

SCHILTHORNBAHN  20XX

Schilthorn
Piz Gloria



World's **steepest** cableway
Open **365** days a year

Our response to increasingly stretched transport facilities and infrastructures

The current access to the Schilthorn dates back to the 1960s

The current access to the Schilthorn from Stechelberg via Gimmelwald and Mürren dates back to the 1960s and represents a major pioneering achievement both in the development of tourism as well as in cable car technology. For a long time, the Schilthorn cable car was the longest aerial cableway in the world!

Our cable cars are now 55 years old. Obviously, extensive maintenance work has been carried out over the years and numerous improvements have been made. Nevertheless, load-bearing infrastructures such as foundations, pylons and the buildings remain largely in their original state.

The cosmetic upgrades carried out in recent years cannot and should not deflect from the fact that our aerial cableways have reached their capacity limits due to the significant rise in demand and therefore need to be replaced.

In summer 2018 and after extensive preparation, the Board of Directors approved the SCHILTHORNBahn 20XX project and gave the go-ahead for detailed planning work. In April 2020, the documents for the operating licence and planning approval were submitted to the Federal Office of Transport (FOT). In September 2021, the FOT granted the necessary licences and planning approval for the large-scale project.

In 2015, the Board of Directors commissioned a masterplan with the following requirements:

1. Transportation capacity must be increased at a «mountain-friendly» rate, from 350 today to at least 800 passengers per hour, bearing in mind that overcrowding the mountain must be avoided at all costs!
2. Cutting travel time between Stechelberg and the Schilthorn summit from currently 32 minutes to around 20 minutes.
3. Enhancing passenger convenience by reducing changeovers.
4. Enhancing passenger comfort by increasing the cabin space per guest by 25%.
5. Optimising luggage transport for guests staying in Mürren.
6. **Open on 365 days a year**
Year-round, uninterrupted access to the Schilthorn – Piz Gloria.



Johannes Stöckli
Chairman



Christoph Egger
CEO

20XX

Schilthorn Cableway Ltd is investing some CHF 100 million in the SCHILTHORNBahn 20XX project to improve passenger convenience and comfort and eliminate waiting times.



Schilthorn Cableway milestones

55 Years Schilthorn – Piz Gloria: a success story

- 1962 Schilthorn Cableway founded
- 1965 Stechelberg – Gimmelwald – Mürren – Birg section opens
- 1966 Engetal ski lift opens
- 1967 Birg – Schilthorn section opens
- 1968 Filming starts on «On Her Majesty’s Secret Service»
- 1969 Piz Gloria revolving restaurant opens
- 1970 More than 1 million section passengers on the aerial cableway
- 1987 Construction of the Stechelberg – Mürren transport cableway
- 1988–1990 Expansion of the Piz Gloria revolving restaurant
- 1993 Ski area expansion: Muttleren and Kandahar chairlifts commence operations
- 1998 Acquisition of Mürren – Allmendhubel Funicular and Sportbahnen Mürren
- 1999 Renovation of the Mürren – Allmendhubel Funicular
- 1999 Expansion of the Allmendhubel Panorama Restaurant

- 2000 Renovation of the Stechelberg – Mürren transport cableway (authorisation to transport passengers)
- 2001 Maulerhubel chairlift opens
- 2002 Construction of the reservoir
1st stage of snowmaking system:
Obere Hübel – Höhenlücke
- 2006 Construction of the Riggli detachable 4-seater chairlift
- 2009 Construction of the Winteregg detachable 4-seater chairlift
- 2009 Construction of the Allmiboden 2-seater chairlift
- 2011 Renovation of the Birg Bistro
- 2013 Construction and opening of Bond World, Piz Gloria
- 2013 Construction and opening of the Piz Gloria View platform
- 2014 Construction and opening of the Flower Park children’s playground on Allmendhubel
- 2014 Construction and opening of the Skyline Walk viewing platform at Birg

- 2014 Skyline Snowpark opens
- 2015 007 Walk of Fame opens on the Schilthorn
- 2016 Thrill Walk opens at Birg
- 2016 Flower Trail opens on Allmendhubel
- 2016–2017 Renovation and expansion of Piz Gloria
- 2017 More than 3 million section passengers on the aerial cableway
- 2017–2019 3rd stage of snowmaking system along Schiltgrat, Allmiboden, Maulerhubel & Winteregg chairlifts
- 2019 Acquisition of Hotel Blumental, Mürren
- 2021 Management offices relocate from Interlaken to Stechelberg
- 2022–2026 SCHILTHORNBahn 20XX



