



August 2019

Prepared for: Meråker Kommune & Meråker Brug AS Prepared by: Ecosign Resort Planners

Foto: Lars Falkdalen Lindahl



MERÅKER ALPINSENTER **MASTER PLAN REPORT OUTLINE**

1. Inventory & Technical Assessment

- Area Location
- Terrain Analysis
- Solar Analysis
- Ski Terrain Capacity Analysis
- Analysis of Existing Skier Visits
- Inventory of Existing Alpinsenter Facilities
- Existing Parking & Skier Services Analysis
- Fagerlia Regulerings Plan & Development Program Analysis
- Existing Base Capacity Analysis
- SWOT Analysis

2. Meråker Alpinsenter Master Plan

- Phasing Summary
- Phase 1 Trails & Beginner Area Improvements
- Phase 2 & 3 Lifts & Trails
- Upper Village Concept
- Overall Land Use Plan
- Phase 3 Base Area Capacity Analysis
- Summer Recreation Plan



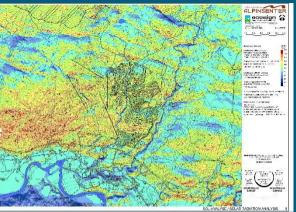
AREA LOCATION



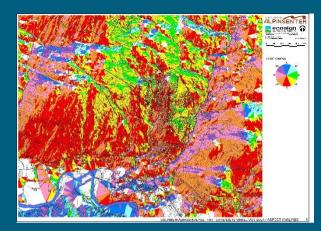
- Meråker Alpinsenter is located 8km west of Meråker Kommune
- The Lower Base Area is located less than 1km from Highway E14; Upper Base Area is 4.5km from E14
- 50km / 45 minutes east of Værnes International Airport
- 85km / 1.3 hrs. from Trondheim Metropolitan Population = 275,000
- 85km / 1.1hrs. West of Åre, Sweden
- Local Population in Meråker Kommune = 2,500



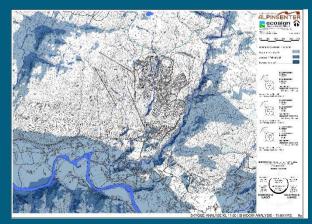
The orientation of the terrain relative to the sun and sharing from surrounding topography is analyzed. The site is mostly south facing which maximizes exposure to sun in the winter but may contribute to degradation of snow quality in the spring.

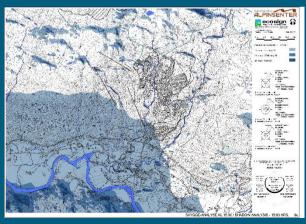


Sol-analyse / Incoming Solar Radiation



Terranganalyse / Slope Aspect





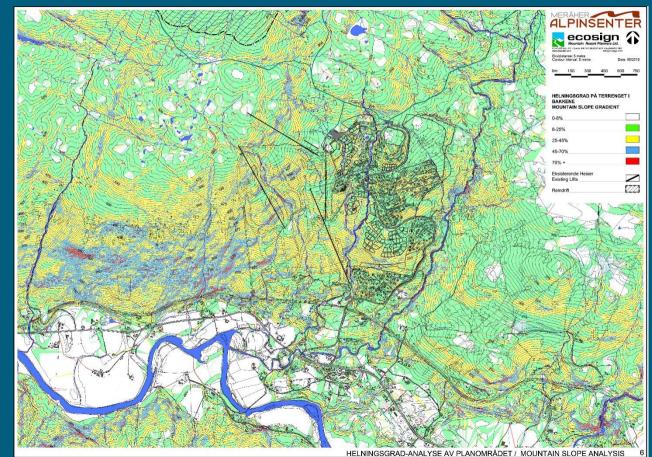
Sol-analyse 11:00 hrs.

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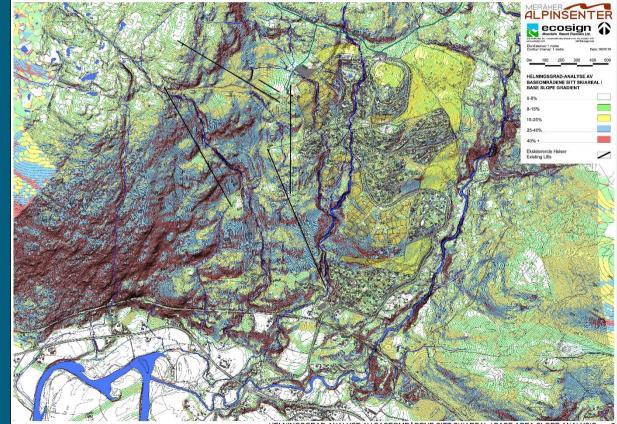
MOUNTAIN SLOPE ANALYSIS



