Polish Academy of Sciences
Mineral and Energy Economy Research Institute
Cracow, Poland

The Expert Group on Resource Classification
Geneva, 23-26 April 2013.

COAL SEAM RESOURCES/RESERVES
POLISH, UNFC AND JORC CODE (CRIRSCO) CLASSIFICATION

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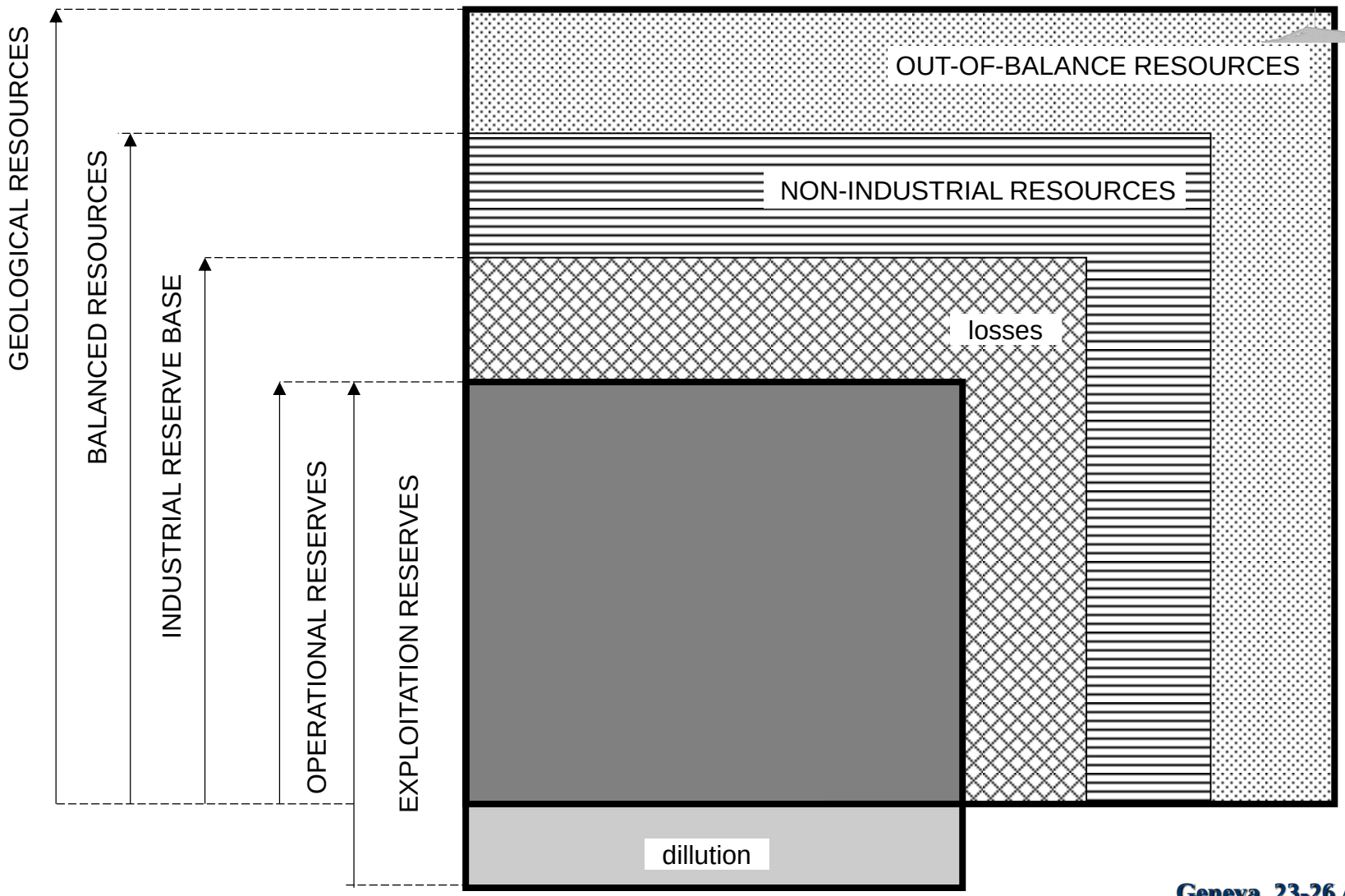
POLISH RESOURCES CLASSIFICATION SYSTEM

	Geologic assurance (category)				
	A	**B**	**C_1**	**C_2**	**D (D_1)**
Admissible error limits	**±10%**	**±20%**	**±30%**	**±40%**	**>40%**
	Measured		Indicated	Infered	

Polish classification
(economic and feasibility subdivision)



GENERAL PROCEDURE OF RESOURCES AND RESERVES EVALUATION CONSISTS OF 3 STEPS:

