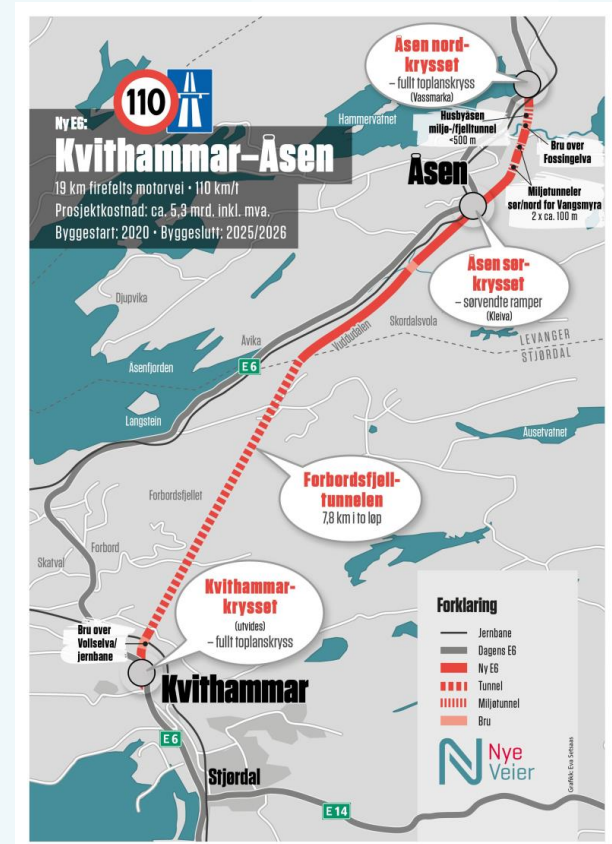


# E6 KVITHAMMAR - ÅSEN TENDER CONFERENCE

Værnes, Radisson Blu Hotel 03.09.2018

## AGENDA

- *Nye Veier, E6 Trøndelag*
- *Project description (SoW), E6 Kvithammar-Åsen*
- *Project execution model*
- *Tender documents*
- *Prequalification and qualification rules*
- *Tender rules and award criterias (BVP)*
- *Time schedule for tendering process*



# E6 TRØNDELAG – INTRODUCTION PROJECT PORTFOLIO - COLLABORATION

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*Johan Arnt Vatnan, SVP*

*Værnes, 03.09.2018*

# Nye Veier AS

## Et tydelig oppdrag

Helhetlig og kostnadseffektiv utbygging og drift av trafikksikre hovedveier

- Mer trafikksikker vei for pengene

## Nye Veiers oppdrag

### § 3 Selskapets virksomhet

Selskapets oppgaver er å gjennomføre planlegging, vedlikehold av de riksveistrækninger som omfattes av porteføljen og som selskapet etter avtale med Deponeringsmyndigheten påtar seg ansvar for, samt virksomhet nært tilknyttet.

Selskapets virksomhet skal være effektiv og helhetlig utbygging, drift og vedlikehold av trafikksikre riksveier. Selskapets samlede utbygging og drift skal være kostnadseffektiv og lønnsom, og selskapet skal prioritere utbygging og drift med lav/negativ samfunnsøkonomisk lønnsomhet.

Kilde: § 3 i Vedtektene for Nye Veier AS. Fastsatt ved stiftelsen 4. mai 2015. Sist endret 18. desember 2015.

Jeg legger gjennom selskapets vedtekter at utbygging og drift av trafikksikre riksveier, større kostnadsbesparelser og lønnsomhet ved valg av utbyggingsrekkefølge.

## Nye Veiers verdier



**FORNYER**

Vi **forny** ved å tenke nytt og utfordre



**FORBEDRER**

Vi **forbedrer** ved å bringe verdi til jobben hver dag



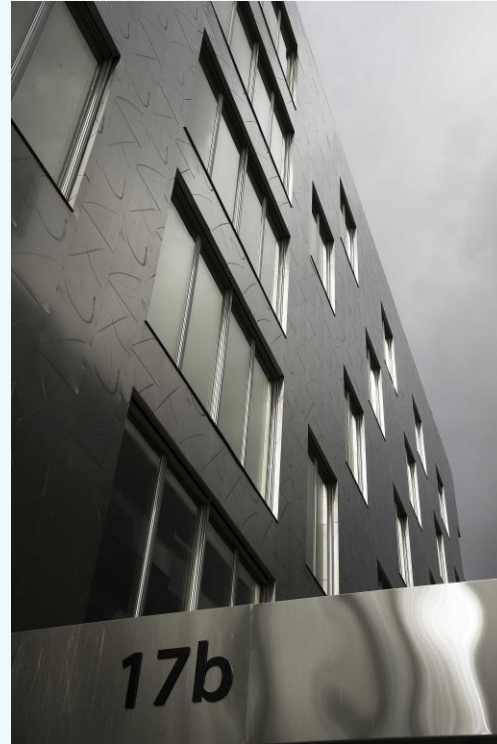
**FORSIKRER**

Vi **forsikrer** ved å garantere at vi tar samfunnsansvaret vårt på alvor

Vi bygger gode veier raskt og smart

# Project Office

- In operation in Trondheim since January this year
- Officially opened 26th April
- Location for the project organization during development
- Address: Sluppenveien 17B, Trondheim



# New E6 Trøndelag

- 106 km will be built:
  - Ulsberg–Melhus, 64 km
  - Ranheim–Åsen, 42 km
- Generally 4 lanes – 110 km/h
- Portfolio cost before optimization:  
28 billion NOK (3 billion EUR)
- Cost optimization: minimum 20%



# E6 Ranheim–Åsen, 42 km

- Adopted zoning for Ranheim–Værnes 23 km
  - ongoing adjustments
- Adopted municipal sector plan Kvithamar–Åsen
- Planning for 4 lanes and a 110 km/h speed limit for the entire project
- Nye Veier has been working on further development and optimization of the project after takeover

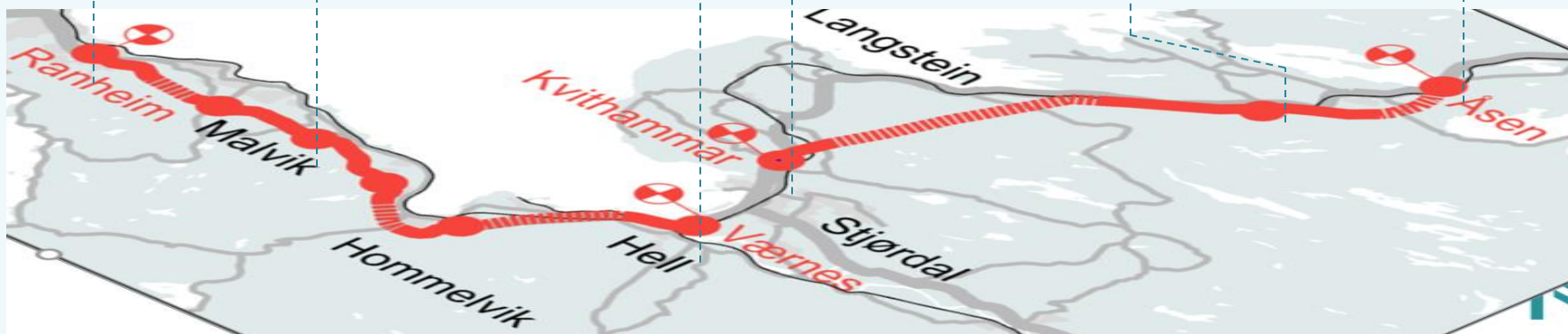


# E6 North – The execution strategy's contract breakdown

\*Prosjektkost er satt til 80 % av estimat 0

\*\*Entreprisekost er anslått til 70 % av Prosjektkost (eks. mva)

