

FREMTIDSPLANER HOS RAGN-SELLS

V/MIKAEL HEDSTRÖM, RAGN-SELLS





ASH2SALT

Framtidssäkrad cirkulär behandling av flygaska

Mikael Hedström Ragn-Sells

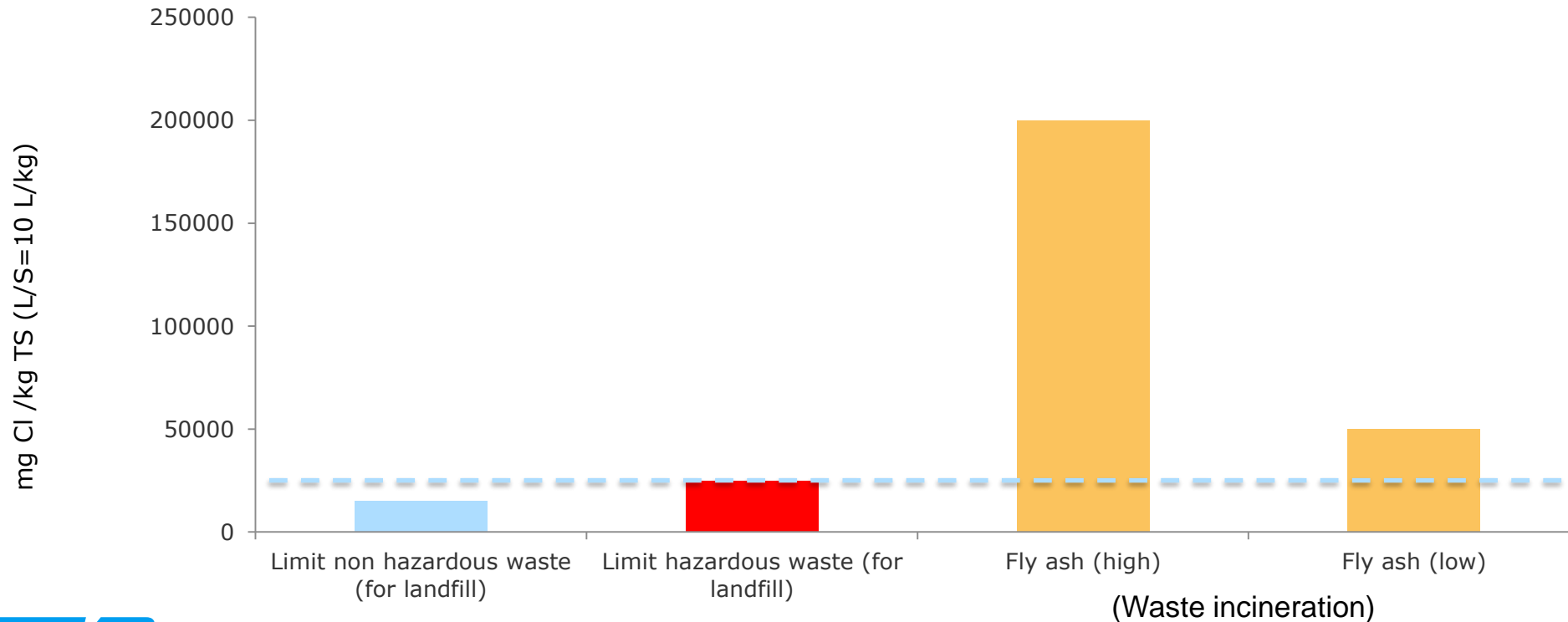
DAGENS METOD FÖR BEHANDLING AV FLYGASKA PÅ HÖGBYTORP HAR EN BEGRÄNSAD LIVSLÄNGD

- Flygaskan blandas med cementliknande material och vatten för att immobilisera lösliga ämnen och skapa en fysisk stabilisering.
- Huvudakliga insatsmaterial är andra askor där kolaska varit det viktigaste.
- Blandningen deponeras på en specialbyggd askdeponi som möjliggjort ett antal undantag för askor med högt kloridinnehåll.
- Processen använder allt lakvatten som uppstår på området.