souvenir shop . visualization

Additional uses

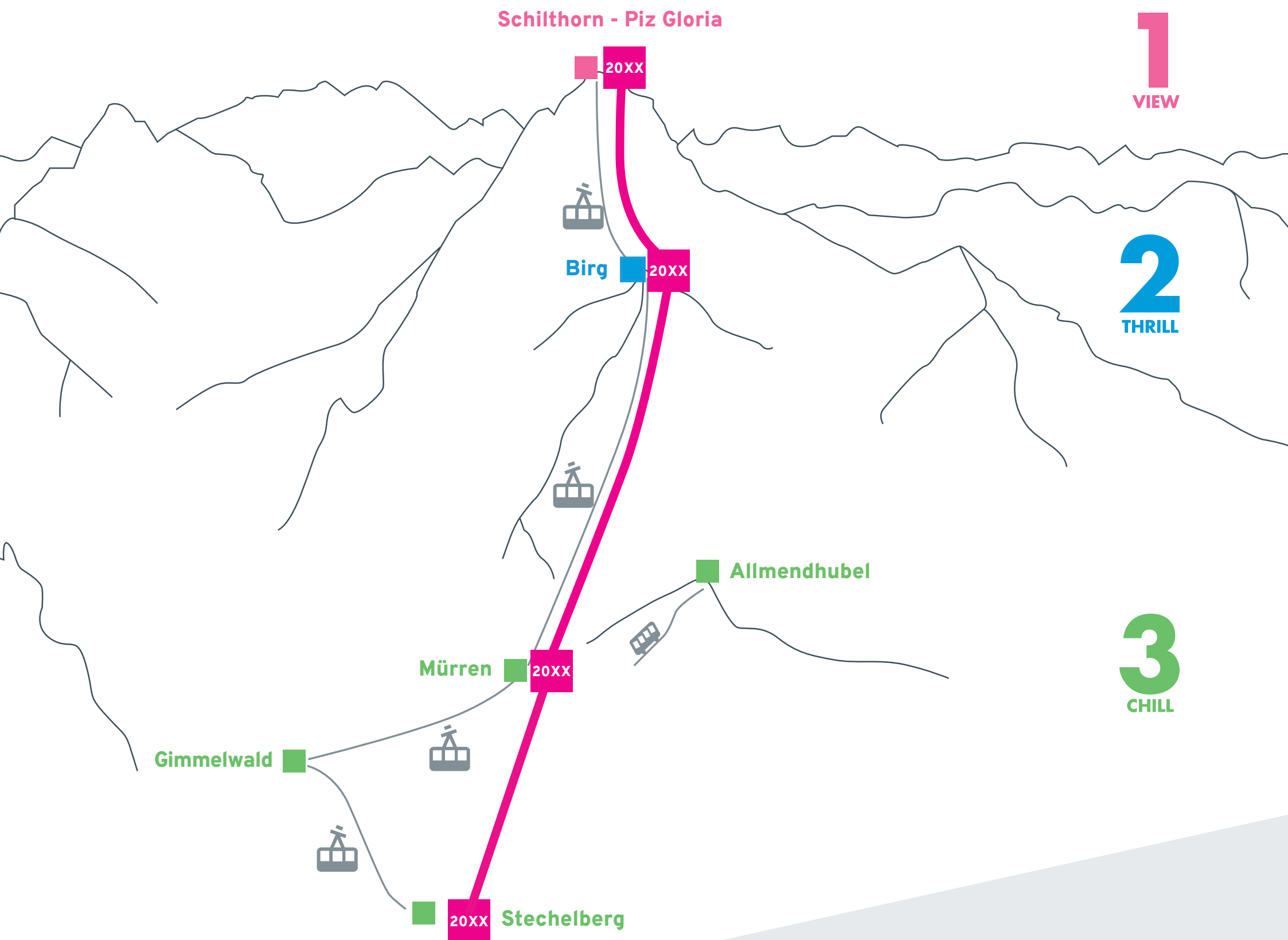
The project enables the expansion and optimisation of circulation areas

The higher transport capacity obviously poses the risk that our premium excursion destination could be over-run by visitors and therefore lose its overall appeal. However, in view of the modest transport capacity (compared to other new mountain railways) of 800 persons/hour such concerns are unfounded.

The project will allow for the expansion and optimisation of the circulation areas in all stations and thus also increase the overall capacity of the excursion mountain. It will also create new spaces that can be utilised as retail premises or recreational areas.