	Ranheim	Reitan	Værnes	Kvithammar	Åsen kryss sør	Åsen kryss nord	Totalt
Prosjektkost (MRD)*	~1,6				~3,8	~1,3	~ 10,7
Entreprisekost (MRD)**	~1,1				~2,6	~1	~ 7,5
Lengde (km)	~8				~13,6	~5,5	~ 43,2
Massebalanse (m3)	+250 000				+2 000 000	+500 000	+ 4 000 000
ÅDT (2016)	20 000				10 000	9 000	-
Estimert byggetid	1,5 til 2 år				4 til 5 år	1,5 til 2 år	-





# E6 Ulsberg–Melhus, 64 km

- A total of five zoning plans for the section with varying road standard
- Significant measures of optimization is implemented to achieve better road standard, greater benefit and lower costs (-20% by now!)
- Nye Veier is planning for 4 lanes and a 110 km/h speed limit on most of the section





# E6 Ulsberg–Melhus: Provisional contract strategy



# Execution model

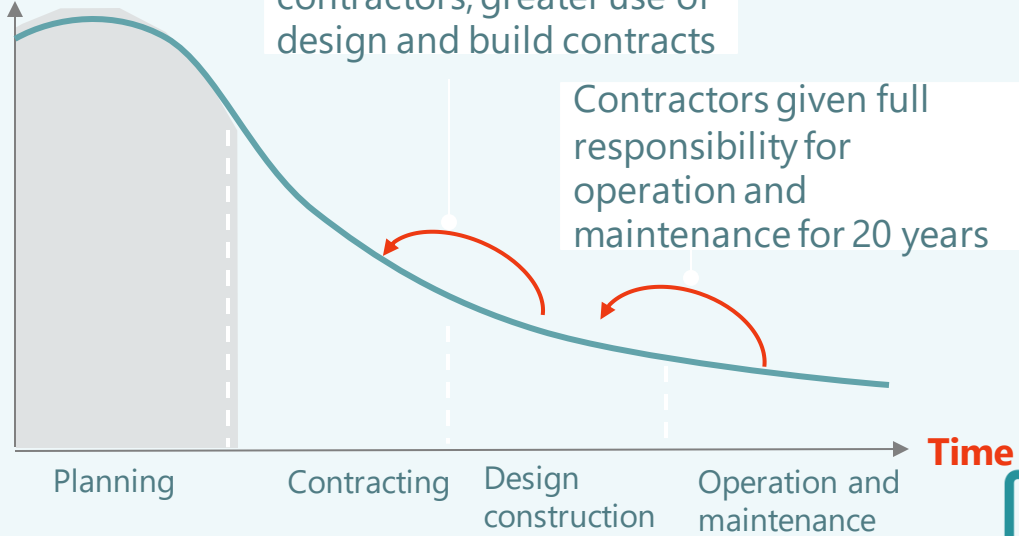


Emphasis on influencing the planning phase to ensure optimal solutions

**Nye Veier's sphere of influence**

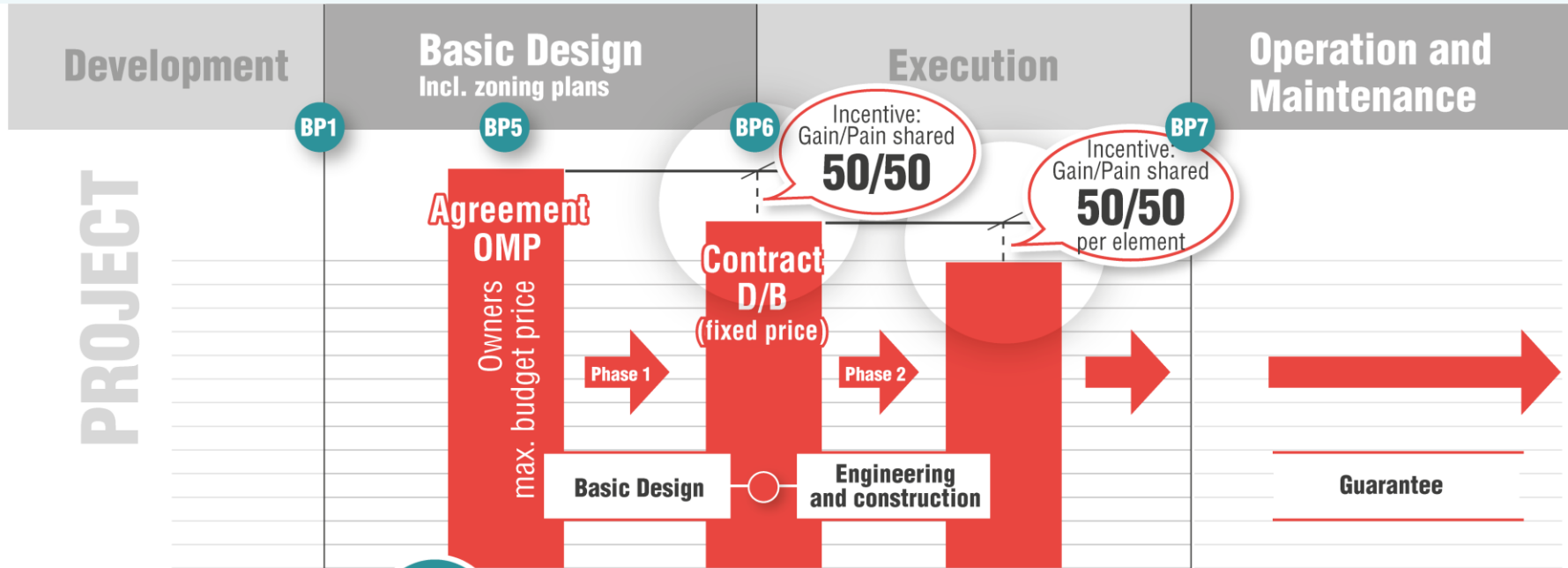
Early involvement of contractors, greater use of design and build contracts

Contractors given full responsibility for operation and maintenance for 20 years



# Nye Veier – E6 Kvithammar-Åsen

## PROJECT- and INCENTIVE MODEL



BVP-method



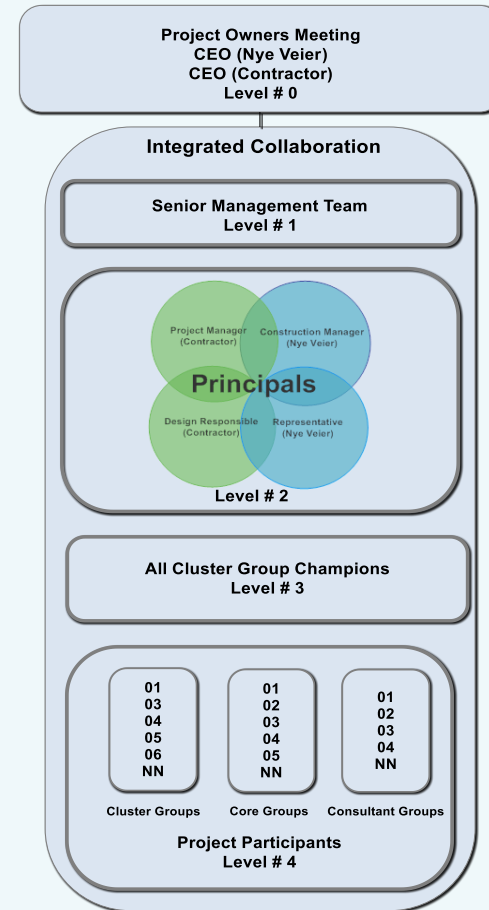
### Integrated Collaboration

– Develop the project in collaboration to fixed price in D/B contract

BP = decision gate

# Nye Veier – E6 Kvithammar-Åsen

## Integrated Collaboration



# Full digitalized within 2020

With a fully digitized project, it is meant (3D/4D/5D/6D/7D):