FLYGASKAN HAR EN HÖG SALTHALT

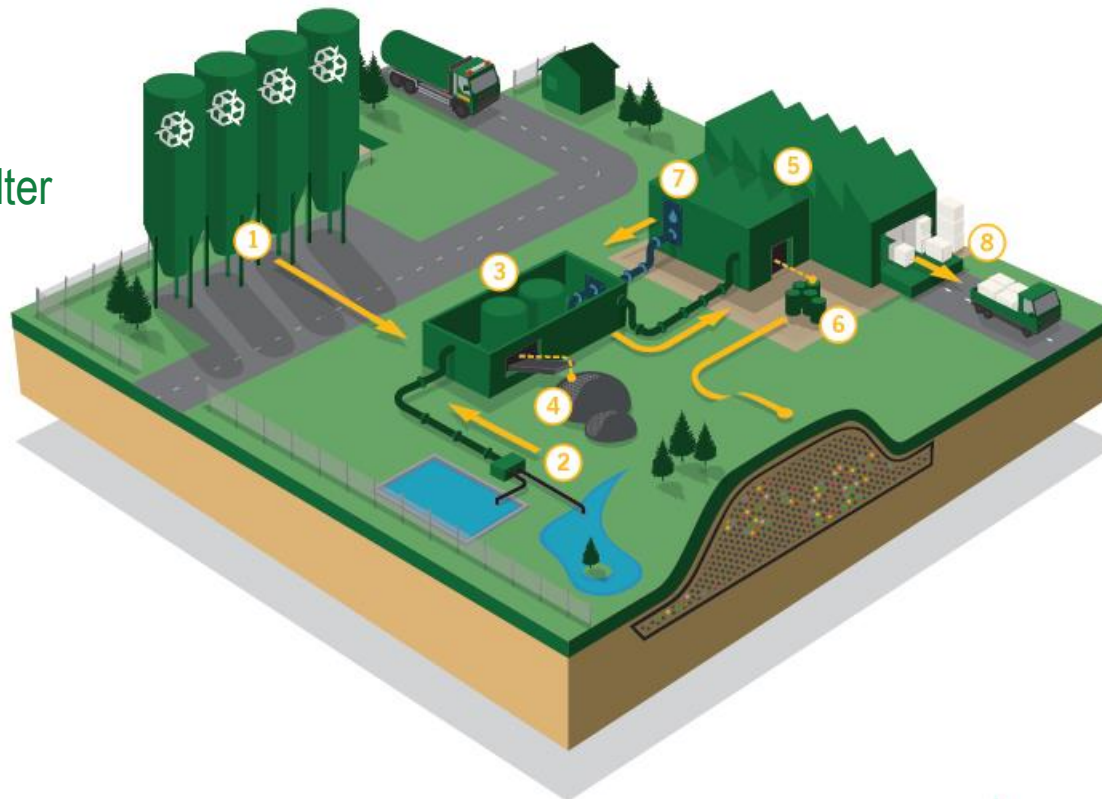
- Salthalt i flygaska från avfallsförbränning kan vara upp till 40%