- The existing alpinsenter facility is developed on high quality ski terrain with a mix of beginner, intermediate and some advanced terrain
- Slopes illustrated in Green and Yellow with small areas of Blue on the Mountain Slope Analysis are the most valuable for commercial skiing. This type of terrain is prevalent within the Meraker Study Area
- Slopes less than 8% are illustrated in White and are too flat for alpine skiing but are ideal for cross-country skiing
- Slopes greater than 70% in sustained areas are generally too steep for commercial skiing



BASE AREA SLOPE ANALYSIS



- To minimize earthworks, medium to high density development should be planned in areas with slopes less than 15% (Green & White)
- Resort facilities and hot beds should be planned within comfortable walking distance (450m) to ski area facilities
- Development on slopes greater than 40% (Red) should be avoided

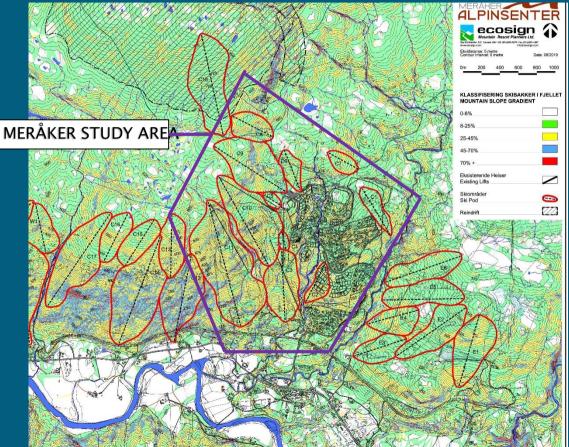
HELNINGSGRAD-ANALYSE AV BASEOMRÅDENE SITT SKIAREAL / BASE AREA SLOPE ANALYSIS





- Area of Terrain Pods = 192 ha.
- Potential Ski Trail Area within Pods = 58.5 ha.
- Estimated Skier Carrying Capacity = 3,310 Skiers At One Time
- Opportunity to improve ski-in/ski-out within Fargelia

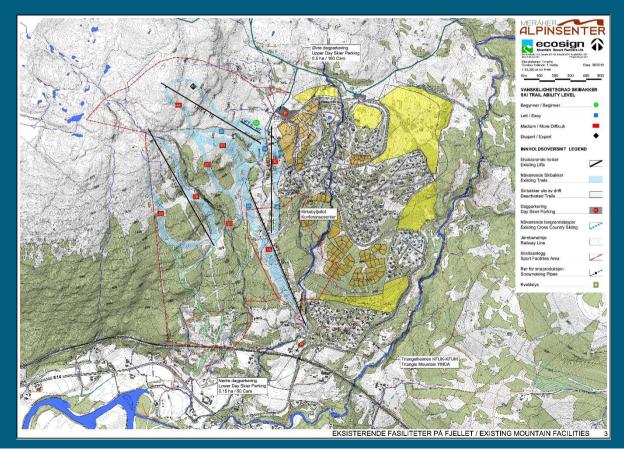
SKI TERRAIN CAPACITY ANALYSIS





- 4 T-Bars and 1 Handle Tow with a total capacity of 1,360 Skiers At One Time
- Total Vertical of Existing Lifts = 802m
- Total Hourly Lift Capacity = 5,133 people/hr
- Sports Facility Area in Kommune Plan = 161.2 hectares
- Top Elevation = 619m / Bottom Elevation = 158m / Total Vertical = 461m
- Existing night lighting and snowmaking
- Snow grooming garage located in upper parking lot
- Extensive cross-country trails connecting to Grova Skisenter and surrounding alpine areas

EXISTING ALPINSENTER FACILITIES





- Annual Skier Visits between 15,000 21,000
- Alpinsenter only operates between 80 85 days in a 130-day winter season
- Average skiers per day is approximately 200 skiers. Peak days have exceeded 800 skiers
- The capacity of the alpine ski lifts is 1,350 skiers at one time so even on Peak Days the facility is only 60% full
- The existing facility could support 50,000 visits per year by increasing the number of operating days to 120 and filling the resort to capacity (1,350 skiers) on peak days.
- When annual visits exceed 35% of the total theoretical lift capacity, more capacity is needed.
- 450 Skiers reflects the Design Day business levels for planning existing skier services