- Model-based planning (“no drawings”)
- Project development and quality control in the model
- Buildability (modeling of production/progress)
- HSE conditions in the construction period
- Monitoring and signal system
- GPS/laser control of machinery
- Via the model, transfer data to NVDB to be used in further operations phase
- A BIM execution plan must be prepared, based on Nye Veier’s BIM strategy

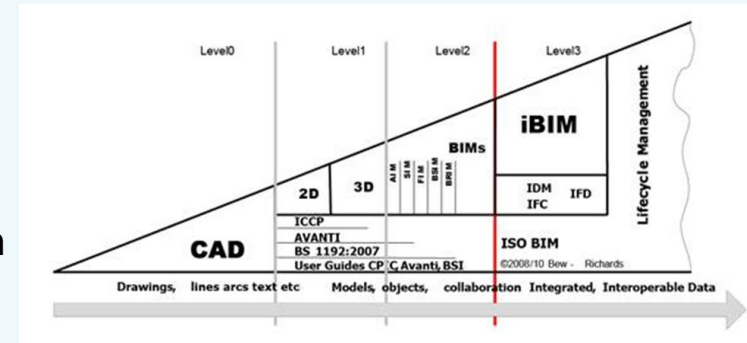
3D: Geometry

4D: Time

5D: Costs

6D: Sustainability

7D: Operation and maintenance





# Prosperous Trøndelag

- Cooperation
- Entrepreneurship
- Innovation
- Social and political stability
- Low crime
- Great nature

Trondheim – leading city of:

- Technology and research
- Education
- Sports
- History
- Religion



# PROJECT DESCRIPTION AND SCOPE OF WORK E6 KVITHAMMAR-ÅSEN

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*Jørund Gullikstad, project director Ranheim-Åsen*

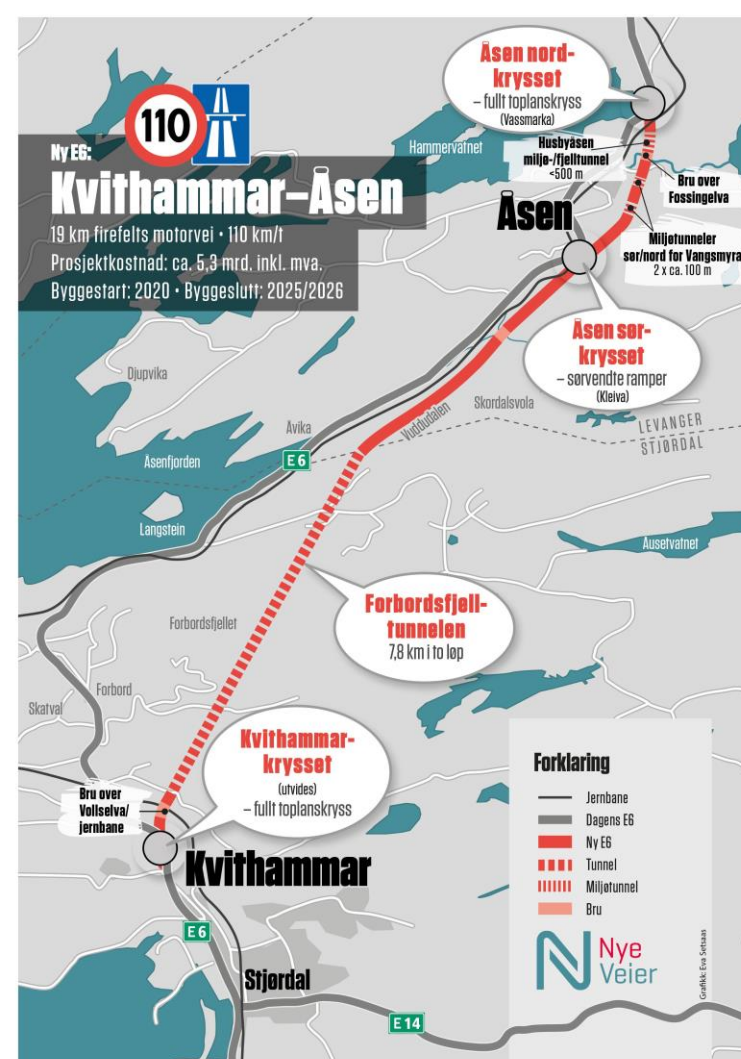
*Værnes, 03.09.2018*



## E6 Kvithammar-Åsen: Project Goals – Execution



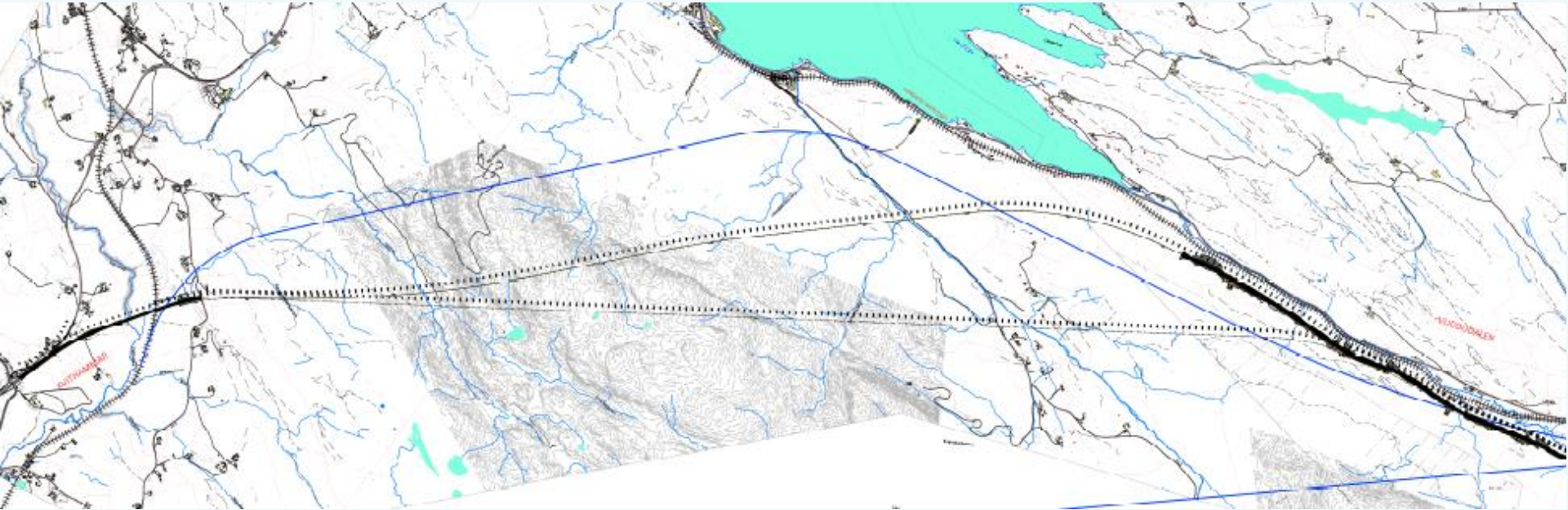
- Deliver on the goal of zero accidents and injuries during construction and operation phases, as well as ensuring a health promoting and fair working environment
- Minimize the construction and life time cost by the means of joint interaction and digitalization
- Minimize the inconvenience of all road users involved during construction and operation phases
- Minimize greenhouse gas emissions as well as other pollution to the environment
- Minimize temporary and permanent seizure of farmlands