- Key innovations compared to the existing aerial cableway:**
- 3 sections (Stechelberg – Mürren – Birg – Schilthorn) instead of the current 4 sections.
 - The section between Stechelberg and Mürren will be built as a traditional cable car.
 - The sections Mürren – Birg and Birg – Schilthorn will each be served by 2 single-track Funifor cable cars, which can be operated and serviced independently.
 - One less changeover (Gimmelwald).
 - Net travel time will be cut from 20.4 minutes today to 11.8 minutes.
 - Total scheduled travel time from Stechelberg to the Schilthorn will be cut from 32 minutes today to 24 minutes.
 - Increase in transportation capacity from 350 today to 800 persons/hour
 - Year-round access to the Schilthorn.

- New amenities will be added in stages at the stations along the route:**
- Stechelberg**
- Bistro & Shop (110 m²)
 - Fully automated luggage and freight logistics management between Stechelberg and Mürren
- Mürren**
- Sports retailer with ski rental service and restaurant (450 m²)
 - Ski depot with 200 – 300 lockers
- Birg**
- 2677 Vue des Alpes 160-seat restaurant with table service and spectacular views of the Eiger, Mönch and Jungfrau in the former concrete cableway tower
 - Roof terrace (300 m²) with lounge and sun loungers
 - Shop premises (112 m²) for rent
- Schilthorn**
- Spacious rooftop terrace on the cableway station with views of the Eiger, Mönch and Jungfrau
 - Wind and weather-sheltered foyer with unrivalled views of the Eiger, Mönch and Jungfrau, countless Alpine peaks, the Swiss plateau and Jura mountains
 - Shop premises (60 m²) for rent



Completely redesigned access

Enabling faster and more convenient direct access from Stechelberg to Mürren was a priority in the new overall concept.

The current situation is marked by almost 100 percent capacity utilisation and the need for multiple changes between cable cars. Facility operation is complex and must meet the needs of diverse stakeholders: the population of Gimmelwald and Mürren, day trippers from the valley, guests staying in Mürren, independent and group tourists from many different cultures, skiers, hikers etc. Access not only has to handle passenger traffic, but also the transportation of goods and freight to Gimmelwald and Mürren (and back) as well as to the businesses at Birg and on the Schilthorn.

Completely redesigned access should meet the needs of all stakeholders as fully as possible, while taking care to avoid potential conflicts. The key factors here are increased capacity and improved comfort for locals and guests. Roomier cabins with 25 percent more space per guest, but also today's state of the art and current regulations require larger track widths and thus larger axis corridors and stations. Structural considerations in Mürren and the topographical constraints at the other stations and along the route did not leave enough leeway for different options.

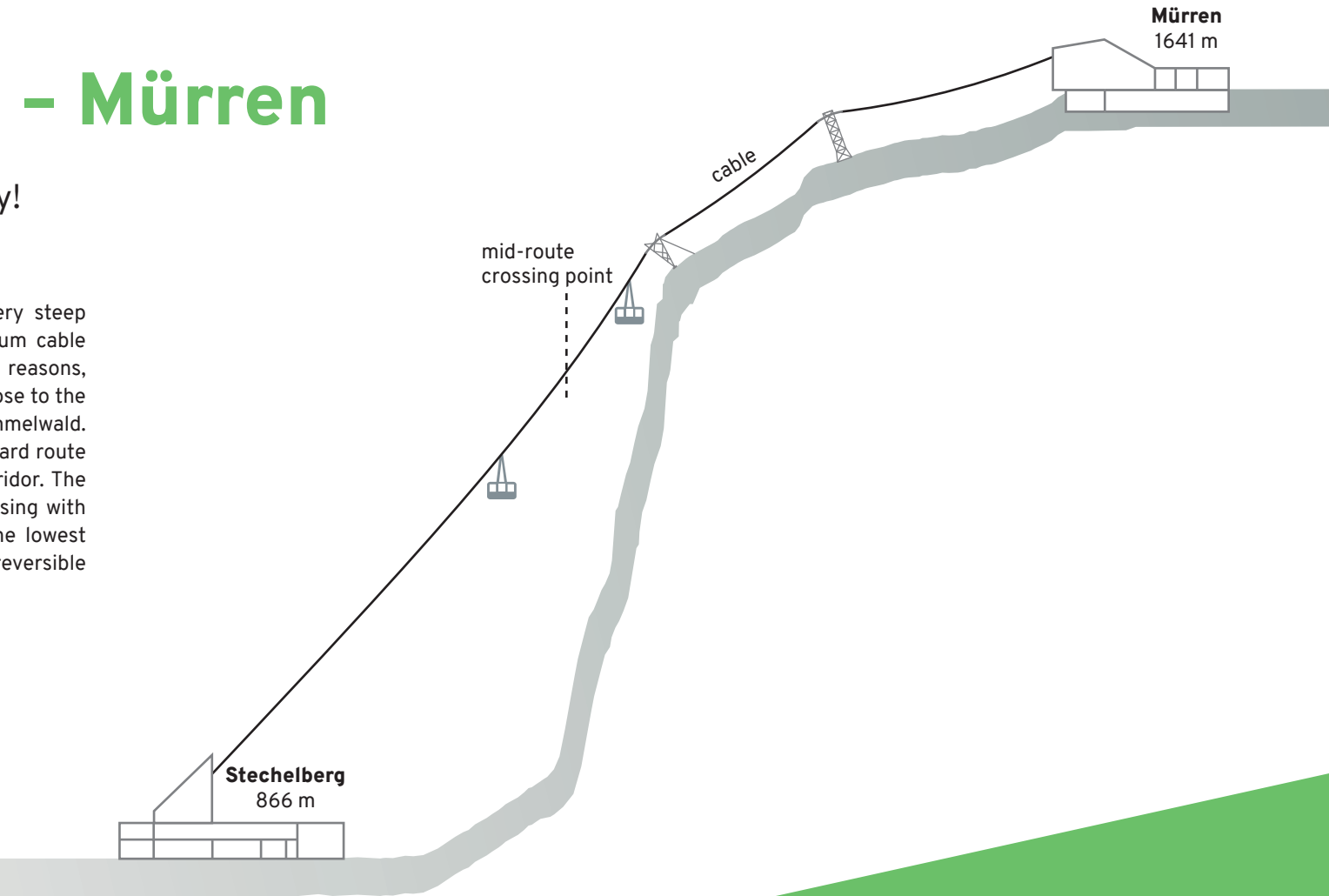
The necessity of keeping access to Birg open during the construction period of a new facility is obvious and economically essential.