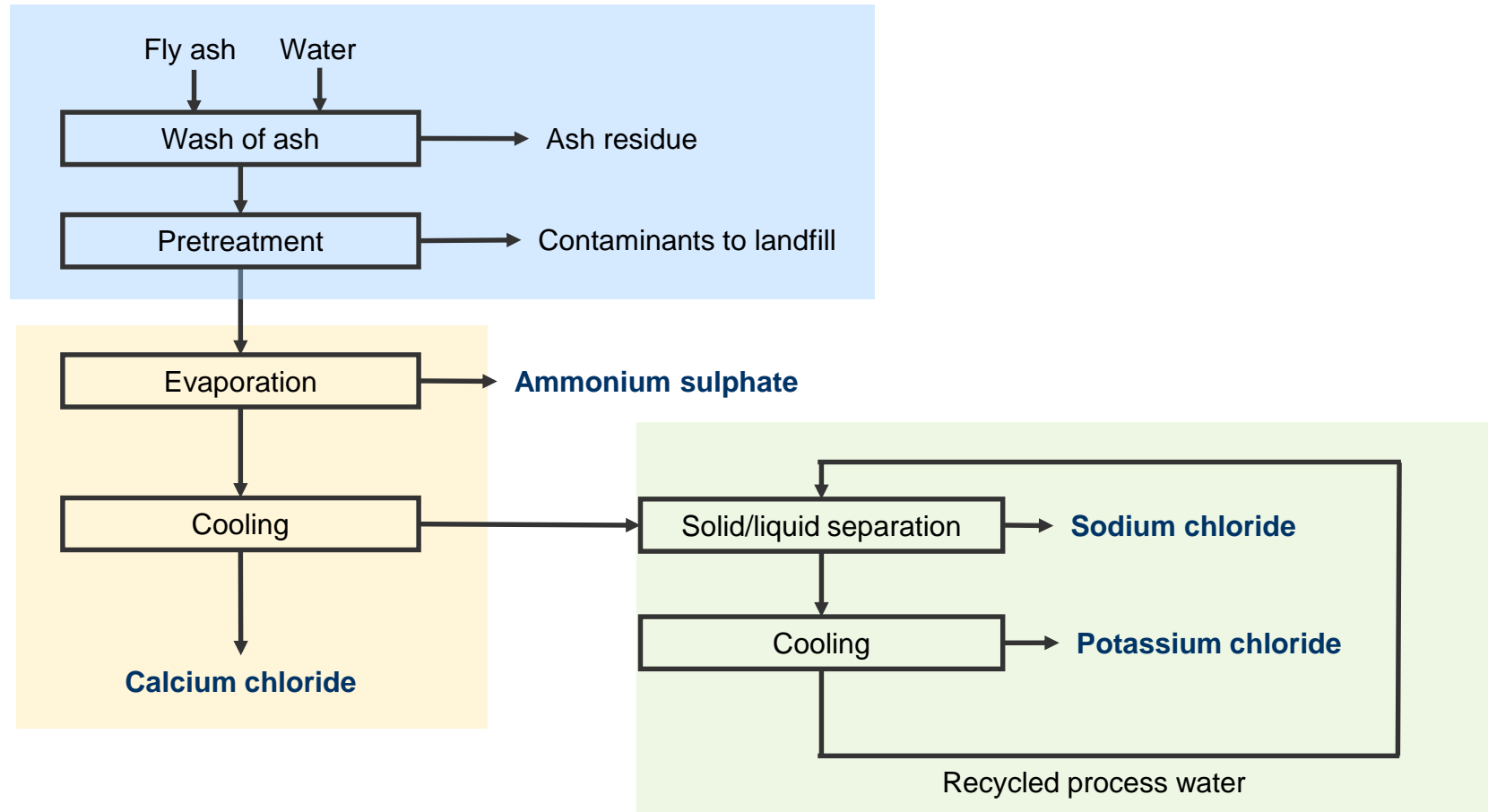
ASH2™ SALT – EN RAGN-SELLS PROCESS

Tvättar flygaska och utvinner kommersiella salter
- patenterad process

1. Flygaska
2. Lakvatten
3. Asktvätt och filtrering
4. Tvättad aska
5. Saltutvinning
6. Tungmetallfraktion
7. Renat vatten
8. Kommersiell salter
 - Kaliumklorid (KCl)
 - Kalciumklorid (CaCl_2)
 - Natriumklorid (NaCl)
 - Ammoniaklösning