# Overall schedule E6 Kvithammar-Åsen

- Preannouncement: 12.06.18
- Deadline to join qualification: 20.08.18
- Announcement of qualification: 31.08.18
- Deadline for qualification: 10.10.18
- Selection of 3-5 Tenderers: 02.11.18
- Information meeting, start tender phase: 19.11.18
- Deadline to deliver Tender: 08.02.19
- Announcement of selected Tenderer: 26.03.19
- Signing of contract: 16.05.19
- Integrated collaboration and zoning plans: Q2-2019 to Q2-2020
- Mobilisation and physical start: Medio-2020
- Project completion: 2025/26

# Forbordfjelltunnelen, optimised 2 x ca 7,8 km





# Kvithammar – tunnel entrance Hollan, new FV (old E6) rerouted in west



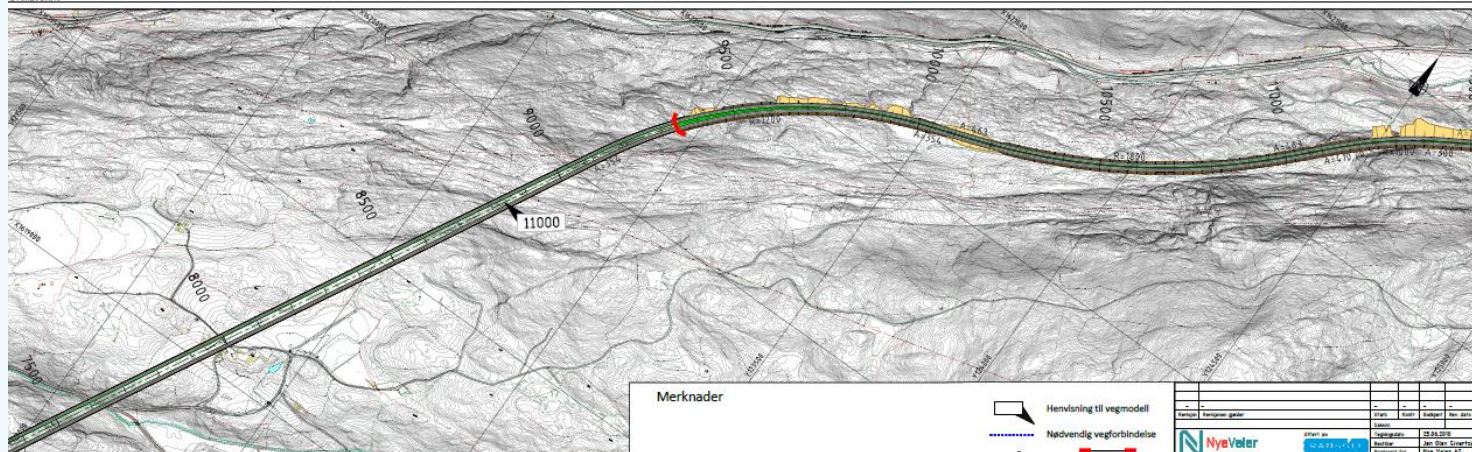
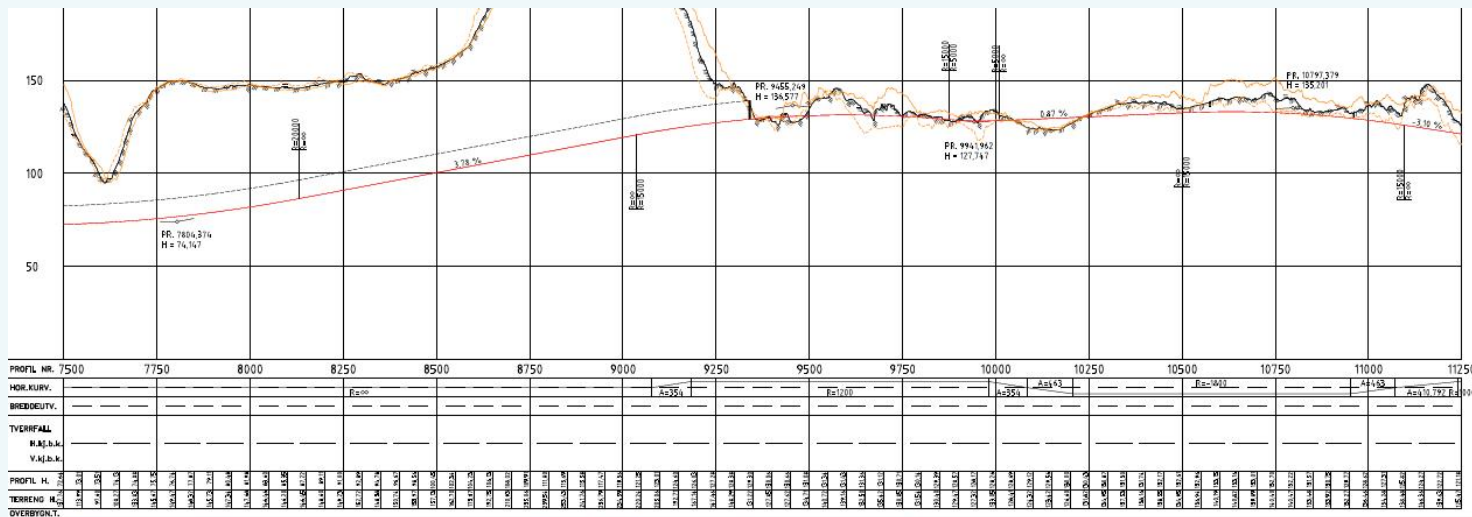