For faster and more convenient access, a direct connection between Stechelberg – Mürren was the obvious choice. The existing cableway will continue to run, thus providing access to Gimmelwald village. This section can be maintained for future operations through ongoing maintenance and targeted renewal investment – increased capacity or major mechanical changes are not needed here.

Stechelberg – Mürren

The world's steepest cableway!

The first section is characterised by the very steep ascent in the first cable span and a maximum cable incline of up to 160 percent. For operational reasons, the location of the valley station, which is located towards Gimmelwald. In Mürren, the existing dwellings and the onward route towards Birg only allow for one possible corridor. The facility now only requires two pylons, dispensing with the previous third pylon in the middle of the lowest houses in Mürren. A traditional, two-track reversible aerial cableway is envisaged on section 1.



Technical data

Horizontal length:	1190 m
Altitude difference:	775 m
Pylons:	2
Max. speed:	7.0 m/s
Travel time:	3:54 mins
Cabin capacity:	85 persons
Passenger capacity:	800 pphpd



Mürren – Birg

Summit station and changeover point – striking architecture above the precipice

The second section is a long section that should nonetheless match the capacity of the previous and following sections. Therefore, cabins with a capacity of 100 persons are necessary.

The terrain profile means that only one pylon needs to be erected. The stations and routing of the cableway have been laid out in such a fashion as to allow it to be

built while the existing cableway (and the transport cableway) are in operation. This means that there is no need to suspend operations to provide access to Birg.

