

ESNG Gällivare analysis of runway extension

TABLE OF CONTENTS

1	ASSIGNMENT.....	2
2	CONDITIONS	2
2.1	Background.....	2
2.2	Runway 12/30 extension.....	2
2.3	Analyzed object/obstacle	3
2.4	Flight Procedures.....	4
3	RESULTS	5
3.1	MSA/TAA	5
3.2	Holdings.....	5
3.3	Circling	5
3.4	Omnidirectional departure procedures	6
3.4.1	Runway 12	6
3.4.2	Runway 30	6
3.5	ILS z or LOC z RWY 30	6
3.6	ILS y or LOC y RWY 30.....	7
3.7	NDB RWY 30	7
3.8	NDB RWY 12	7
3.9	RNP RWY 12.....	8
3.10	RNP RWY 30.....	8
4	SUMMARY.....	8

1 ASSIGNMENT

LFV has been commissioned by Michael Gustafsson (Flygplatschef, Gällivare flygplats) to investigate the impact of planned Hybrit facilities in Gällivare municipality on a potential extension of Runway 12/30.

2 CONDITIONS

2.1 Background

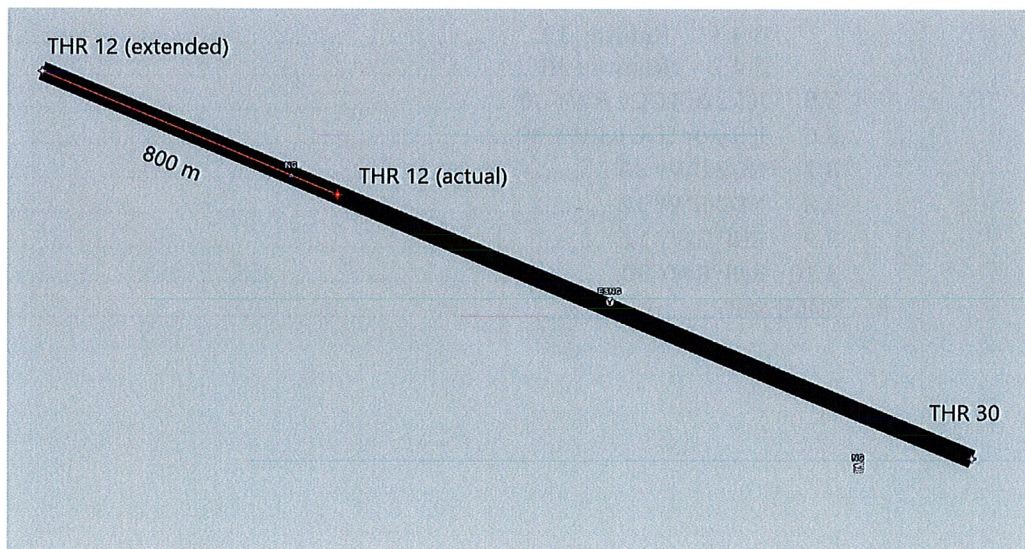
Investigation presented in this document will measure an impact on instrument procedures **caused by the mentioned planned facilities**.

Final impact on procedures caused by RWY extension is unknown and depends on many factors like ultimate length of extension, updated obstacle survey due to new RWY parameters (new obstacles), etc.

However, where it is already predictable, the expected impact on procedures caused by RWY extension itself – is also presented.

2.2 Runway 12/30 extension

Analysis is based on a simulation for 800 m of RWY 12/30 extension in northwest direction:



2.3 Analyzed object/obstacle

Analysis concerns a planned Hybrit facilities in Gällivare municipality – Malmberget 8:17, "Vitåfors" (ref.: D-2021-272725):



2.4 Flight Procedures

Investigation is based on reviewed procedures (ref.: D-2020-211768), submitted to Transportstyrelsen for approval in 2021:

- Omnidirectional departure procedures RWY 12/30
- ILS z or LOC z RWY 30 (new)
- ILS y or LOC y RWY 30
- NDB RWY 30
- NDB RWY 12
- RNP RWY 12
- RNP RWY 30

Required changes in procedures due to extension of runway are simulated in accordance with ICAO Doc 8168 PANS-OPS vol. II, 7th edition.