# Kvithammar – tunnel entrance Hollan, Vollselva bridge





# New E6 lifted higher in the valley, 'flat' terrain, reduced railway conflict



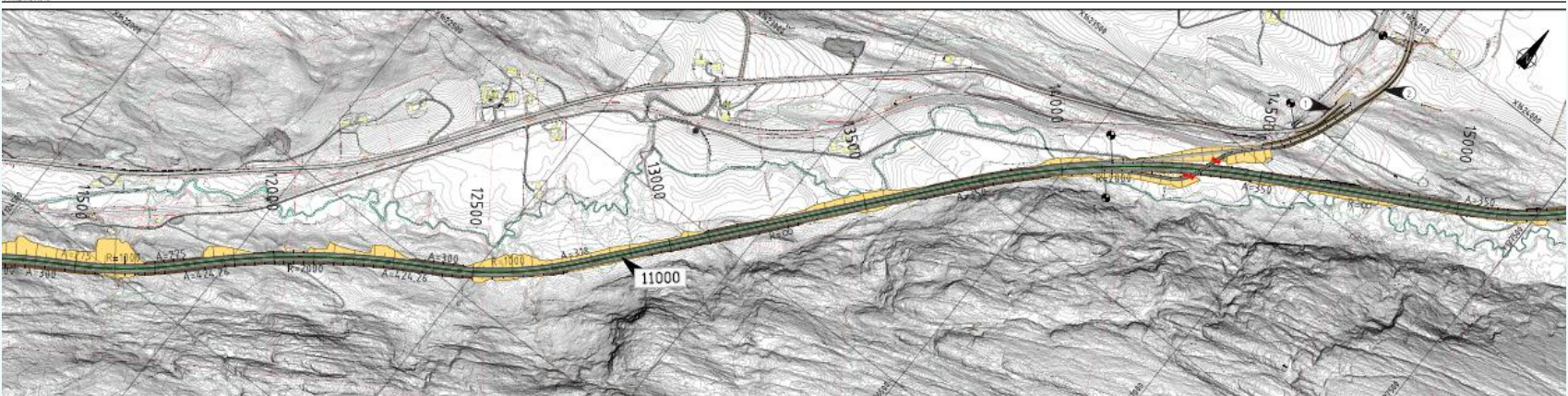
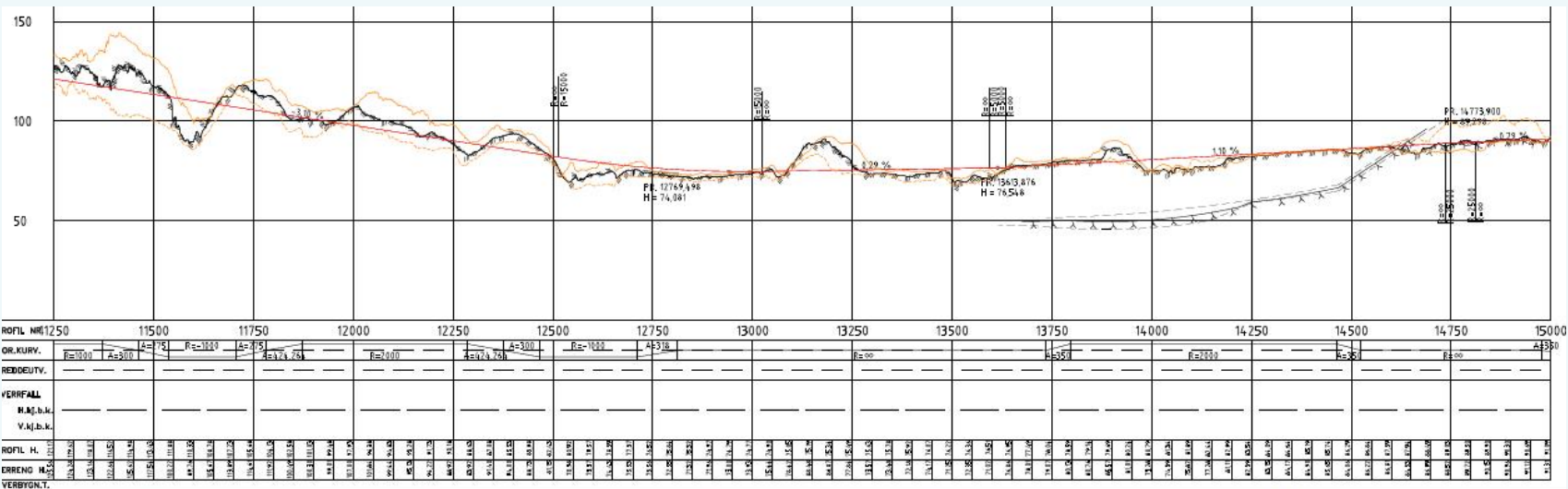