EXISTING SKIER VISIT

	2016/2017	2017/2018	2018/2019
Total Skier Visits	15,038	20,868	15,252
Number of Operating Days	81	84	80
Total Days in Season	130	148	128
% Days Operating	62%	57%	63%
Average Skiers Per Day	186	248	191
Peak Day	888	808	698
Average of Top 10 Days	550	624	501
Design Day 80% of Average Top 10	484	549	441
# of Days Above 450 Skier Visits	9	15	5
% Days Above 450 Skier Visits	11%	18%	6%



EXISTING BASE AREA FACILITIES



- Lower Base Area located at 150m elevation; Upper Base Area located at 450m elevation
- Skier services include parking rentals, retail, restaurant, tickets and operations in Upper Base Area. Parking and tickets only in Lower Base Area
- Total parking capacity = 200 cars

Existing Parking Capacity

	Area # #		#
	ha	Cars	Alpine Skiers
Lower Base Area	0.15	50	115
Upper Base Area	0.45	150	345
Total	0.6	200	460



- Total functional space in existing rental and restaurant buildings = 219.2m²
- Proposed restaurant associated with the Kirkebyfjellet
 Konferensenter could add an additional 265m² of functional space or 84 indoor seats and 32 outdoor seats.
- In addition to evaluating the size (m²) of skier service space, its location relative to other facilities and the quality of service needs to be taken into consideration.
- The rental shop and restaurant are not easily accessible from the upper base area parking lot which are key issues to address in the master

INVENTORY OF EXISTING SKIER SERVICE SPACE

				Browned	Total with
		EXISTING		Proposed	
	Restaurant	Rental Building	Total	Kirkebyfjellet Restaurant	Kirkebyfjellet Restaurant
			m²	noolaanan	noolaanan
Staging Facilities					
Ticket Sales	-	6.0	6.0	-	6.0
Public Lockers	-	-	-	-	0.0
Equipment & Repair	-	55.7	55.7	-	55.7
Guest Services/Ski School	-	-	-	-	0.0
Children's Programs	-	-	-	-	0.0
Sub-total Staging Facilities	-	61.7	61.7	-	61.7
Commercial Facilities					
Food Service Seating	59.6	-	59.6	160.0	219.6
Kitchen & Scramble	33.6	-	33.6	80.0	113.6
Restrooms	11.7	11.1	22.8	25.0	47.8
Accessory/Retail Sales	-	25.0	25.0		25.0
Sub-Total Commercial Facilities	104.9	36.1	141.0	265.0	406.0
Operational Facilities					
Office	-	7.9	7.9		7.9
Employee Facilities	8.6	-	8.6		8.6
First Aid & Ski Patrol	-	-	-		-
Sub-Total Operational Facilities	8.6	7.9	16.5	-	16.5
Total Functional Space	113.5	105.7	219.2	265.0	484.2
Storage	1.5	7.8	9.3	-	9.3
Circ./Walls/Waste/Mechanical	29.0	28.5	57.5	25.0	82.5
Total GFA	144.0	142.0	286.0	290.0	576.0







- To satisfy existing business levels, skier services should be planned for a Design Day of 450 Skiers
- To satisfy business levels at the end of Phase 1, Skier services should be planned for a Design Day of 1,200 Skiers.
- With the exception of space for tickets, rentals and retail, all services are undersized according to existing business levels. Restaurant space is needed as well as operations space and other staging facilities such as lockers, ski school and children's programs.
- The proposed restaurant at Kirkebyfjellet would satisfy the need for restaurant space for up to 700 skiers per day.
- Approximately 1,000m² of new functional space is needed to supply recommended skier services to support Phase 1 business levels which will result in 60,000 total annual visits.