3 RESULTS

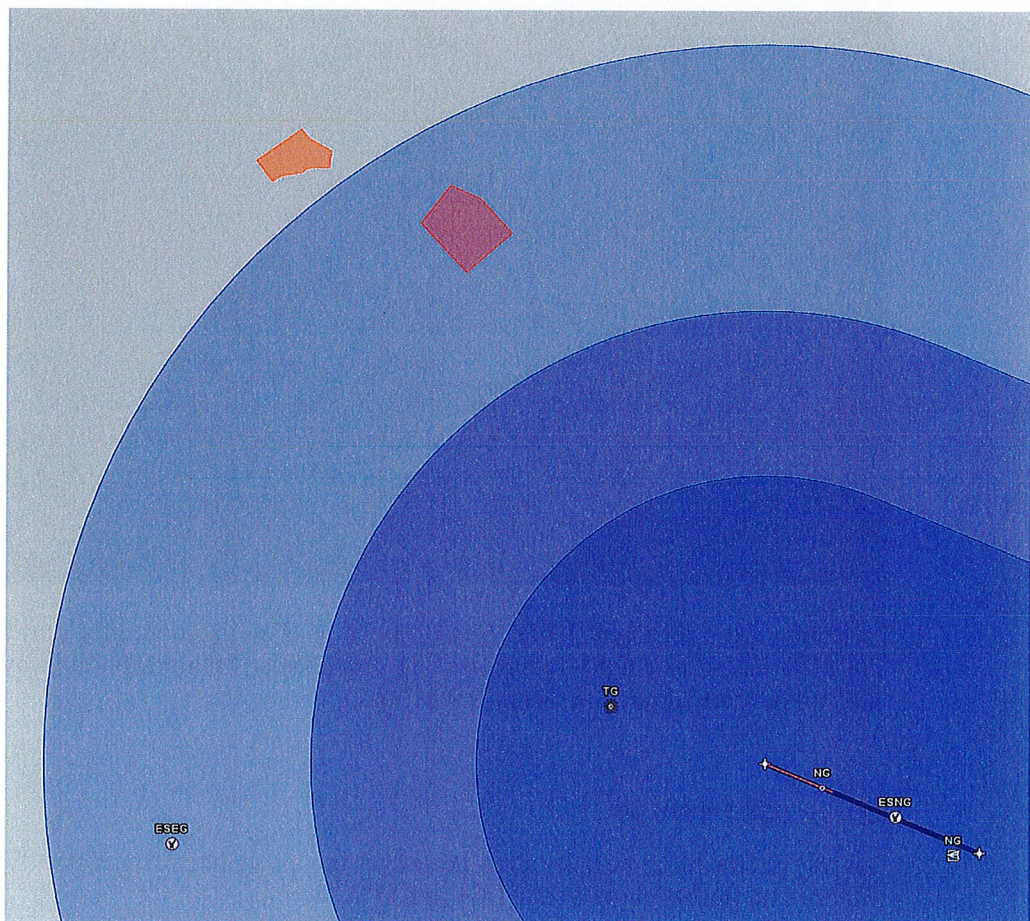
3.1 MSA/TAA

Runway extension does not affect the MSA/TAA. Therefore, "Vitåfors" will still have **no impact on MSA or TAA**.

3.2 Holdings

Runway extension does not affect the holdings for ESNG procedures. Therefore, "Vitåfors" will still have **no impact on holdings**.