**New E6 lifted higher in the valley, 'flat' terrain, reduced railway conflict**



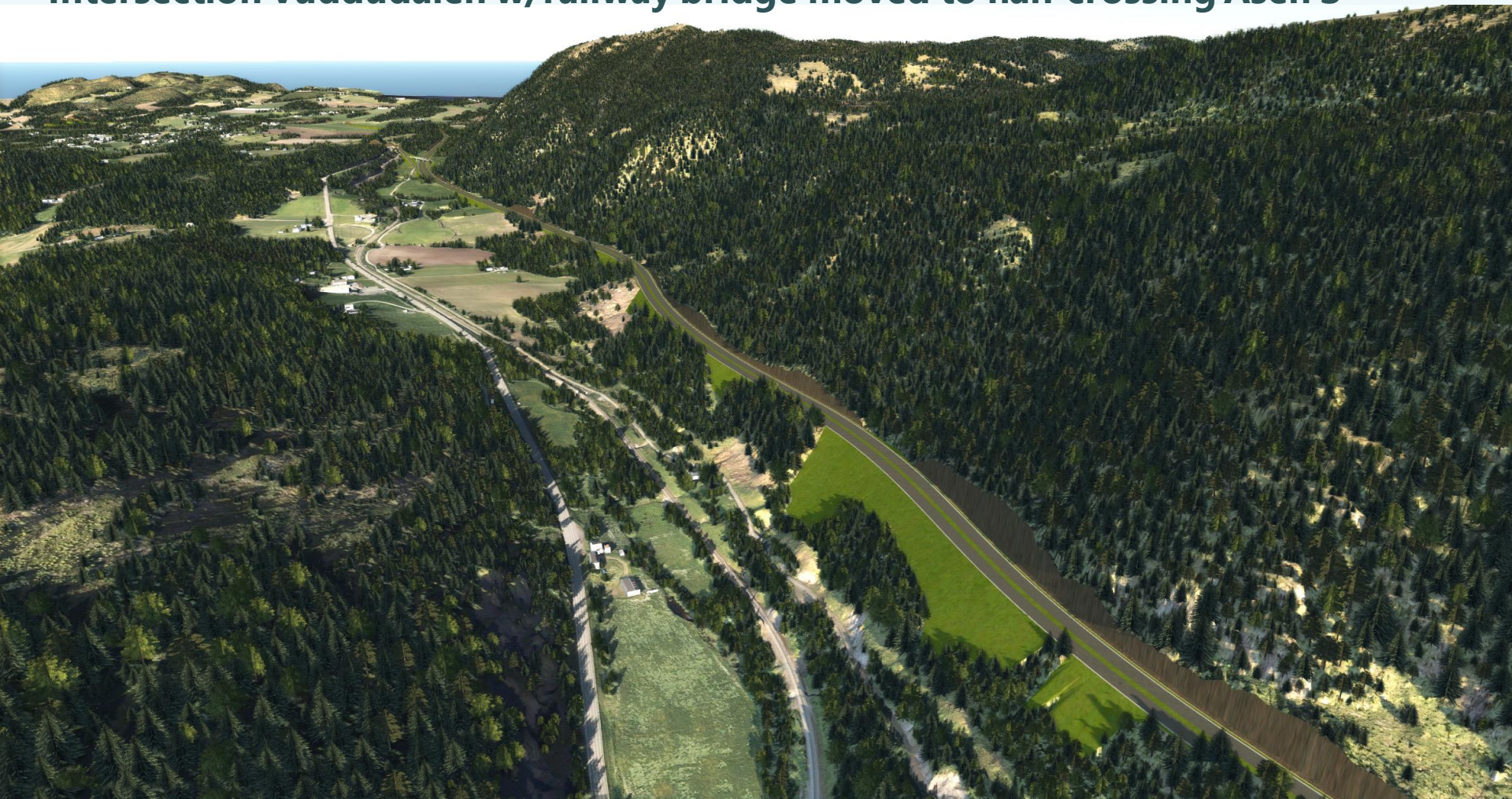


# Intersection Vuddudalen w/railway bridge moved to half crossing Åsen S





# Intersection Vuddudalen w/railway bridge moved to half crossing Åsen S



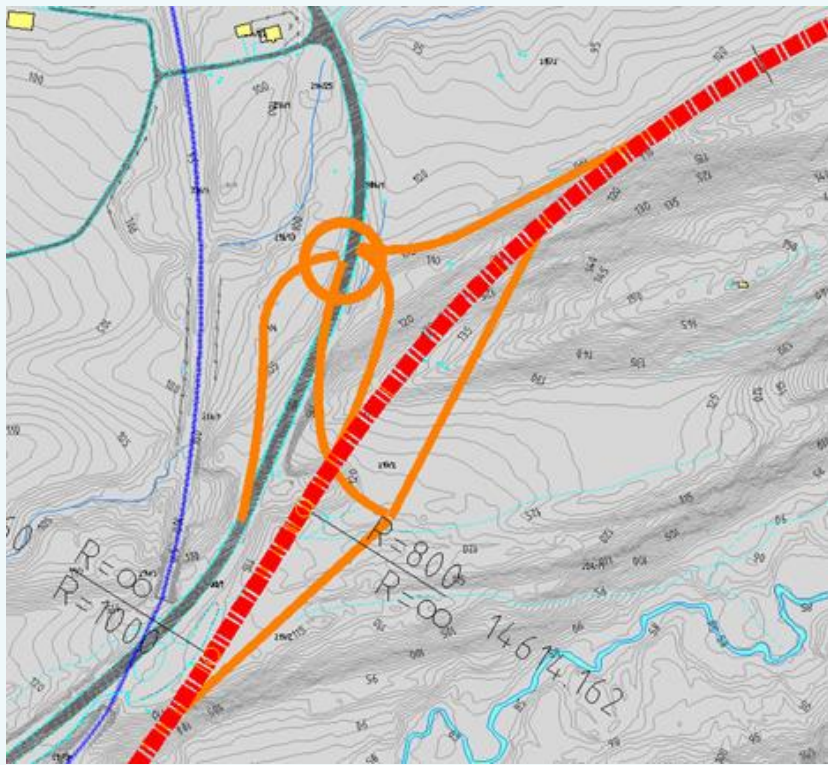


# Intersection Vuddudalen w/railway bridge moved to half crossing Åsen S





# Åsen S, alternative road line and intersection north of Grubbåsen



# Åsen road line alternatives

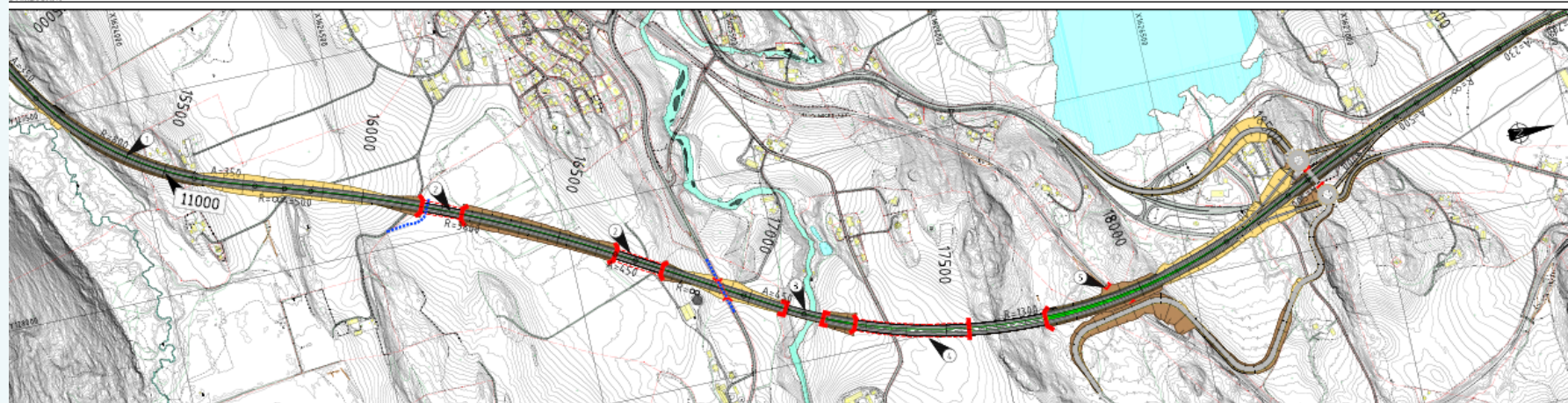
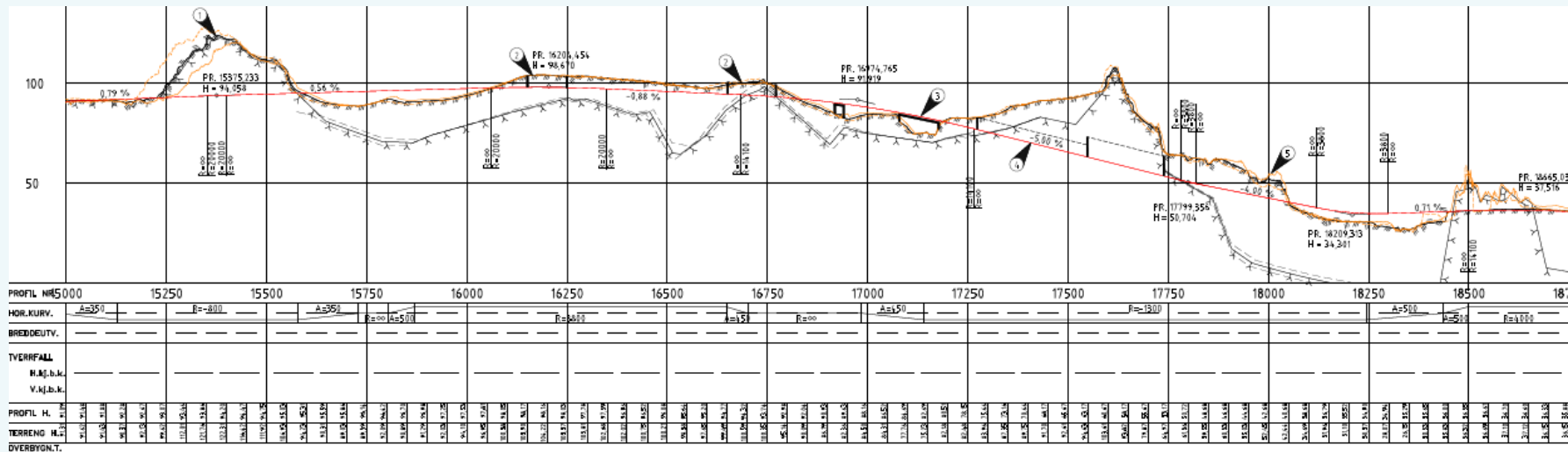


- 2017/2018:  
Extensive geological and geotechnical surveys and evaluations
- Approx. 10 alternatives evaluated, tunnel alternative in municipal sector plan rejected due to missing rock at several locations