Analysis of Existing Skier Service Space

Existing Business Levels - Design	Existing Business Levels - Design Day = 450 Skiers							
Phase 1 Business Levels - Design Day = 1,200 Skiers (80% of Phase 1 SCC)								
		Total Recon	mended Space		Skier Servic	e Space (m ²)		
			m²	Existing	needeo			
					recommendat	ion for Design		
Guest Service Function		# of Skier	s / Design Day	Services*	Day busin	esslevels		
Staging Facilities	m² / Skier	450	1,200	m²	450	1,200		
Ticket Sales	0.012	5.4	14.4	6.0	-0.60	8.4		
Public Lockers	0.030	13.5	36.0	-	13.50	36.0		
Equipment Rental & Repair	0.080	36.0	96.0	55.7	-19.70	40.3		
Guest Services/Ski School	0.020	9.0	24.0	-	9.00	24.0		
Children's Programs	0.025	11.3	30.0	-	11.25	30.0		
Subtotal Staging Facilities	0.167	75.2	200.4	61.7	13.45	138.7		
Commercial Facilities								
Food Service Seating	0.400	180.0	480.0	59.6	120.40	420.4		
Kitchen & Scramble	0.200	90.0	240.0	33.6	56.40	206.4		
Restrooms	0.100	45.0	120.0	22.8	22.20	97.2		
Accessory/Retail Sales	0.050	22.5	60.0	25	-2.50	35.0		
Subtotal Commercial Facilities	0.750	337.5	900.0	141	196.50	759.0		
Operational Facilities		-	-					
Administration	0.030	13.5	36.0	7.9	5.60	28.1		
Employee Facilities	0.025	11.3	30.0	8.6	2.65	21.4		
First Aid & Ski Patrol	0.030	13.5	36.0	-	13.50	36.0		
Subtotal Operational Facilities	0.085	38.3	102.0	16.5	21.75	85.5		
Subtotal all Facilities	1.002	450.9	1,202.4	219.2	231.70	983.2		
Storage @ 10%	0.100	45.1	120.2	9.3	35.79	110.9		
Circ./Walls/Waste/Mech. @ 15%	0.150	67.6	180.4	57.5	10.14	122.9		
Total GFA	1.253	563.6	1,503.0	286.0	277.63	1,217.0		
NOT including the proposed Kirkebyfieldst Posteurant								

*NOT including the proposed Kirkebyfjellet Restaurant



- Currently, 288 Cabins have been built in Fagerlia with a total of 2,300 beds assuming an average of 8 beds per cabin.
- The Kirjebyfjellet Konferensenter contains 38 beds which are currently the only Hot Beds in Fagerlia
- Of the total 2,300 beds, only 526 beds (23% of total) can be considered as ski-in/ski-out. Skiers from beds that are not ski-in/ski-out drive to the resort parking lots.
- The "Alpine Skier Yield" is used to calculate skiers from beds and is a factor of occupancy and participation and is higher for Hot Beds compared to Cold Beds. An estimated 175 alpine skiers will ski-in/ski-out to the alpinsenter on peak days

Fagerlia Skier Yield

Assumptions								
	- Unit Sta	LUL Sealo.	Aipine Skier	Alpine Skier				
	Occupancy	Occupancy	Participation	Yield from Beds				
Cabins/Cold Beds	90%	85%	50%	38%				
Apartments / Hot Beds	95%	90%	80%	68%				

Fagerlia Inventory of

Ex	istin	a_Be	ds
Felt	Bydg	ı (ر	kisting
Area	Built	# Beds	Ski-in/Ski-out
4.1*	-	-	-
4.2	-	-	-
4.3	19	152	Y
4.4	8	64	N
4.5	11	88	N
4.6	-	-	-
Kirkebfjellet	5	38	Y
5	38	304	Y
6.1	4	32	Y
6.2	-	-	-
6.3	3	24	N
6.4	-	-	-
7	28	224	N
8A	38	304	N
8B	34	272	N
9	-	-	-
10	35	280	N
10 sor	-	-	N
Nedre del	65	520	N
F1	-	-	N
F2	-	-	N
Bjønnlitjønna	-	-	-
Total	288	2,302	-

Analysis of Ski-in/Ski-

	_	
	#	#
Existing Beds Ski-in/Ski-out	Beds	Skiers
Hot Beds	38	26
Cold Beds	488	149
Total	526	175
Total Existing Beds	2,302	
% of Beds Ski-in/Ski-out	23%	



ANALYSIS OF EXISTING BASE AREA CAPACITY

- Base Area Capacity is the combination of the numbe Afpinsenter Existing SCC = 1,350 Skiers At One Time alpine skiers generated from beds that are ski-in/ski-out (skiers don't use parking lots) and the number of skiers that arrive by car or bus to the parking lots.
- The Base Area Capacity should ideally be equal to or greater than the alpinsenter's SCC (Skier Carrying Capacity)
- The total base capacity of the parking lots and ski-in/skiout beds is estimated at 635 skiers. On previously recorded peak days greater than 635 skiers, cars parked along roads which allowed more skiers to access the resort.
- The current Base Area Capacity is 50% of the ski lift infrastructure capacity (1,350 skiers at one time) which points to the need to expand parking, increase transit/buses and increase the number of beds that are ski-in/ski-out before increasing lift capacity

Fagerlia Existing Base Area Capacity

	# of
	Alpine Skiers
Lower Parking	115
Upper Parking	345
Beds Ski-in/Ski-out	175
Total Base Area Capacity	635



Strengths

- Good terrain balance with a mix of Beginner, Intermediate & Advanced ski terrain
- Favourable aspect, views and sun exposure
- Good skiable vertical for Norway (+/- 450m)
- Good proximity to market 80km to Trondheim City / 50km to airport
- Direct access from Highway E14
- Grova Skisenter in region
- · Other recreation facilities and attraction in area