1. **Resources evaluation based on exploration data** (Approved by governmental administrative body) - delineation of resources, supposed economic that are technically mineable presented in geological report
2. **Delineation of resources technically mineable by the proposed mining method and economically feasible, that could be transformed to reserves,** Preparation of "Deposit development plan" (prefeasibility study)
4. **Estimation of reserves.** Mine operation plan

Exploration results are presented in "Geological documentation of deposit" that contains presentation of:

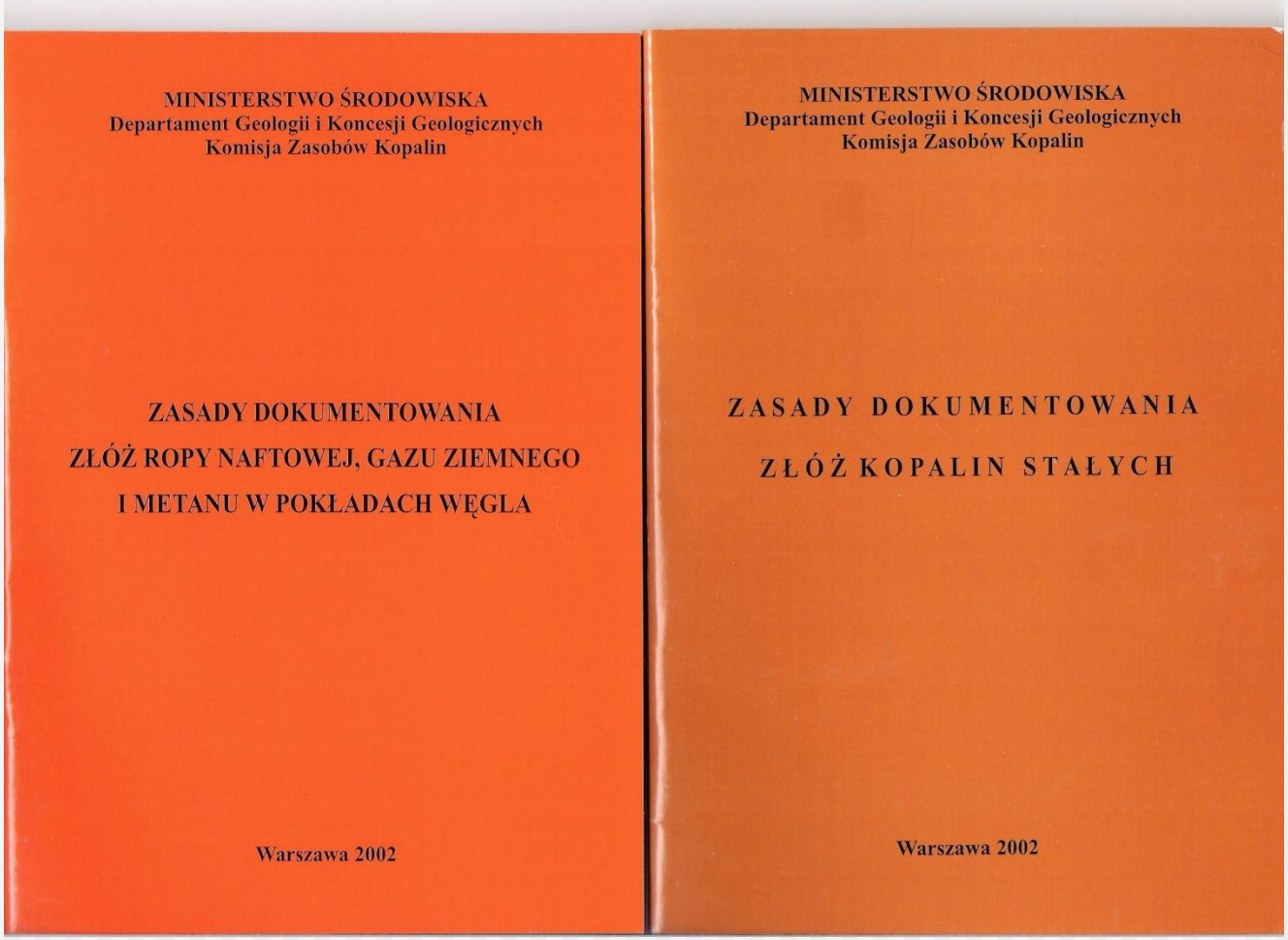
- **geological model of deposit,**
- **quality of mineral commodity (coal, lignite etc.),**
- **geological conditions of mining (hydrogeology, geotechnic etc.),**
- **environmental conditions of the area,**
- **resources evaluation**

"Geological documentation" is presented in uniform manner according to the rules prepared by the Commission of Mineral Resources, the advisory body the Ministry of Environment.