# Dayzone with 2 concrete tunnels and 1 concrete/rock tunnel



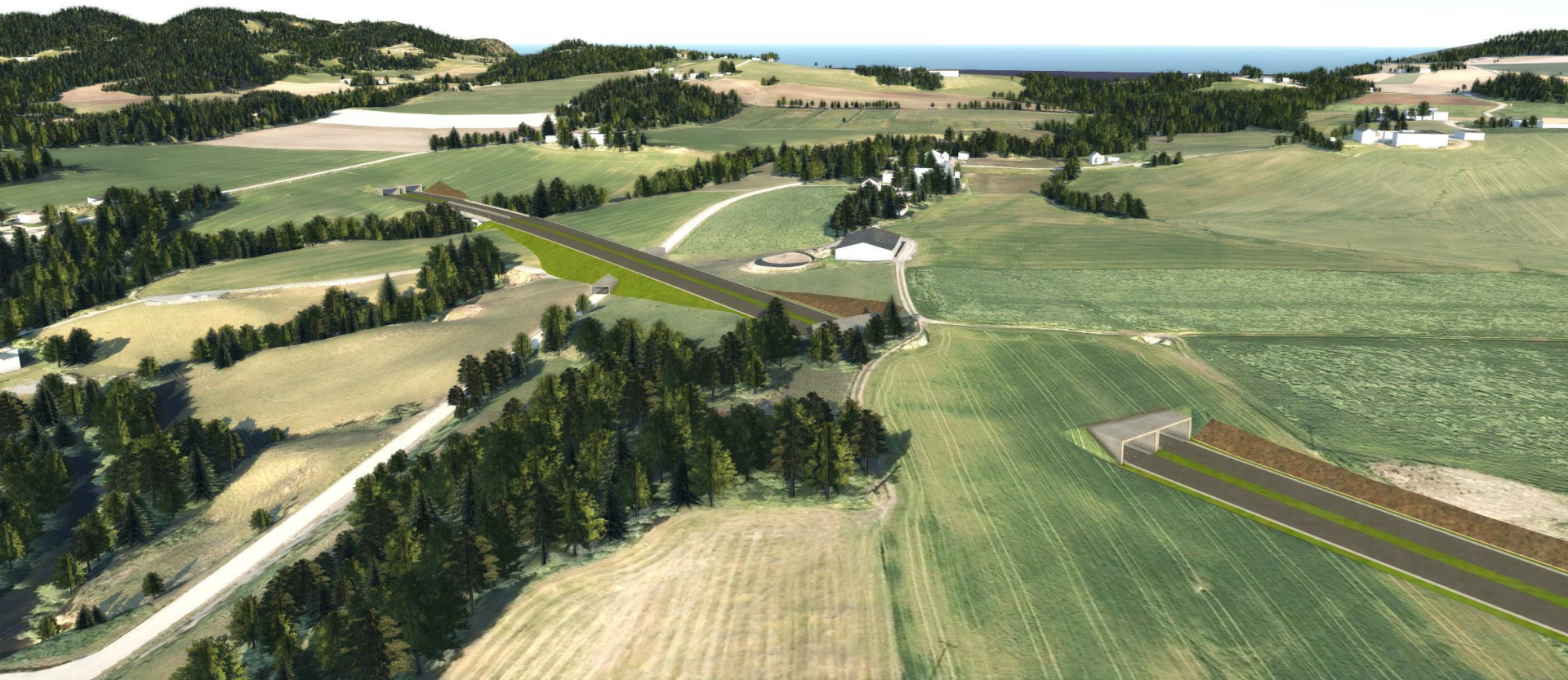


# Dayzone with 2 concrete tunnels and 1 concrete/rock tunnel





# Concrete tunnel Vang, Fossingelva bridge and concrete/rock tunnel Husby





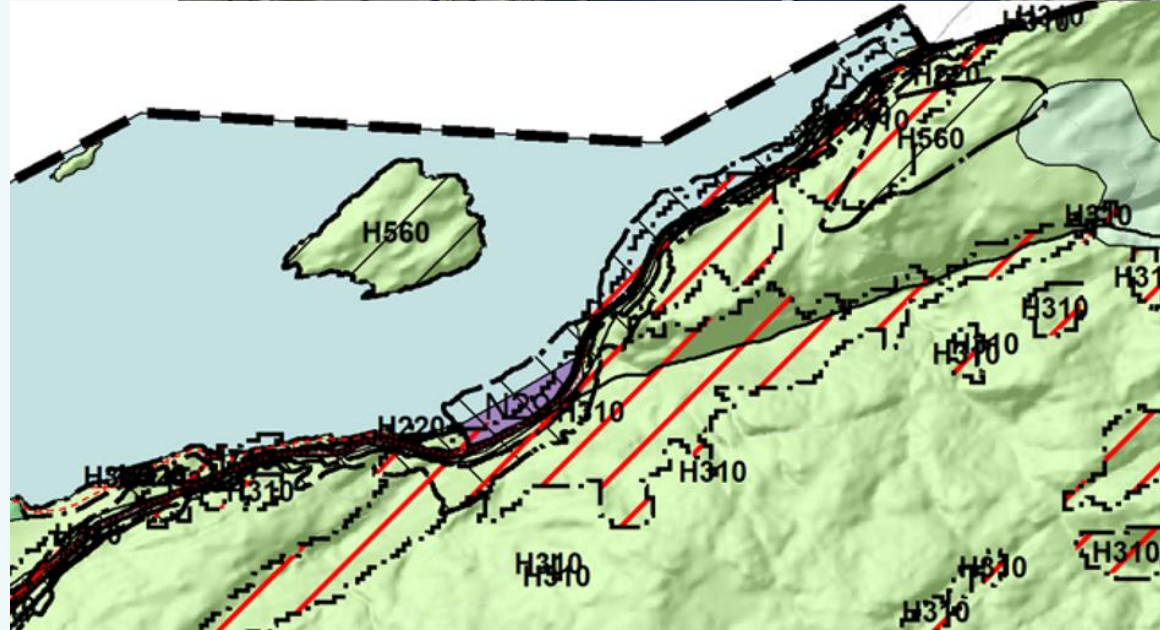
# Intersection Vassmarka, and railway bridge over new E6





## Rock mass deposits: Safety, environment and cost optimisation

- Minimize construction traffic on public roads
- CO2-reduction in construction phase
- Short transport, cost optimised solution ref. Avinor-intent agreement
- Double socioeconomic effects, good dialogue with Stjørdal municipality regarding excess masses from Forbordfjelltunnelen for local needs
  - Trondheim airport Værnes
  - Industrial area Langstein