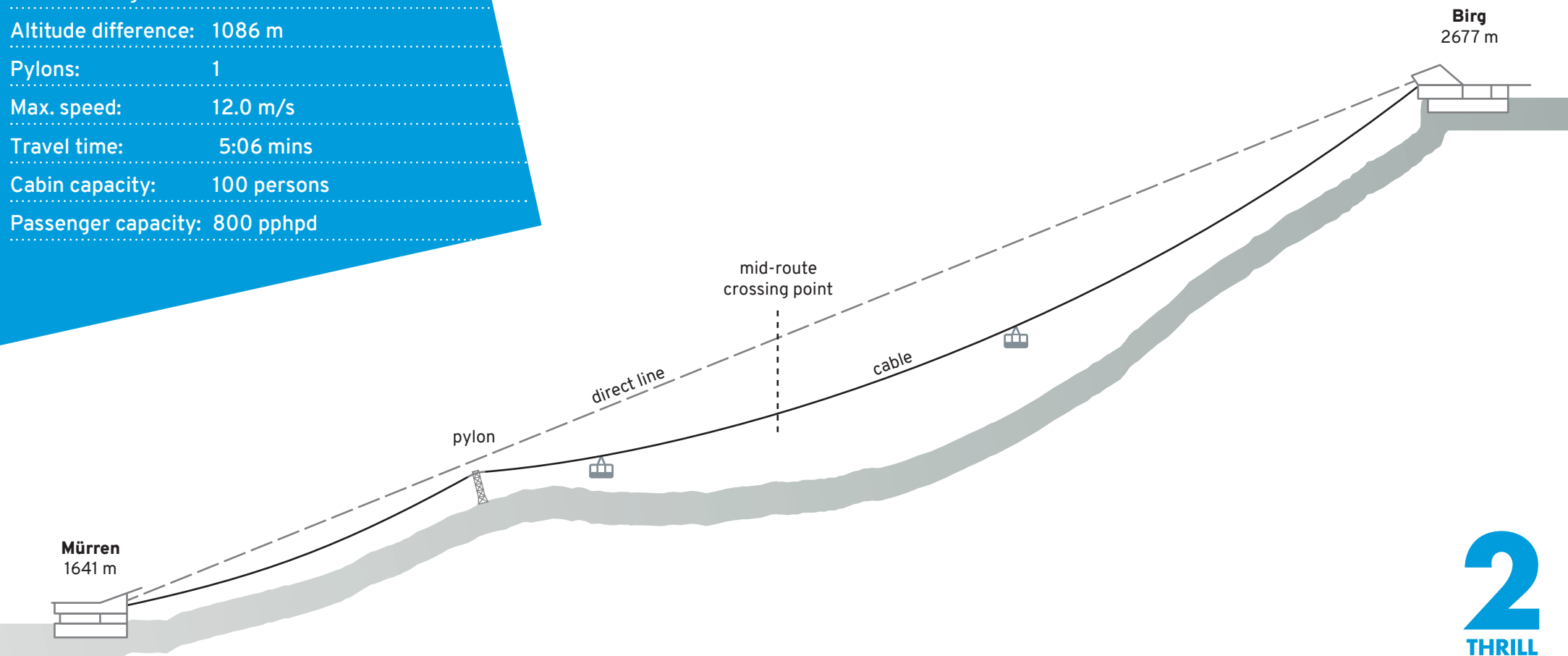
The resulting location of the valley station in Mürren requires raising the platform level by one floor. Conversely, this has advantages in terms of integrating the station into the terrain. The more spacious cabins and

the larger track width also require larger station dimensions. For this section, a system of two independent, single-track and extremely wind-stable Funifor cable cars, as previously installed several times in South Tyrol and elsewhere, is the best solution.



Technical data

Inclined length:	2757 m
Altitude difference:	1086 m
Pylons:	1
Max. speed:	12.0 m/s
Travel time:	5:06 mins
Cabin capacity:	100 persons
Passenger capacity:	800 pphpd

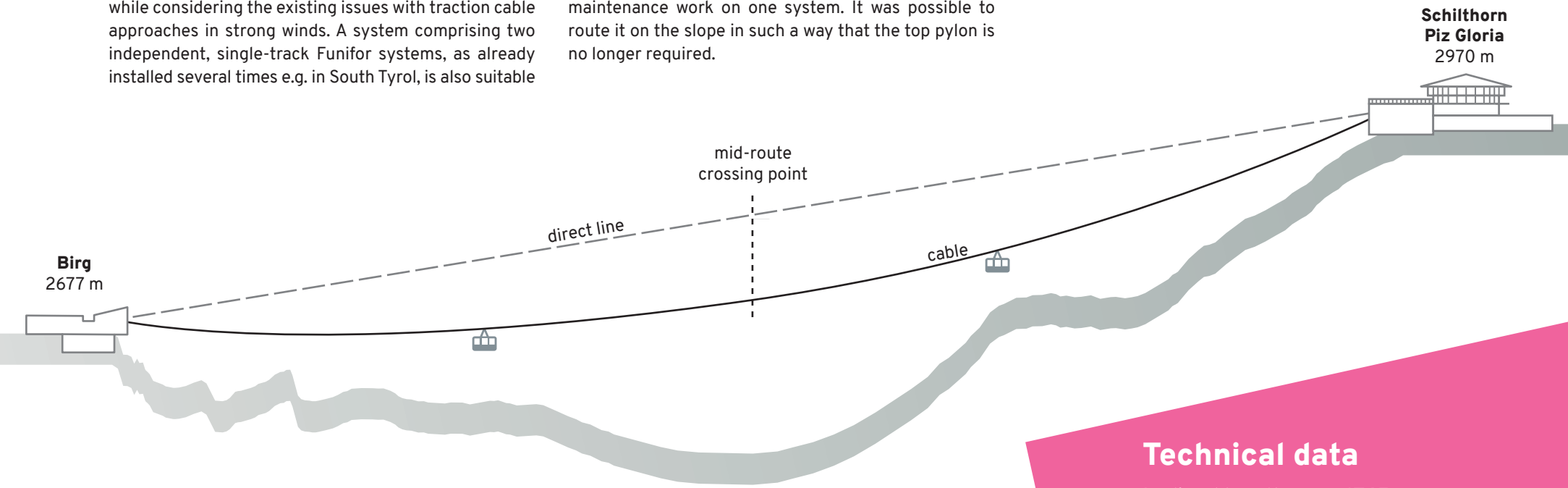


Birg – Schilthorn

Piz Gloria – Swiss icon of technology and tourism

Space for new stations at Birg and on the Schilthorn is at a premium. To achieve the required capacity, a new two-track installation is both practical and necessary while considering the existing issues with traction cable approaches in strong winds. A system comprising two independent, single-track Funifor systems, as already installed several times e.g. in South Tyrol, is also suitable