Guidelines for resources evaluation

Hydrocarbons and coal bed methane

Solid mineral commodities



The „Deposit development plan" presents resources that could be transformed to reserves (economicreserve base in place)**. They are calculated by:**

- delineation of resources technically mineable by the proposed mining method,
- delineation of resources technically mineable – and economically feasible.
- estimation of probable reserves

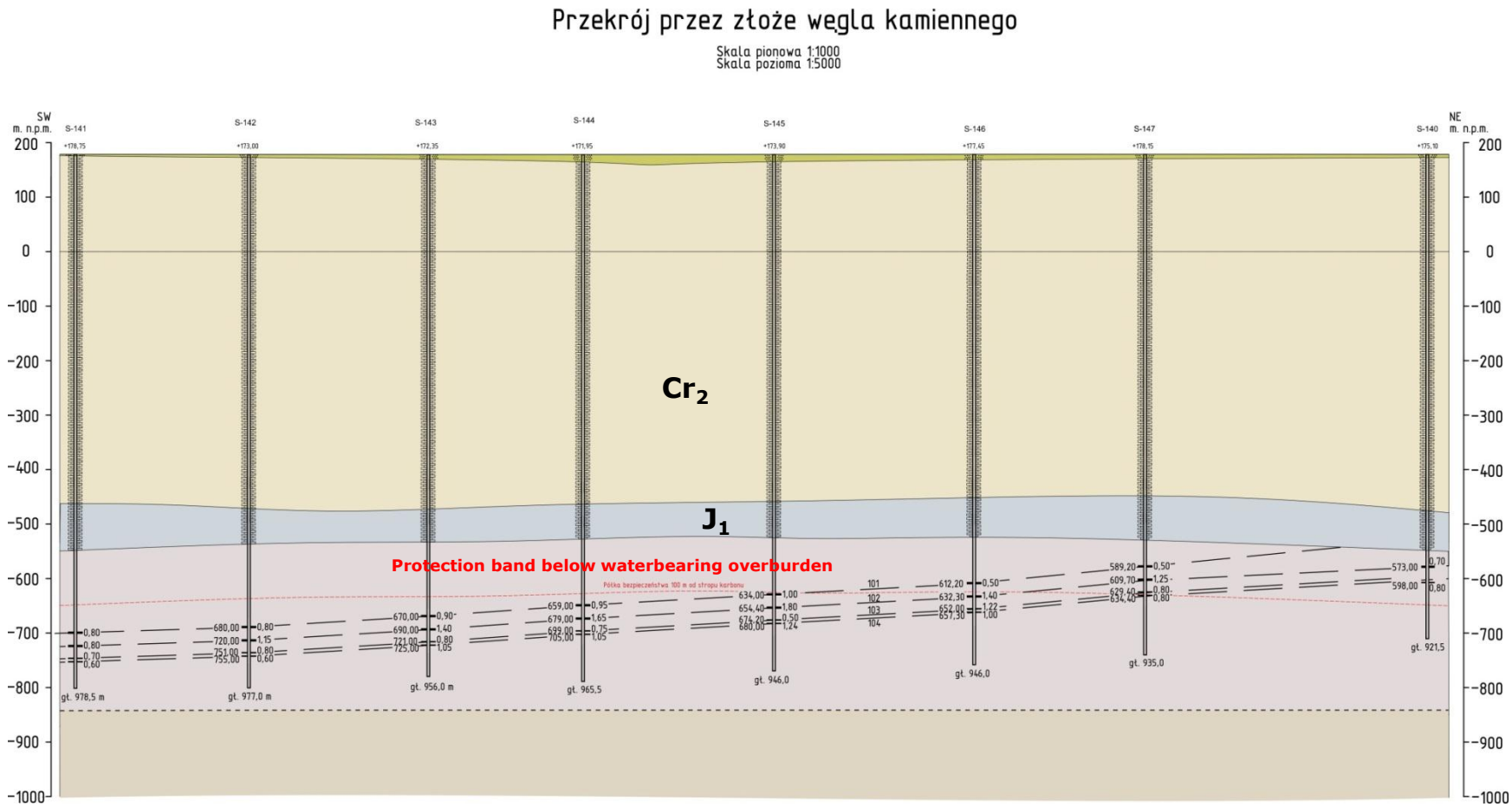
„Deposit development plan" is the obligatory document presented with the application for mining licence

Mine operation plan presents:

- delineation and estimation of reserves

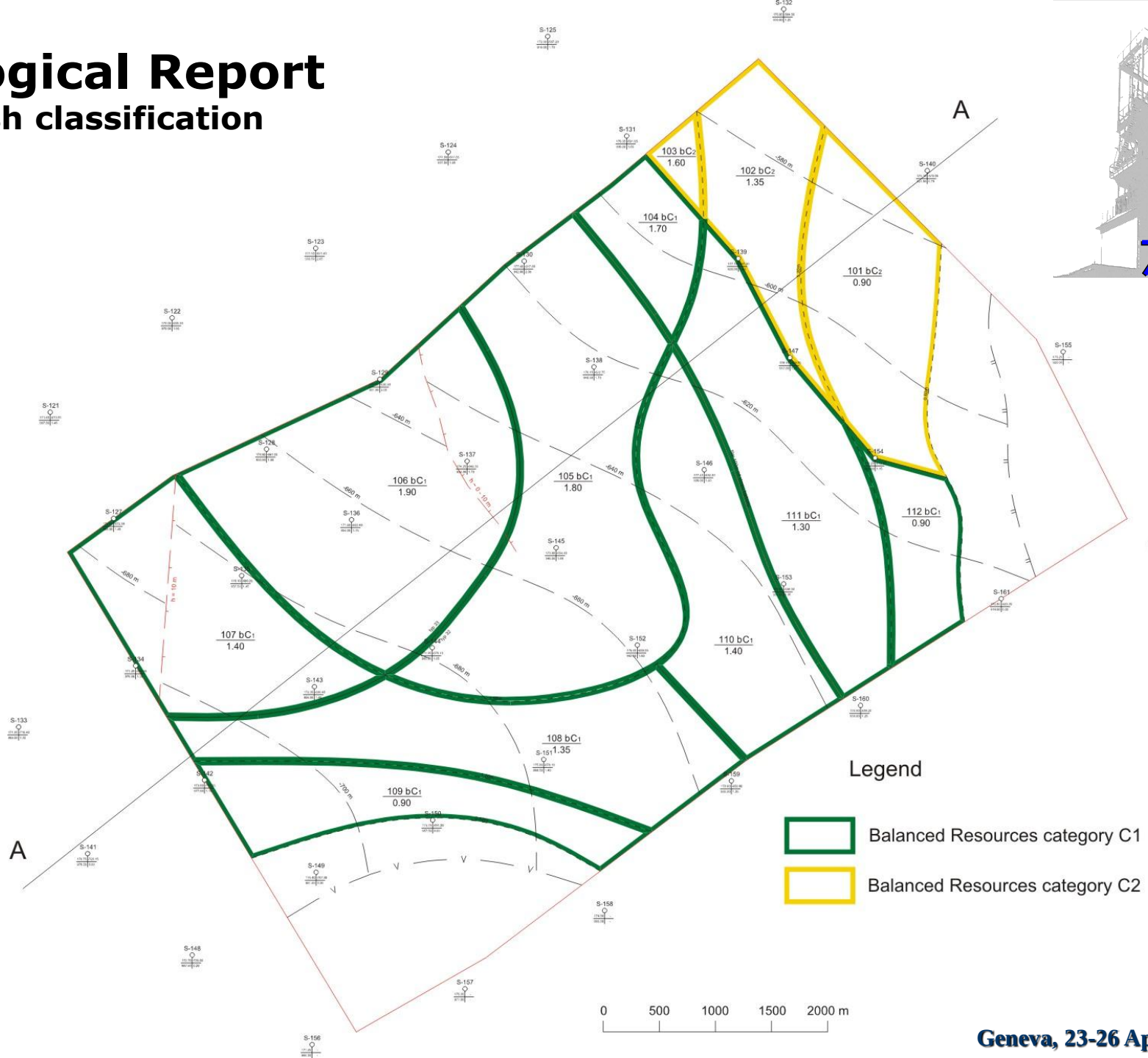
Proved reserves are evaluated only for internal use of mining enterprises and are not officially reported