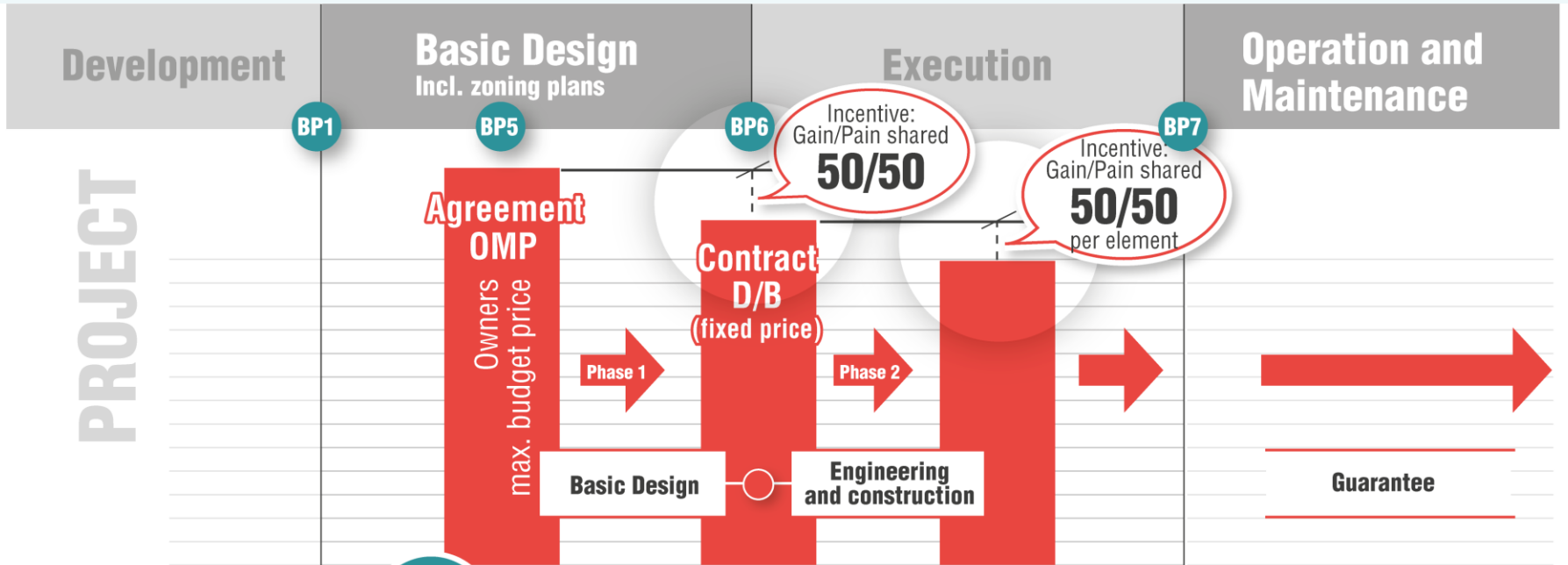
# PROJECT EXECUTION MODEL E6 KVITHAMMAR-ÅSEN

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*Jørund Gullikstad, project director Ranheim-Åsen*

*Værnes, 03.09.2018*

Nye Veier – E6 Kvithammar-Åsen  
**PROJECT- and INCENTIVE MODEL**



PROJECT



BVP-method



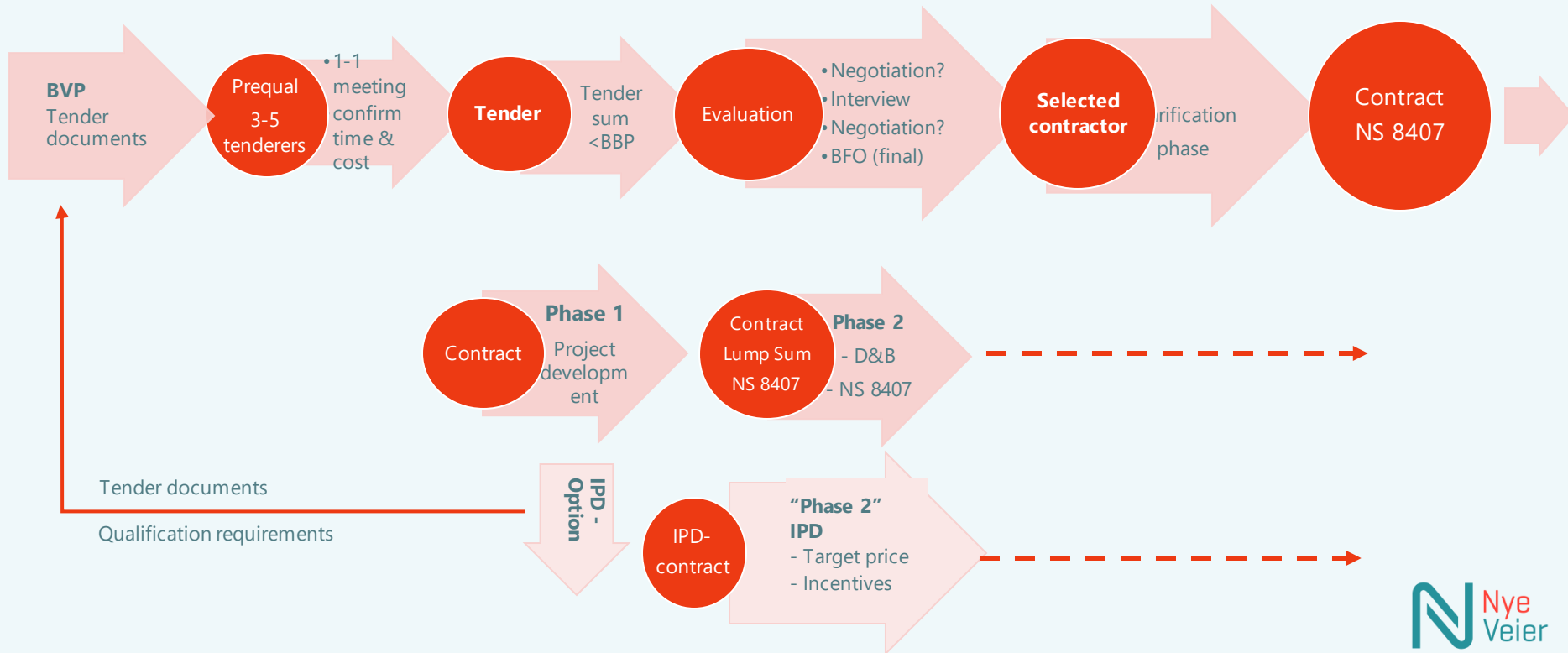
**Integrated Collaboration**

– Develop the project in collaboration to fixed price in D/B contract

BP = decision gate

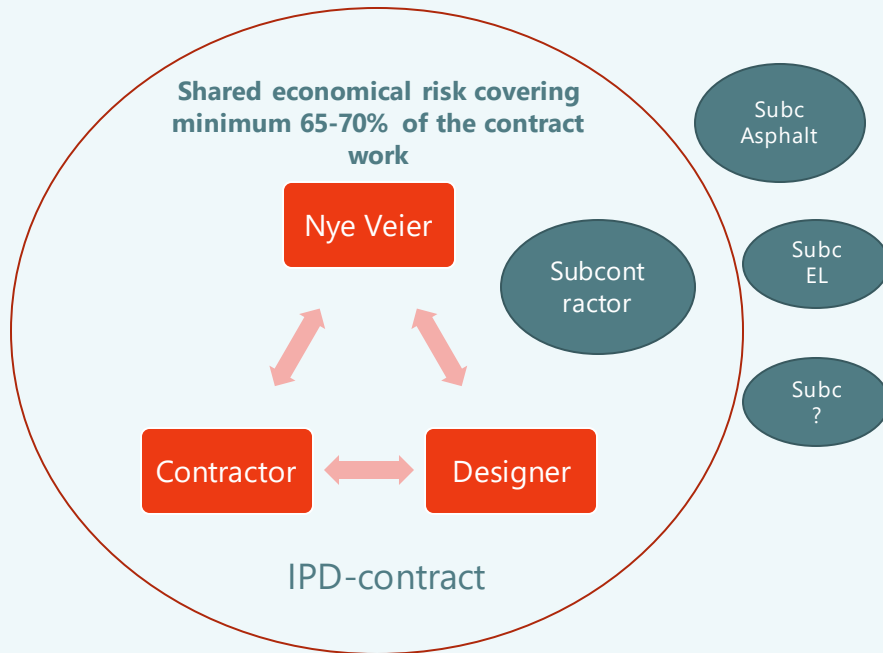


# TENDER DOCUMENTS E6 Kvithammar-Åsen:



# What is IPD in Nye Veier?

## IPD = Integrated Project Delivery



- Integrated organisation and collaboration through the entire project
- Collaboration agreement between the IPD partners
- Compensation model based on target price, net cost, incentives and mark-up
- Incentive if cost savings and separate bonus if overall project goals are achieved
- Economic risk shared between the IPD partners, Open book-principle
- Focus on
  - One project team
  - BIM and digitalisation
  - Lean & VDC processes, methods and tools
  - ICE – Integrated Concurrent Engineering
  - Co-location (Big-Room)



## Owners/clients Budget Price

- 3800 MNOK exclusive VAT
- This is an all inclusive price according to the description given in section D1.1, D2 and D3 in the tender documents
- The budget price is without the options given in section D1.1