3.3 Circling



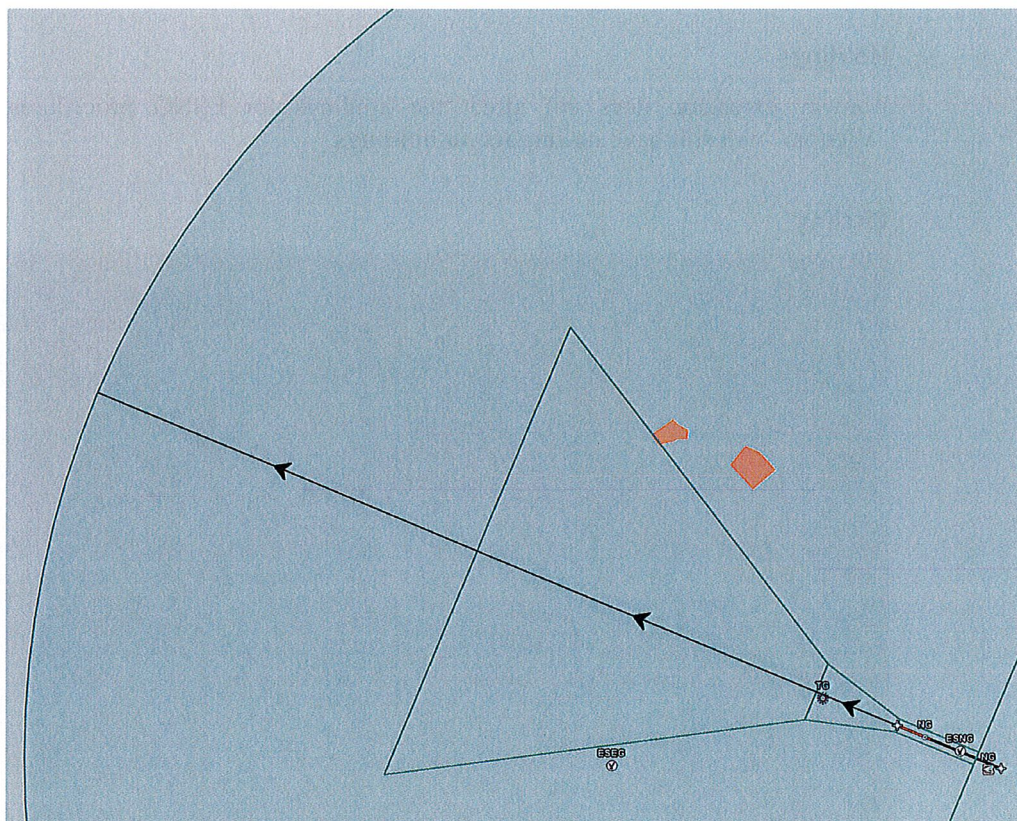
Protection areas for circling will increase in NW direction after runway extension, thus OCA may generally rise. However, "Vitåfors" still remains within area for Cat C only, therefore will still have **no impact on circling**.

3.4 Omnidirectional departure procedures

3.4.1 Runway 12

Runway extension does not affect this procedure. Therefore, "Vitåfors" will still have **no impact on Omni RWY 12**.

3.4.2 Runway 30



Protection areas for Omni RWY 30 will move in NW direction after runway extension and PDG has to be raised due to existing obstacles at Malmberget anyway. "Vitåfors" will still have **no impact on Omni RWY 30**.

3.5 ILS z or LOC z RWY 30

Runway extension principally does not affect this procedure. Therefore, "Vitåfors" will still have **no impact on ILS z or LOC z RWY 30**.

However, Procedure will have to be reviewed due to new position of Localizer (to be also moved NW, after RWY extension).