Bogdanka Coal Deposit

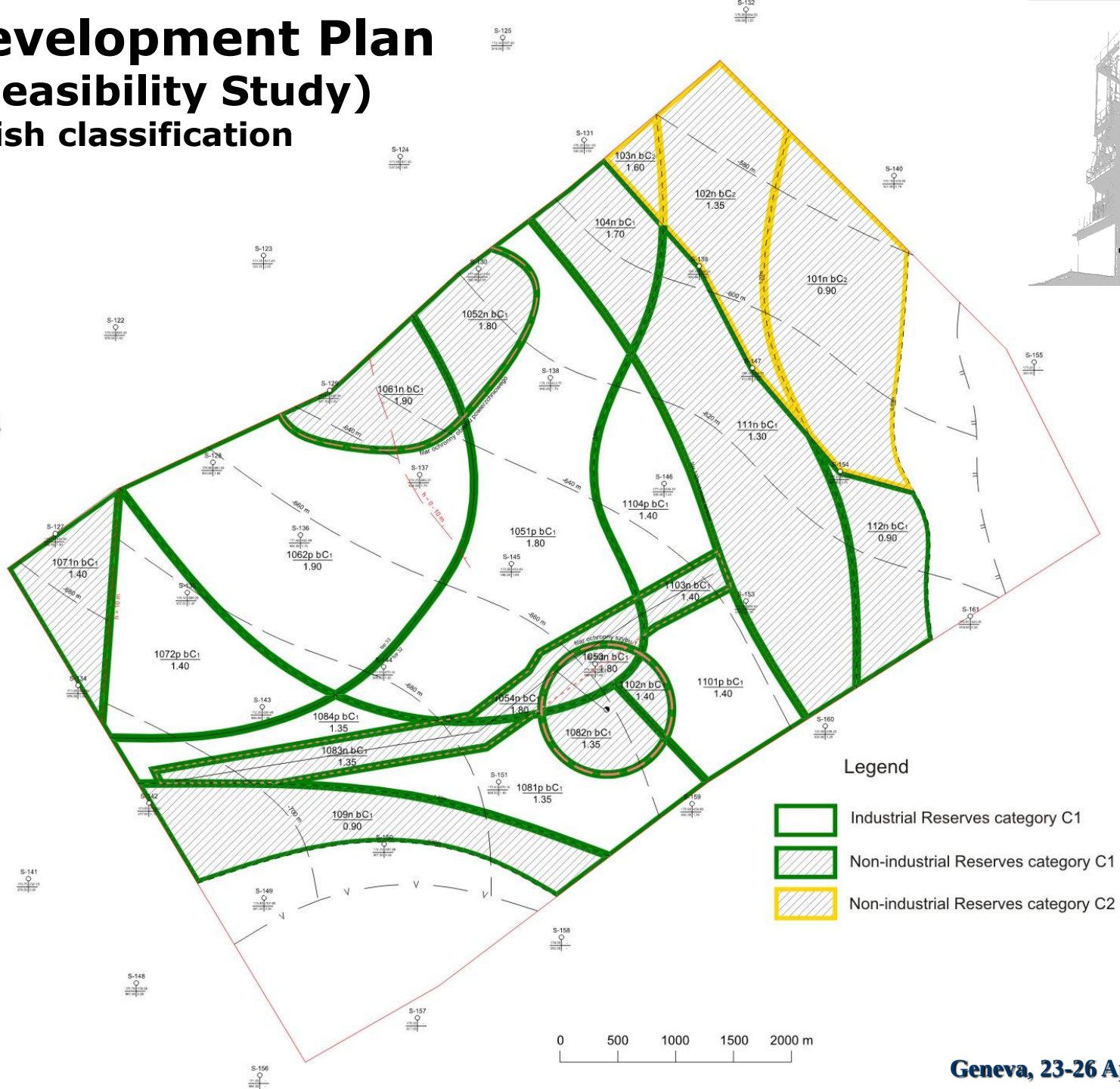


Geological Report

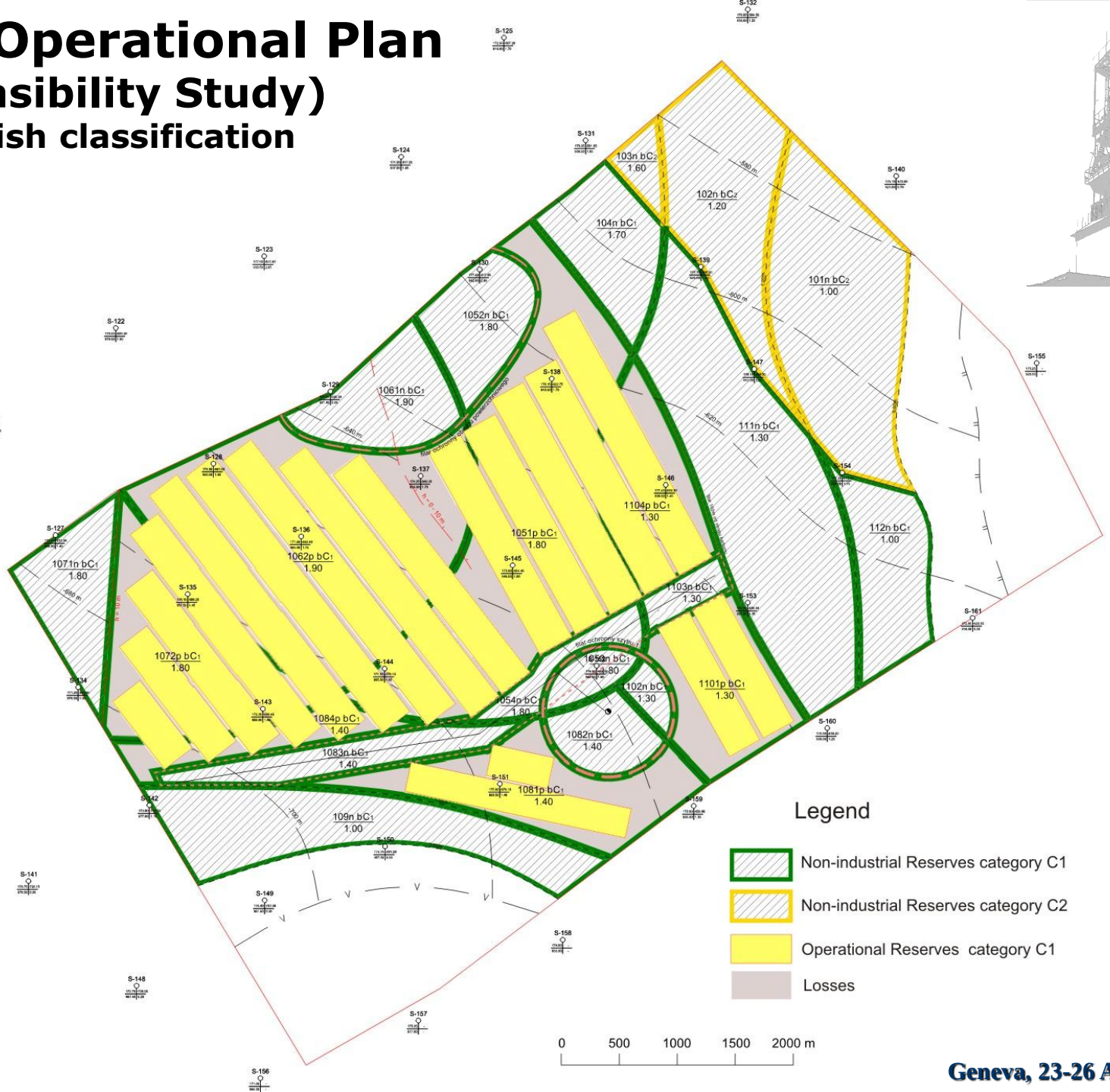
Polish classification



Mine Development Plan
(Pre-Feasibility Study)
Polish classification



Mining Operational Plan
(Feasibility Study)
Polish classification