for this section. This system makes it possible to build a wind-stable facility, which offers further advantages in terms of rescue and uninterrupted operation during maintenance work on one system. It was possible to route it on the slope in such a way that the top pylon is no longer required.



Technical data

Inclined length:	1745 m
Altitude difference:	283 m
Pylons:	0
Max. speed:	7.3 m/s
Travel time:	5:02 mins
Cabin capacity:	100 persons
Passenger capacity:	800 pphpd



Schilthorn – Piz Gloria Open 365 days a year

The Schilthorn – Piz Gloria will be open and accessible all year round thanks to the new Funifor technology. The two tracks of the Funifor cable cars can be operated and serviced independently of each other, ensuring seamless access to our mountain. Year-round operation is particularly important for international tourism. It also represents an appreciable improvement for winter sports enthusiasts, since no more days out skiing will be lost to revision and maintenance work in future.

New cabins – more space and comfort

Cabins with a convertible vibe convey a sense of the extreme altitude

The focus is on boosting space and comfort in the new cabins of the SCHILTHORNBAHN 20XX project. Expansive glazing that can be partially opened and integrated heating systems also enhance visibility. On the lowest section, freight and goods are transported fully automatically in underload containers.

The new SCHILTHORNBAHN 20XX cabins, two per section, offer more space and comfort. Each passenger has 25 percent more space than in the current cabins. Between Stechelberg and Mürren, each cabin can accommodate 85 people. On the upper two sections between Mürren and the Schilthorn, there is room for 100 passengers per cabin. Windows reaching down to the cabin floor guarantee almost unimpeded views. Passengers can disembark quickly and comfortably thanks to doors that are almost three metres wide. The simple, angular design harmonises effortlessly with the rugged, craggy landscape.

Ride with a convertible vibe

The new cabins between Stechelberg and Mürren and Mürren and Birg can be operated with open windows, lending the travel experience a convertible vibe. Lowering the mountain- and valley-facing windows to chest height is not only good for ventilation (and cooling in summer) but also provides unimpeded photo opportunities and an exhilarating sense of the vertiginous altitude and steep gradient.

Integrated heating systems for more comfort and better visibility

All cabins have underfloor heating and integrated window heaters that are charged at the stations. However, the heating systems are not intended to warm the cabins. Rather, a heated floor prevents snow and ice from sticking in winter, and heated windows prevent them from icing over or fogging up. This ensures clear views of the surrounding mountain panorama.

Leading partner in cabin construction

Carvatech is supplying and manufacturing the cable car cabins. Based in Oberwies in Austria, the company is a leading cable car cabin manufacturer that excels in innovative, design-oriented aluminium lightweight construction technology and premium quality.

Funifor cableway – the perfect solution for challenging applications

The new cable car system provides excellent wind stability and enables year-round operation

Funifor is a patented Doppelmayr/Garaventa cableway system which provides the perfect solution for particularly challenging applications. As well as being technically unique on the international market, this wind-stable reversible aerial cableway ranks at the very top in terms of reliability, technology and economy. Thanks to its low height and short hangers, the Funifor can be snugly incorporated into difficult high mountain terrain, thus avoiding severe weather exposure.

Innovation and stability

From a technical perspective, the Funifor traction cable system comprises a single spliced cable ring. In both stations, the cable is deflected via vertical discs: two at the drive station in the valley and two at the return station on the mountain. The large distance between the carrier cables prevents any lateral swinging movement and guarantees high wind stability. The drive in the cabins is equipped with four horizontal compensating sheaves which do away with the need for a mechanical anchoring system between the traction cable and the drive (anchor pile or grouting pins). This makes it possible to check the whole length of the traction cable at any time.

Two independently operating routes offer transportation combinations that were previously unheard of in cableway construction. Thanks to the sophisticated

technology, only one cabin at a time can be operated if required. This makes maintenance work far easier and boosts availability, as only one section needs to be closed at a time.