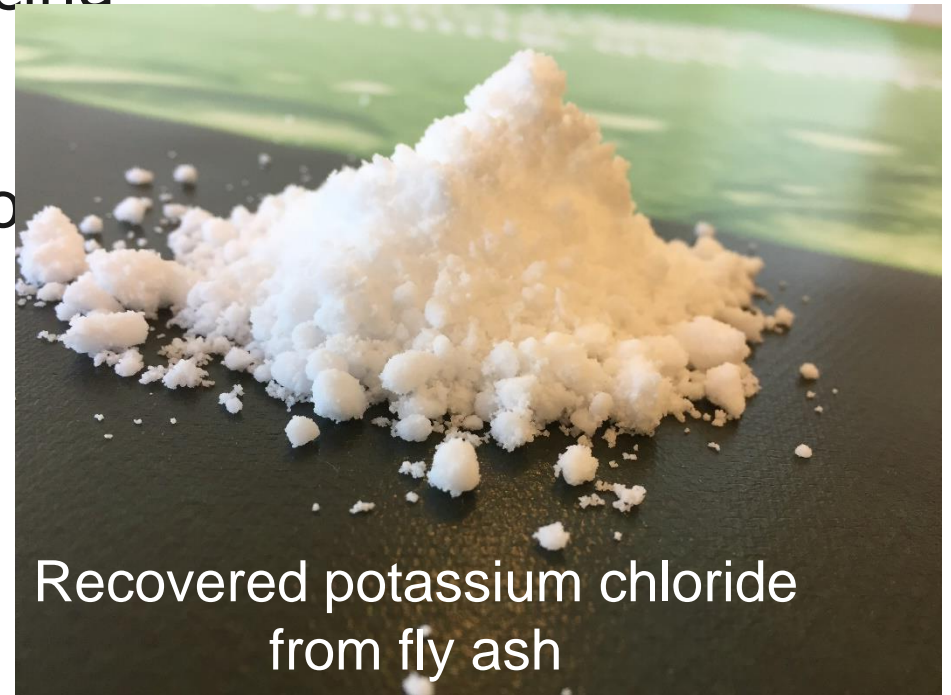


ASH2[®]SALT – SIMPLIFIED SCHEME



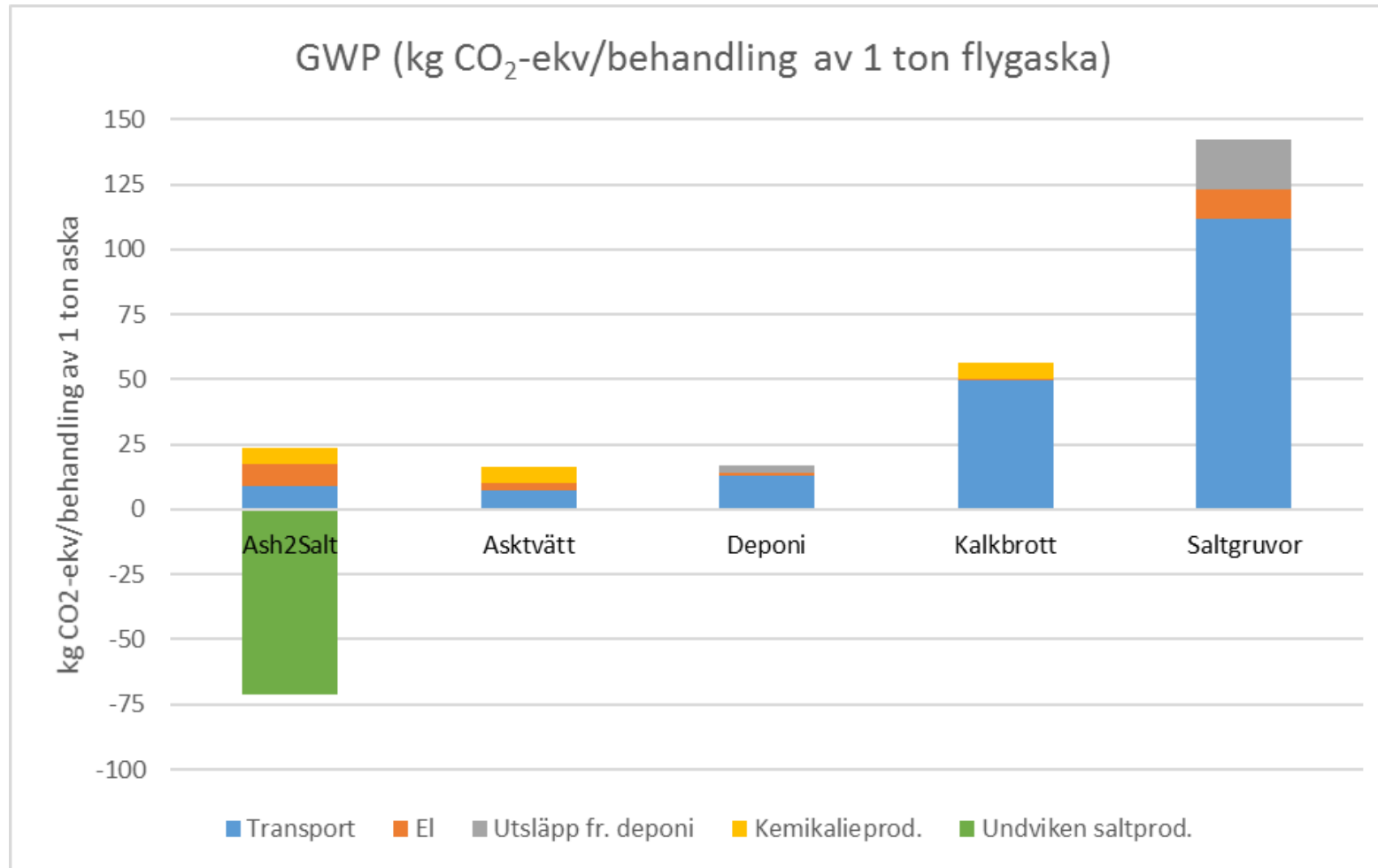
ASH2™ SALT - PRODUCTS FROM THE PROCESS

- **Potassium chloride** - Fertilizer
- **Calcium chloride** – Dust control and deicing
- **Sodium chloride** – Industrial processes
- **Aqueous ammonia** – Air pollution control
 - **Alt.: Ammonium sulfate**



Recovered potassium chloride
from fly ash

LCA- KLIMATPÅVERKAN BEHANDLING AV SVENSK FLYGASKA



SLU | Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences
Institutionen för energi och teknik

Livscykelanalys av behandlingsprocesser för flygaska från avfallsförbränning

- Jämförelse av Ash2Salt-processen med befintliga metoder

Life cycle assessment of treatment processes for fly ash from municipal solid waste incineration (MSWI)