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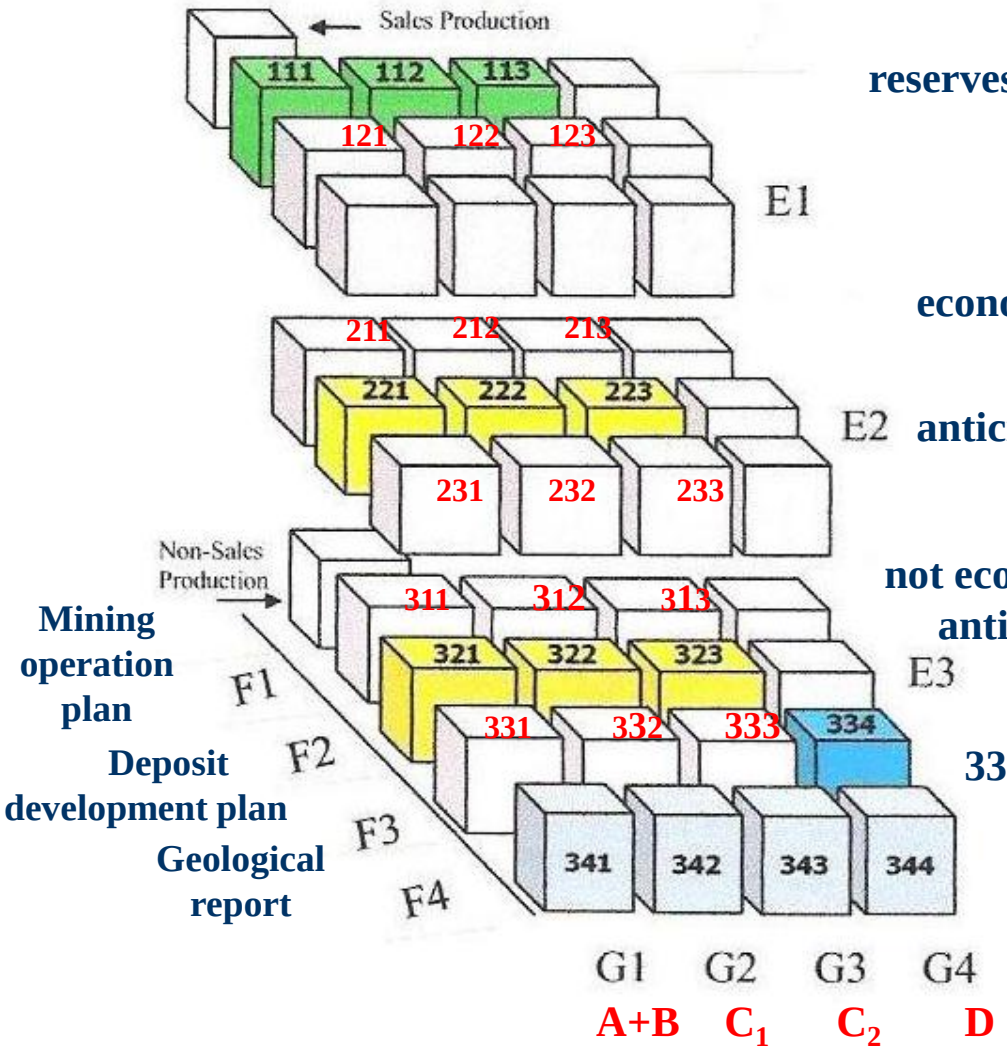
The general rules of classification of resources and reserves used in Poland are concordant with the United Nations Framework Classification (UNFC) and resources/reserves data can be easily transferred to CRIRSCO (JORC code) classification