Made-to-measure technical perfection

Working with the customer, Doppelmayr/Garaventa develops tailor-made solutions. The Funifor ranks among the innovative cableway systems which stand the test – and not just at extreme altitudes.

Precision engineering and compact construction are the striking features of the Funifor, ensuring a perfect fit down to the last detail. The low-rise, compact station buildings are also technically consistent and characteristic of the system. In addition to shorter and cost-saving planning and manufacturing times, this enables harmonious integration into the mountain landscape.

The double haul rope configuration, the continuous haul rope loop, the smaller rope and sheave diameter, and the gear unit are designed for low maintenance and all underline the economics, ergonomics and longevity of the cableway system. Independently driven

carriers are a major safety feature of the Funifor. An additional rescue cableway, as used on traditional cableway, is no longer necessary since the operating carrier can easily be run to the respective valley station.

Key features at a glance:

- Short hanger allows compact, low-rise station buildings
- Separate drives for each carrier and therefore no need for a rescue cableway
- Wide rope gauge, high wind stability
- Spliced haul rope loop
- Very maintenance-friendly





The world's steepest cableway – 160 % incline!

775 metres altitude difference and 1194 metres length

The SCHILTHORNBAHN 20XX project will oversee the construction and installation of the world's steepest and at the same time one of the most spectacular aerial cableways in a direct line between the valley station in Stechelberg and the village of Mürren. Travelling a distance of 1194 metres, the cableway will overcome an altitude difference of 775 metres and achieve a maximum incline of 159.4 percent. Along the way it ascends above the Mürrenfluh cliff, a popular launch spot among base jumpers. Passengers travelling in the new cable car will get the opportunity to observe these daring leaps at close range. The journey will take 3 minutes and 54 seconds at a speed of 7 metres per second.

Currently, the steepest cable car in the world is the Loen Skylift in Norway, which has a maximum gradient of 133 percent. The funicular with the steepest gradient is in Switzerland: the Stoos Funicular has a maximum gradient of 110 percent. Like the cableway systems in Loen and Stoos, the new reversible aerial cableway between Stechelberg and Mürren is being built by the Garaventa/Doppelmayr Group, the world's leading manufacturer in surface and aerial cableway construction.

Energy management – efficient hybrid battery system

Sustainability – the key issue of the future

For the SCHILTHORNBahn 20XX project, Schilthorn Cableway is investing in a novel and efficient hybrid battery system. The cableway can operate completely independently on individual trips thanks to stored braking energy and photo-voltaic (PV) cells.

Energy consumption peaks and energy costs can thus be greatly reduced. Energy management on the new SCHILTHORNBahn 20XX revolves around sustainability: a novel energy system uses braking and regenerative energy and added support from photovoltaics to store electricity and make it available at the right moment independently and cost-efficiently. This method optimises energy demand and consumption peaks so that no new, additional overhead power line is necessary.

Energy-efficient hybrid battery system

The concept is based on two levels: The operating hours of the routes are coordinated with each other. The journeys are managed in such a way that the generator output of the cabin travelling downhill is optimally linked with the motor performance of the cabin travelling uphill and can thus pull the latter upwards. A fully occupied cabin travelling downhill will even need to be braked. Excess energy that is generated is stored in a locally installed battery. Energy peaks are covered by the stored energy. The battery is used as an energy buffer,

to ensure that the energy taken from the network is as constant as possible. It can also be charged with solar energy generated in a PV system at Birg station. Therefore the batteries are being continuously charged, even when the cable car is at a standstill. This means that even in the event of a power failure, the cableway is still able to operate at reduced speed.

Prestigious partners in cableway construction

When it comes to implementing the energy concept, Schilthorn Cableway can benefit from the know-how, expertise and close cooperations with prestigious partners, the cableway manufacturer Garaventa and Frey AG in Stans. As leading manufacturer of control systems, the latter supplies state-of-the-art control technology with software developed in-house.

Major energy cost savings

Despite doubling the transportation capacity, the energy costs can be reduced by around 10 percent with the new system. «This is of great importance, particularly since electricity accounts for a substantial share of the operating costs,» says Schilthorn Cableway CEO Christoph

Egger. «The concept was first implemented on the Biel-Maggingen Funicular. Schilthorn Cableway will be the second transportation facility to rely on this system, and to a much greater extent,» Egger continues. In the longer term, the investment in the new system will be recouped within about five years. The batteries have an estimated lifespan of around ten years, after which a new, much more powerful generation of batteries will be available. The economic viability, the added factor of sustainability and cost savings all speak for this investment.