Weaknesses

- Limited opportunities for development at base of ski area facilities
- Upper base has long access road and inconvenient parking
- · Operating to base areas is inefficient for a small ski area
- Very few commercial beds in Kommune
- · High elevation alpine terrain is too flat to ski
- Existing cabins have limited ski-in/ski-out
- Small regional market
- Low business levels prohibitive to investment in new lifts
- Low terrain elevation

Opportunities

- Upgrade lift system with modern equipment and increased capacity with same number of lifts
- Potential future expansion of ski terrain to the west
- Potential expansion of base area facilities adjacent to Highway E14
- Direct road & cross-country ski connection to Grova Skisenter from Merarker Alpinsenter
- Improve ski-in/ski-out to exisitng and future cabins
- Develop summer recreation
- · Hot beds and resort facilities in base area expansion

Threats (Constraints)

- Private land limiting base area expansion
- Cost and logistics of extending alpine ski facilities across railway line
- Competitive disadvantage compared to other larger, established resorts within limited market (Oppdal & Åre)

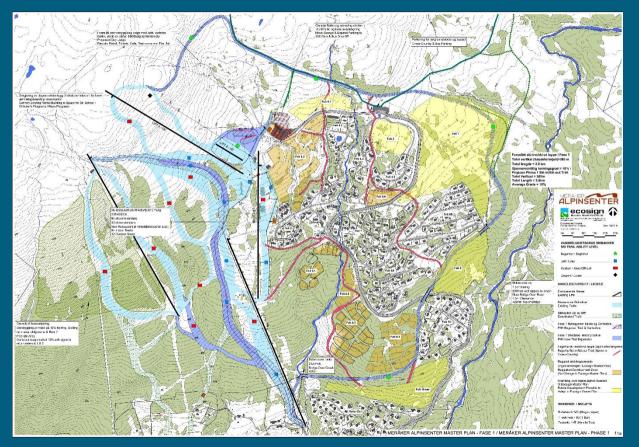
	MERAKER ALPIN MASTER PI	
ecosign Mountain Resort Planners Lt	d.	SCC = Skier Carrying Capacity / Skiers At One Time Winter Operating Days = 120
	,540 Skiers	 Retain Existing T-Bars. Remove beginner handle tow and replace with three moving carpets & platter lift Add top to bottom beginner trail, ski-in/ski-out trail around Fargelia with bridge over open and expanded beginner area Expand parking and skier services in upper base area with new lodge
PHASE SCC = 1 Annual	2 2,190 Skiers Skier Visits = 80	 Remove 3 T-bars (Lifts 2, 3 & 4) and replace with one detachable chairlift and one new Tbar Q00 Shorten Lift 1 T-bar Start first buildings in Upper Village
	3 3,590 Skiers Visits = 150,000	 Develop new base area next to Highway E14 with parking lot, bus drop off and service building Proposed gondola from new base area to mountain top restaurant.

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PHASE 1 MASTER PLAN

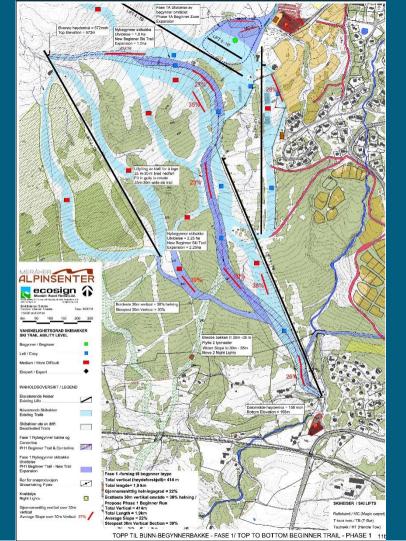
- Existing Tbars retained in Phase 1
- New top to bottom beginner trail from top of Lift 2 to bottom of Lift 1
- New ski-in/ski-out trail with bridge from top if Lift 4 to bottom of Lift 1
- New intermediate trail from bottom of Lift 2 to bottom of Lift 1
- Add ski-in/ski-out to Fagerlia
- Free skiing west of Lift 2
- Build Out Beginner Area with Platter and 3 Moving Carpets