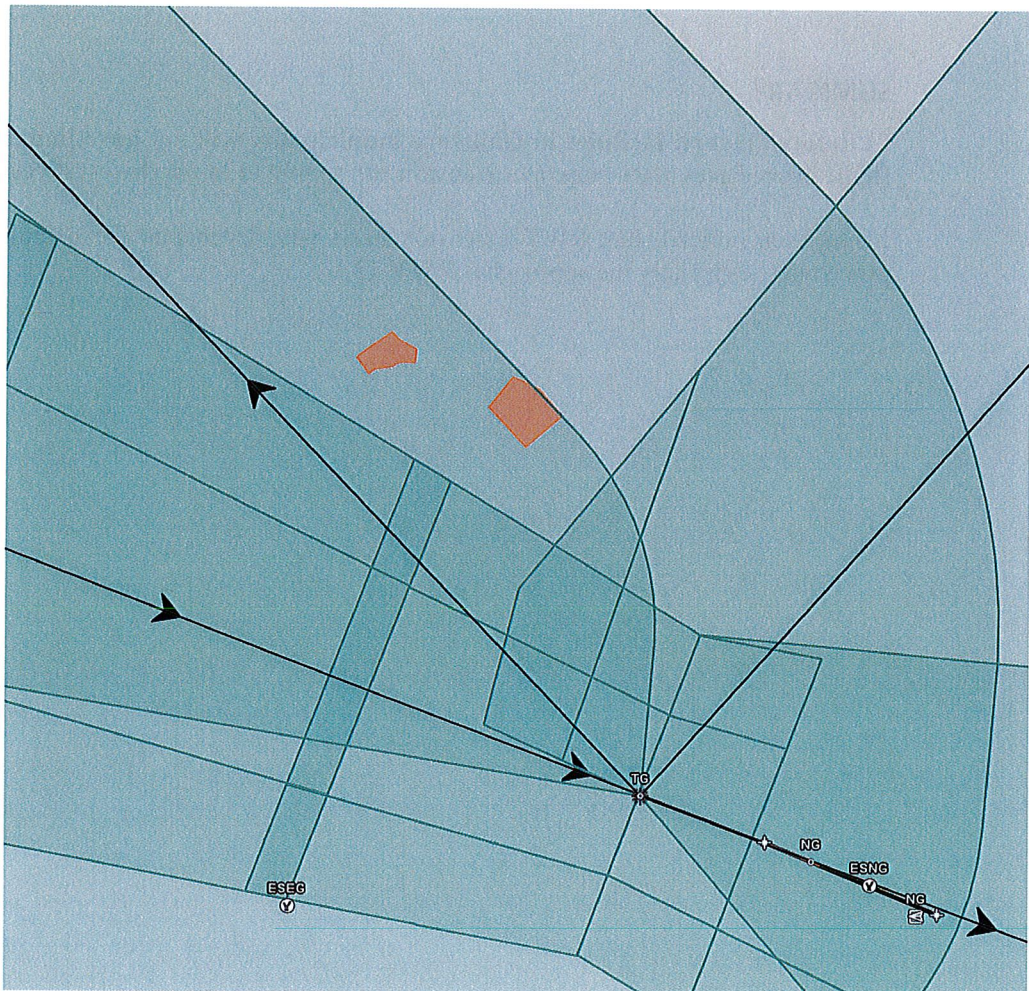
3.6 ILS y or LOC y RWY 30

Runway extension principally does not affect this procedure and its pattern. Therefore, "Vitåfors" will still have **no impact on ILS y or LOC y RWY 30**. However, procedure will have to be reviewed due to new position of localizer (to be also moved NW, after RWY extension).

3.7 NDB RWY 30

Runway extension does not affect this procedure and its pattern. Therefore, "Vitåfors" will still have **no impact on NDB RWY 30**.

3.8 NDB RWY 12



"Vitåfors" still remains within primary protection area for base turn and will still have **no impact on NDB RWY 12**.

However, due to the obstacles at Malmberget, final descent gradient has to be increased above actual 6.1%, which is a maximum ICAO value for aircraft Cat C (and D). Therefore, due to the runway extension in NW direction, NDB procedure to RWY 12 will be available for aircraft Cat A/B only.

3.9 RNP RWY 12

”Vitåfors” is (and will be after runway extension) outside of this procedure protection areas, therefore will still have **no impact on RNP RWY 12**.

However, due to other obstacles and already reached maximum descent gradient in intermediate segment, FAF should be still maintained at NG851. Therefore, it will result in the raise of final descent gradient (from the actual optimum 3°).

3.10 RNP RWY 30

Runway extension principally does not affect this procedure and its pattern. Therefore, ”Vitåfors” will still have **no impact on RNP RWY 30**.

However, FAS Data Block will have to be updated due to new FPAP (THR 12).

4 SUMMARY

”Vitåfors” Hybrit facilities in Gällivare municipality will not have impact on ESNG flight procedures after runway extension (up to 800 m in northwest direction).

It has been noticed, that RWY extension itself will degenerate the parameters of few procedures, especially the approaches RWY 12.