Luggage logistics – stress-free travel

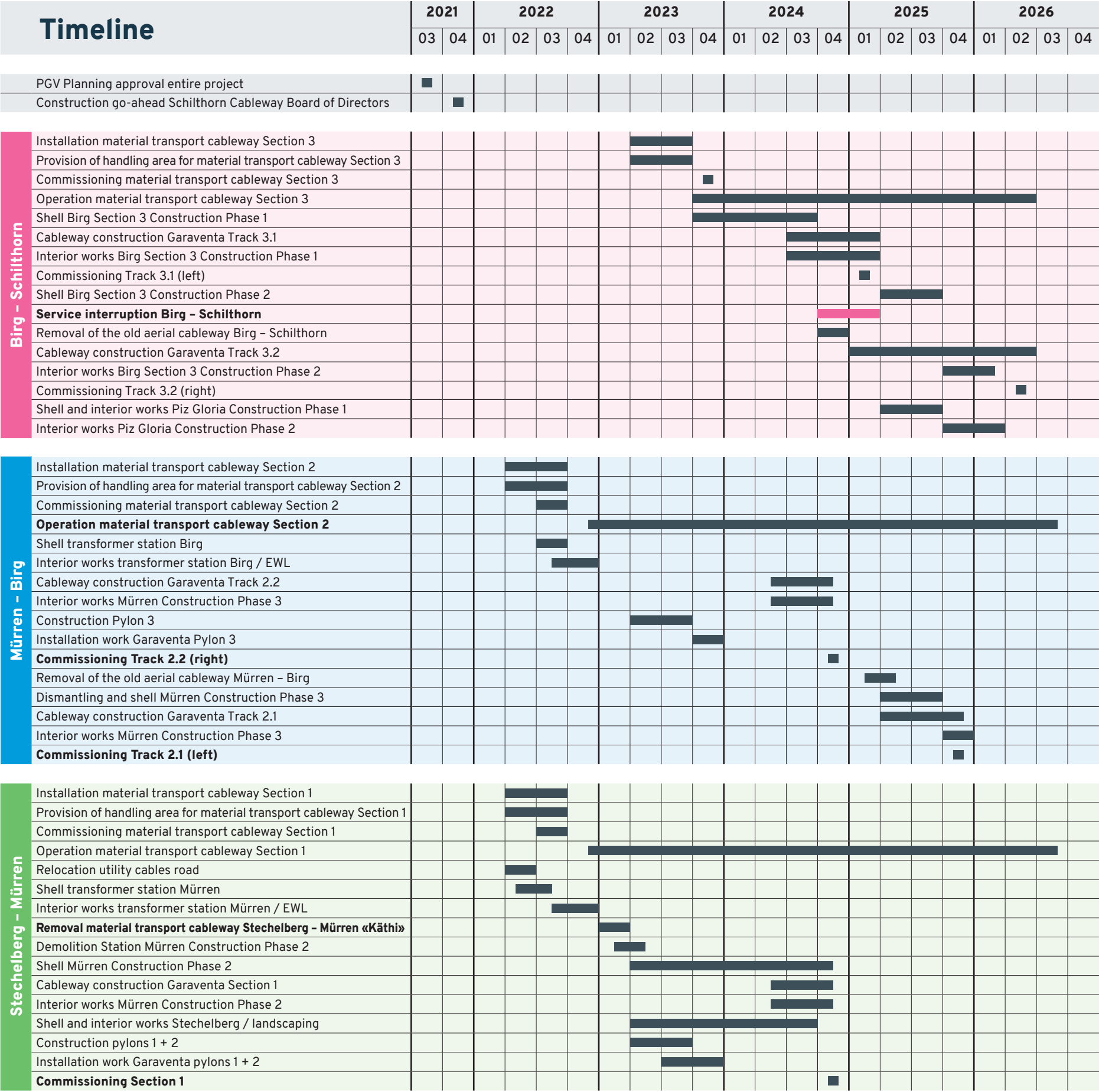
One of the functions of the Stechelberg – Mürren aerial cableway is to provide access to the village and holiday resort of Mürren with its many primary residences, hotels and holiday apartments.

Therefore luggage logistics are very important. Previously, luggage was transported with the «Käthi» transport cable car, with limited capacity.

With our new, fully automated luggage management system, we want to ensure that luggage is normally transported with the same cable car as the guest. Guests can check their luggage in at the counter when purchasing a cableway ticket. It can either be sent directly to their hotel or holiday apartment for a fee or to the top station in Mürren free of charge. At Mürren station, luggage can be collected from the luggage zone or stored in the luggage room until it is picked up. Our aim is to offer a reliable, efficient and modern service to locals and holidaymakers alike.



SCHILTHORNBahn 20XX PROJECT



Construction schedule



Follow developments
and construction progress

www.schilthornbahn20xx.ch