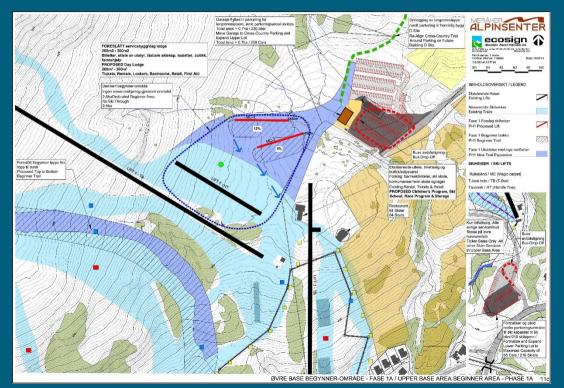
PHASE 1 BEGINNER TRAIL

- New beginner trail possible from top of Lift 2 to bottom of Lift 1:
 - Total length = 1.9km
 - Total Vertical = 414m
 - Average Slope = 22%
 - Steepest 30m Vertical Section = 30% (max for beginners)
- Some tree clearing and grading required
- Fits with Phase 2 lifts
- Ideally slope is widened at bottom close to Lift 1 (two lights must be moved)





PHASE 1A MOVING CARPETS PHASE 1 UPPER BASE AREA



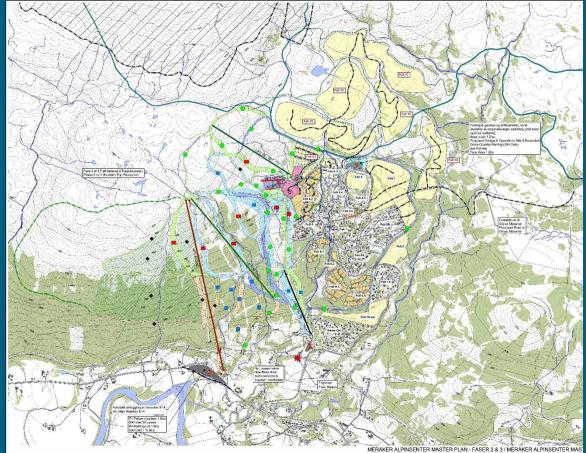
- Phase 1A Moving Carpets can be completed immediately (2019/2020)
 - MC1 = 80m long / 12% slope
 - MC2 = 70m long / 8% slope
- Retain handle tow in Phase 1A (Removed with new platter lift later in Phase 1)
- Move maintenance garage to expand Upper Parking Lot. Maximum capacity 250 Cars / 575 Skiers. Configure parking to accommodate buses.
- Pedestrians can use moving carpets to access skier service building with a short walk over snow
- Idea to build new day lodge on parking lot with rentals, retail, café, lockers and operations space
- Convert existing rentals to ski school, race program, children's program & operations space



Phase 2

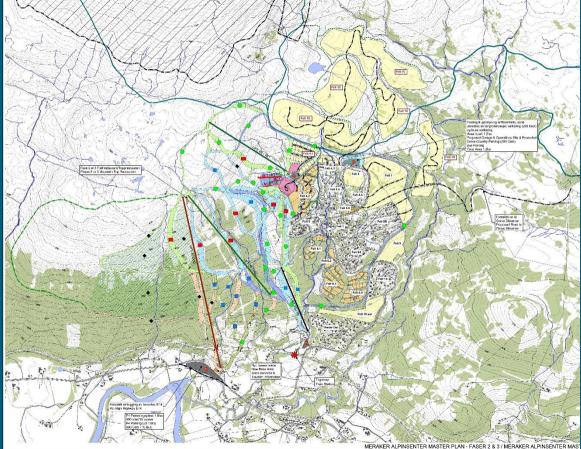
- Remove 3 Tbars Lifts 2, 3 and 4
- Shorten Lift 1 to offload at 320m
- Lift 4R Tbar from Upper Parking P1 to 630m
- Lift 3R Fixed or Detachable 6-seater chair from 263m to 584m
- Widen beginner trail along former Lift 3 Tbar line
- New intermediate trails west of Lift 3R and east of Lift 1 with Freeskiing
- Restaurant at top of Lift 3R can be in Phase 2 or 3

PHASES 2 & 3 MASTER PLAN





PHASE 3 MASTER PLAN SCC = 3,590 Skiers



- New base area in valley bottom with realignment of highway
- New parking for 430 cars and 10 buses
- Day lodge with tickets, rentals (winter and summer), lockers, café, tourist information etc.
- Gondola from new base area to mountain top restaurant for four-season use
- Upper Village is completed and surface parking in upper base is reduced to 100 cars
- Expanded lower ski trails and free skiing zone



UPPER VILLAGE CONCEPT

- Four mixed-use apartment buildings with underground parking, ground-level commercial space (restaurants & retail) and hot beds
- Total = 900 beds / 2.25 ha
- Buildings developed in order A D
- Pedestrian circulation around perimeter of Village connecting all buildings to surrounding development, recreation, sun and views
- Good connection to Beginner Area
- Maintain some parking (100 cars) to support restaurants and shops
- Building D developed in Phase 3 when new base is created
- Ski-in/ski-out beds in expanded Felt 4.1