- A comparison of the Ash2Salt process and existing treatment methods

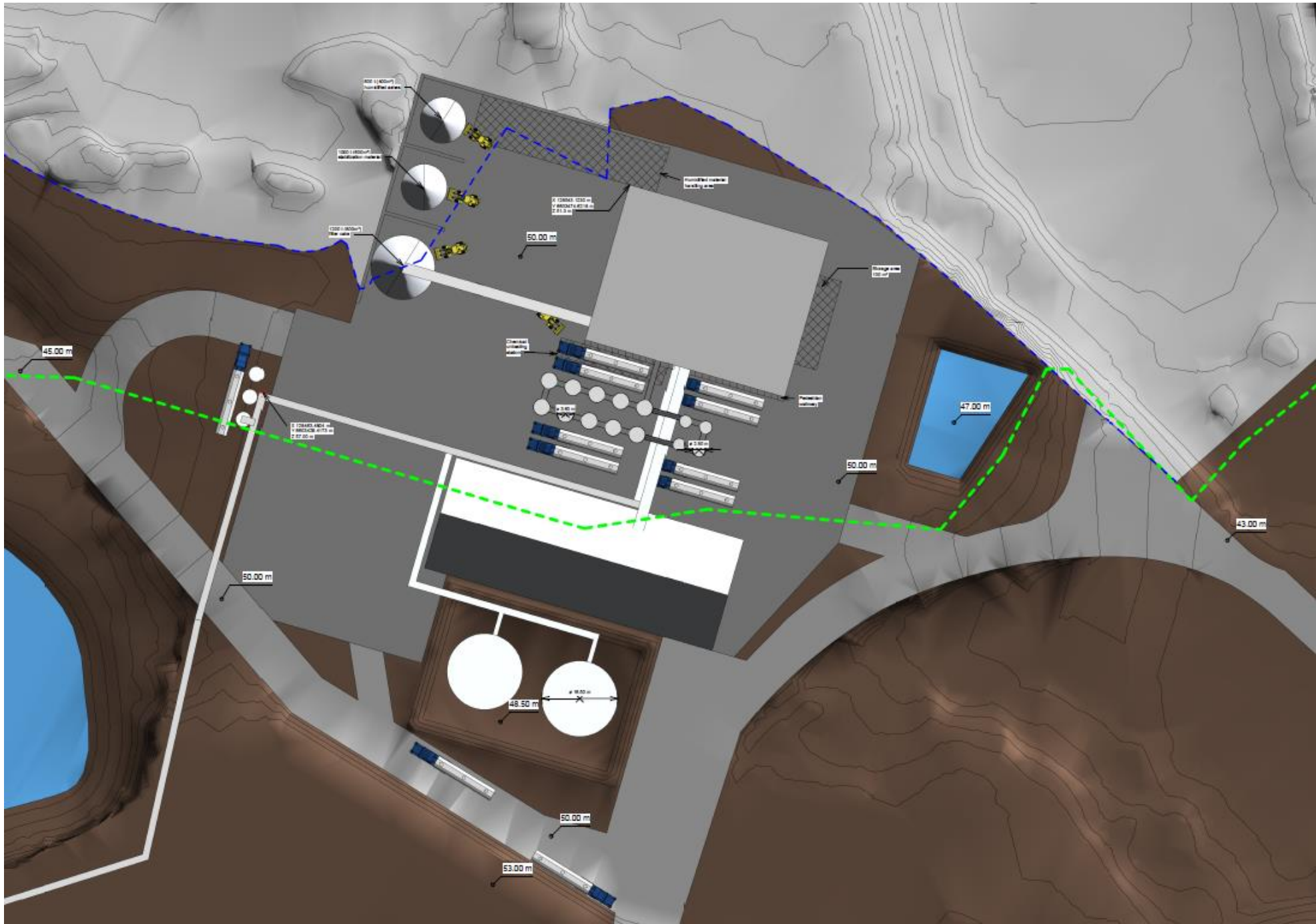
Namn: Kristin Johansson

Handledare: Patrik Enfält, EasyMining Sweden

Ämnesgranskare: Serina Ahlgren, SLU

Examinator: Åke Nordberg, SLU

LAYOUT



BYGGPLATSEN

25/11 - 2020



TIME SCHEDULE

| Overall Project Execution Timeline Project Salarium | | Date: 2020-03-27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| PROJECT EXECUTION | 2019 | | | | | | 2020 | | | | | | | | | | | | 2021 | | | | | | | | | | | | 2022 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Okt | Nov | Dec | Jan | Feb | Mar | Apr | Maj | Jun | Jul | Aug | Sep | Okt | Nov | Dec | Jan | Feb | Mar | Apr | Maj | Jun | Jul | Aug | Sep | Okt | Nov | Dec | | | | | | | | | | | | | | | | |
| Activity/Month | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | | | | | | | | | | | | | | |
| Construction Eng. Doc. - Ground, Build., Infrastr. | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Detail Eng. - Process (early commencement) | | | | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Detail Eng. - Process | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Demolition Work Site Högbytorp (D0) | | | | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Konstruktion Work - Ground, Infrastructure (D1) | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Konstruktion Work - Steel, Walls, Floor, Roof (DE2-1) | | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | |
| Konstruktion Work - Building (DE1 Opt. 1, DE2-2) | | | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |
| Construction Works - Installations (D3) | | | | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |
| Konstruktion Work - Mech., Pip., El., Instr., Aut. | | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Tests & Inspection | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Final Adjustment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tests on Completion | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Final Inspection | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Taking Over | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Performance Test | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Project Closure | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Project Passing Salarium | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Konstruktion Work - Infrastructure (D1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



FRÅGOR?

