loppa 2
- 20/05: Loppa 3
- 21/05: Loppa 4
- 22/05: Loppa 5
- 23/05: Loppa 6

### B Outdoor Active Segments

Chris' documented routes on Outdoor Active:

- 14/05: Alta Day 1
- Indre - Ytre Traverse
- Tverrfjorden loop
- Loppa
- Loppa 2
- Loppa 3

### C Expedition Team Contact Details

Feel free to get in touch! Our contact details are the following:

- Callum Hargrove: [callumhargrove@gmail.com](mailto:callumhargrove@gmail.com)
- Liam Baglole: [baglolew@gmail.com](mailto:baglolew@gmail.com)
- George Alexander: [g.alexander6106@gmail.com](mailto:g.alexander6106@gmail.com)
- Solly Kurzman: [sollykurzman@gmail.com](mailto:sollykurzman@gmail.com)

### D Gear List

#### General Gear

- Toiletries
- 1l Waterbottle
- Headtorch
- Chargers
- Laptop
- Notebook/Diary
- Tonnes of high calorie snacks
- Towel
- Medication
- 4x T-shirts

- A couple jumpers
- Comfy Trousers
- 4x Underpants
- 4x Socks
- Swim shorts (for an arctic dip!)

### **Ski Gear**

- Puffer/Down Jacket
- Waterproof jacket
- Waterproof salopettes
- Fleece
- Thermal tops and bottoms 2x
- Ski socks 3x
- Goggles
- Sunglasses
- Snood
- Ski crampons
- Helmet
- Cap and beanie
- Ski Gloves (ideally mittens)
- Thin gloves (for touring)
- Daypack
- Ski boots (or snowboard boots, compatible with bindings)
- Ski poles (ideally collapsible)
- Skins (Cut to size)
- Skis (or splitboard)
- Sleeping bag / bed sheets / etc.
- Multitool
- Ski straps
- Avalanche Shovel, Probe and Transceiver (and spare batteries!)

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