VILLAGE IMAGERY









	Units
	per ha
Cabins	6
Townhouse	20
Apartment	100

- In addition to the existing 288 units, the Master Plan includes a total of 967 new cabins & apartments which will result in a total of 1,353 units and 8,934 beds in Fargelia at build-out.
- Existing regulation plans are unchanged with the exception of Felt 4.1, 4.2, 9, 1B (new) and 1C (new).
- Hot beds are planned within the expanded Felts 4.1 and 4.2.
- New areas in the Bjønnlitjønna zone (1C) and east of Felt 1 along the proposed road to Grova (1B) add 350 cabin sites with mostly ski-in/ski-out

Felt	Bydg	Ē	xisting	Ubebygd	Ledig	Potensiale	Pot	ential	Total Existin	g + Potential
Area	Built	# Beds	Ski-in/Ski-out	Undeveloped	Vacant	Potential	# Beds	Ski-in/Ski-out	# Units	# Beds
4.1*	-	-		-	-	131	828	Y	131	828
4.2*	-	- 1			-	250	1,320	Y	250	1320
4.3	19	152	Y	3	-		-	Y	22	152
4.4	8	64	N	-	-	-	-	Y	8	64
4.5	11	88	Ν	-	-		-	Y	11	88
4.6	-	- '	-	11	-	-	-	Y	11	0
Kirkebfjellet	5	38	Y	-	-	-	-	Y	5	38
5	38	304	Y	1	1	-	-	Y	40	304
6.1	4	32	Y	7	4	2	16	Y	17	48
6.2	-	-		-	13	-	-	Y	13	0
6.3	3	24	Ν	13	11	3	24	Y	30	48
6.4	-	-		-	27	9	72	Y	36	72
7	28	224	Ν		2		-	Y	30	224
8A	38	304	Ν	1	-		-	Y	39	304
8B	34	272	Ν	4	-	-	-	Y	38	272
9	-	- '			-	22	176	Y	22	176
10	35	280	Ν	-	-	-	-	Y	35	280
10 sor	-	- '	N	-	-	15	120	Y	15	120
Nedre del	65	520	N	-	-	35	280	N	100	800
F1	-	- 1	Ν	-	-	100	800	Y 50%/50%	100	800
F2	-	- 1	Ν	-	-	50	400	Y	50	400
1B	-	-	-	-	-	50	196	Y	50	196
Felt 1C Bjønnlitjønna	<u> </u>		-	-	-	300	2,400	Y 50%/50%	300	2400
Total	288	2,302	-	40	58	967	6,632		1,353	8,934
*Includes MP expansion	n									

Changed by Ecosign from current Regulation Plan



- At build-out of the master plan, the majority of parking is moved to the Gondola Base Area with limited parking in the Upper Base Area. Buses may drop off in the upper base area
- The train station will be operational, and skiers may walk from the train to the Lower Base Area or be picked up by a shuttle and dropped off at the upper base area.
- Improved ski-in/ski-out trails will convert approximately 1,000 existing beds (125 cabins) to ski-in/ski-out. This alleviates demand on parking which creates more capacity for day visitors. Existing and future beds that are ski-in/ski-out account for 84% of total and generate 2,600 skiers.
- A total of 7,500 beds are added as part of the master planned development, increasing the total number of beds in Fargelia to 8,934.

Phase 3 Parking Capacity

	Area	#	#	#	
PHASE 3	ha	Cars	Buses	Alpine Skiers	
Lower Parking	0.15	84	-	193	
Upper Parking	0.3	100	5	430	
Skiers from Train*	-	-	-	200	
Gondola Base Area	1.3	429	10	1,387	
Total	1.75	613	15	2,210	

*Estimate. Skiers walk to Lower Base or Shuttle to Upper Base

Phase 3 Skiers from Beds

iers
26
149
175
616
1,716
307
2,639

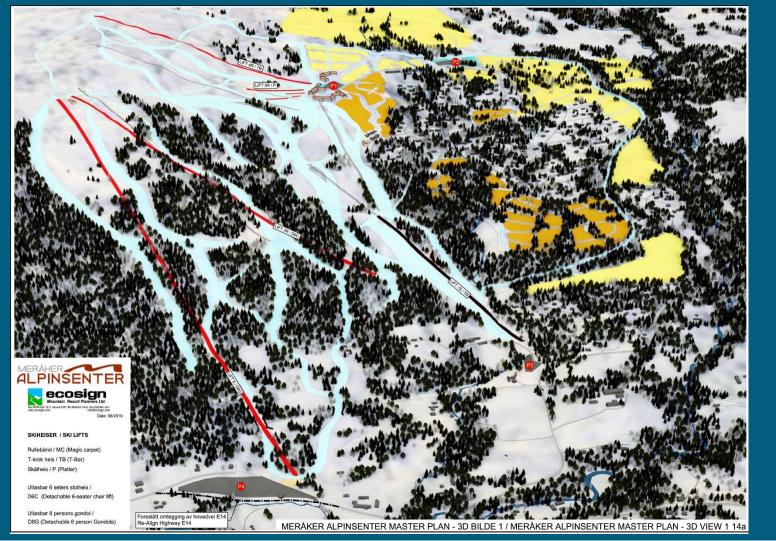


- Base Area Capacity is expanded in the Master Plan to generate an estimated 4,800 Alpine Skiers at build-out
- 42% of total base capacity is from parking areas which generate 2,010 Skiers
- 58% of total skiers come from hot and cold beds which are ski-in/ski-out
- If all proposed development is built out, the Base Area Capacity may exceed the Phase 3 lift system infrastructure capacity (3590 SCC) which will result in lineups and crowding on busy days. The need for expansion of ski area facilities should be reevaluated at the beginning of Phase 3 to update the 2019 master plan projections and identify the most appropriate expansion zones.

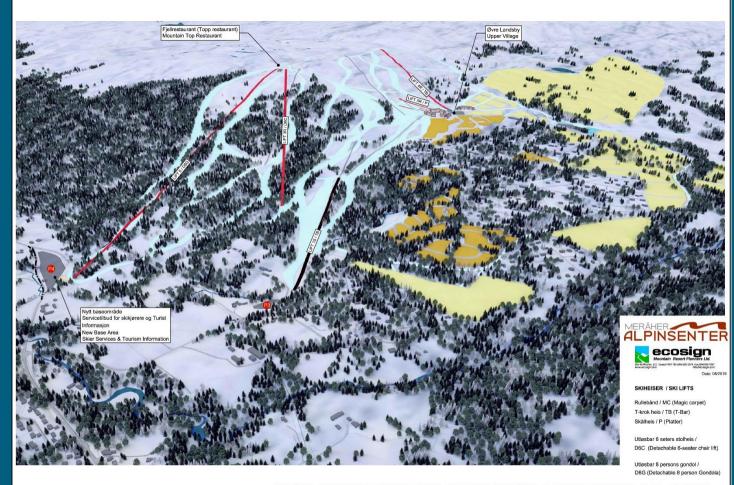
Phase 3 Base Area Capacity

	# of	%
	Alpine Skiers	Total
Lower Parking	150	
Upper Parking	430	
From Train	200	
Gondola Parking	1,387	
Subtotal Parking	1,967	41%
Hot Beds Ski-In/Ski-Out	642	
Cold Beds Ski-in/ski-out	2,172	
Subtotal Beds	2,814	59%
Total Base Capacity	4,781	100%









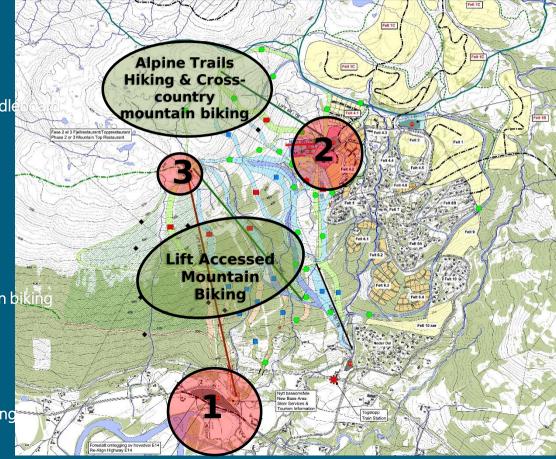
MERÅKER ALPINSENTER MASTER PLAN - 3D BILDE 2 / MERÅKER ALPINSENTER MASTER PLAN - 3D VIEW 2 14b



1. Gondola Base

- River-base activities fishing, canoeing, paddle etc.
- Valley trail connection to Meråker
- Camping / Caravan
- 2. Upper Village
 - Restaurants with local food & wine
 - View point
 - Gravity go-carts with beginner platter
 - Children's playground
 - Access to hiking and cross-country mountain biking
 - Pump track, mountain biking skills park
 - Concerts & Events
- 3. Mountain Top Restaurant
 - Restaurant & View point
 - Alpine hiking & cross-country mountain biking
 - Downhill mountain biking
 - Paraglide launch

SUMMER ACTIVITIES & ATTRACTIONS





SUMMER ACTIVITIES IMAGERY