Polish resources/reserves classification and UNFC



reserves

extractable - accessible

planned for extraction

economic resources in place

developed deposits

anticipated economic resources

undeveloped deposits

not economic resorces in developed deposits

anticipated subeconomic resources in undeveloped deposits

Mining operation plan

Deposit development plan

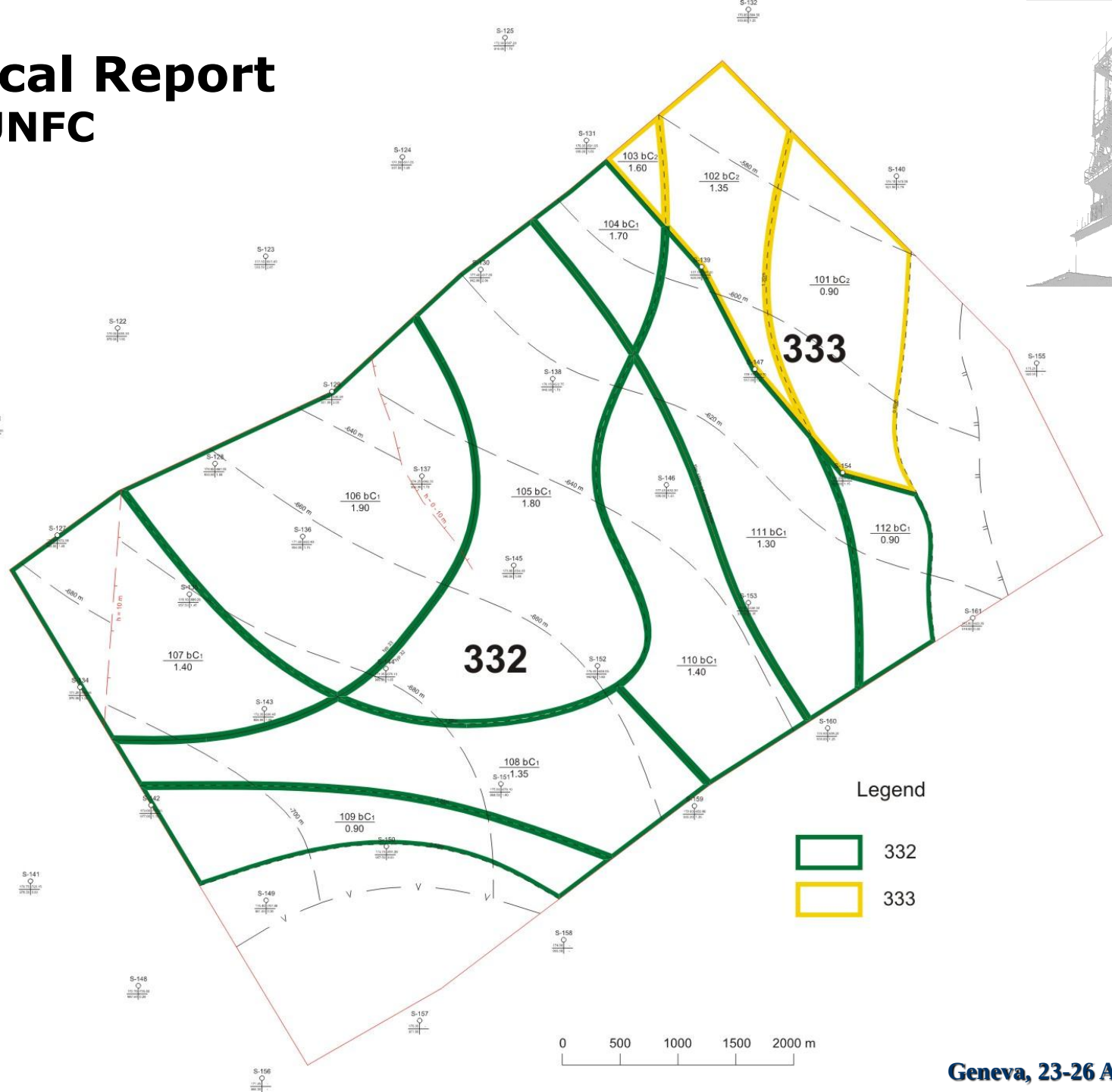
Geological report

334 prognostic resources

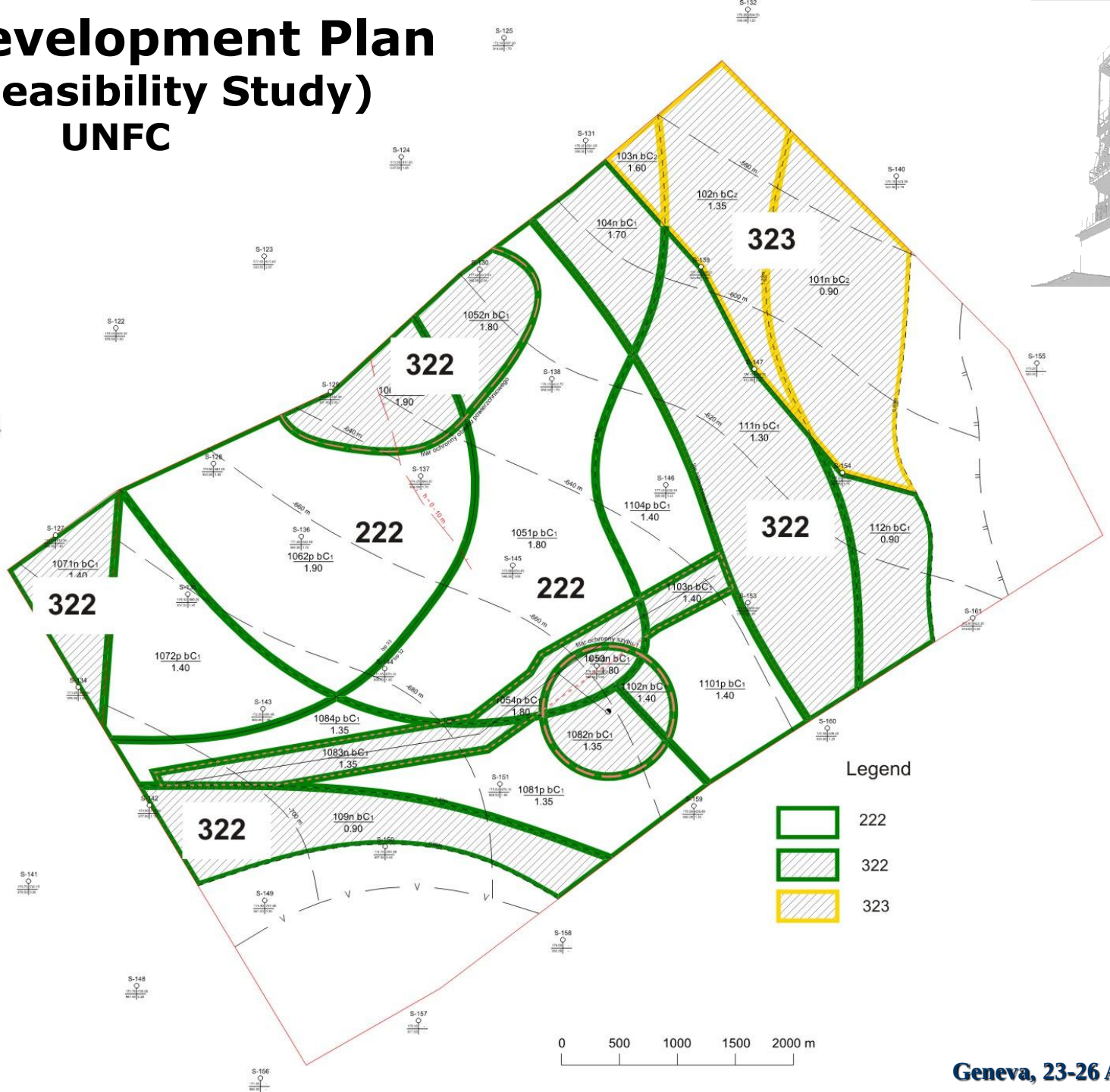
prospective resources (hypothetical)

Polish classification		JORC Code CRIRSCO	PRMS (zasoby wydobywalne)	UNFC 2008		
				Geological report		Feasibility study
				Deposits licensed for mining	Deposits not licensed for mining	
prognostic resources D		Prospecting results	Prospective resources Low, Best, High	2 3 4, 3 3 4		
Anticipated economic („balance") resources	C_2 C_1 A+B	Resources Inferred Indicated Measured	Contingent resources Low, Best,, High	2 2 3 2 2 2 2 2 1	2 3 3 2 3 2 2 3 1	
Anticipated subeconomic („subbalance ") resources	C_2 C_1 A+B			3 2 3 3 2 2 3 2 1	3 3 3 3 3 2 3 3 1	3 1 3 3 1 2 3 1 1
„Not industrial" subeconomic resources	C_2 C_1 A+B					3 1 3 3 1 2 3 1 1
„Industrial" economic resources	C_2 C_1 A+B					2 1 3 2 1 2 2 1 1
Extractable resources	C_2 C_1 A+B					1 1 3 1 1 2 1 1 1
Mineable reserves C_2 C_1 A+B		Reserves Probable Proved	Reserves Proved, Probable, Possible			(1 1 3) (1 1 2) (1 1 1)

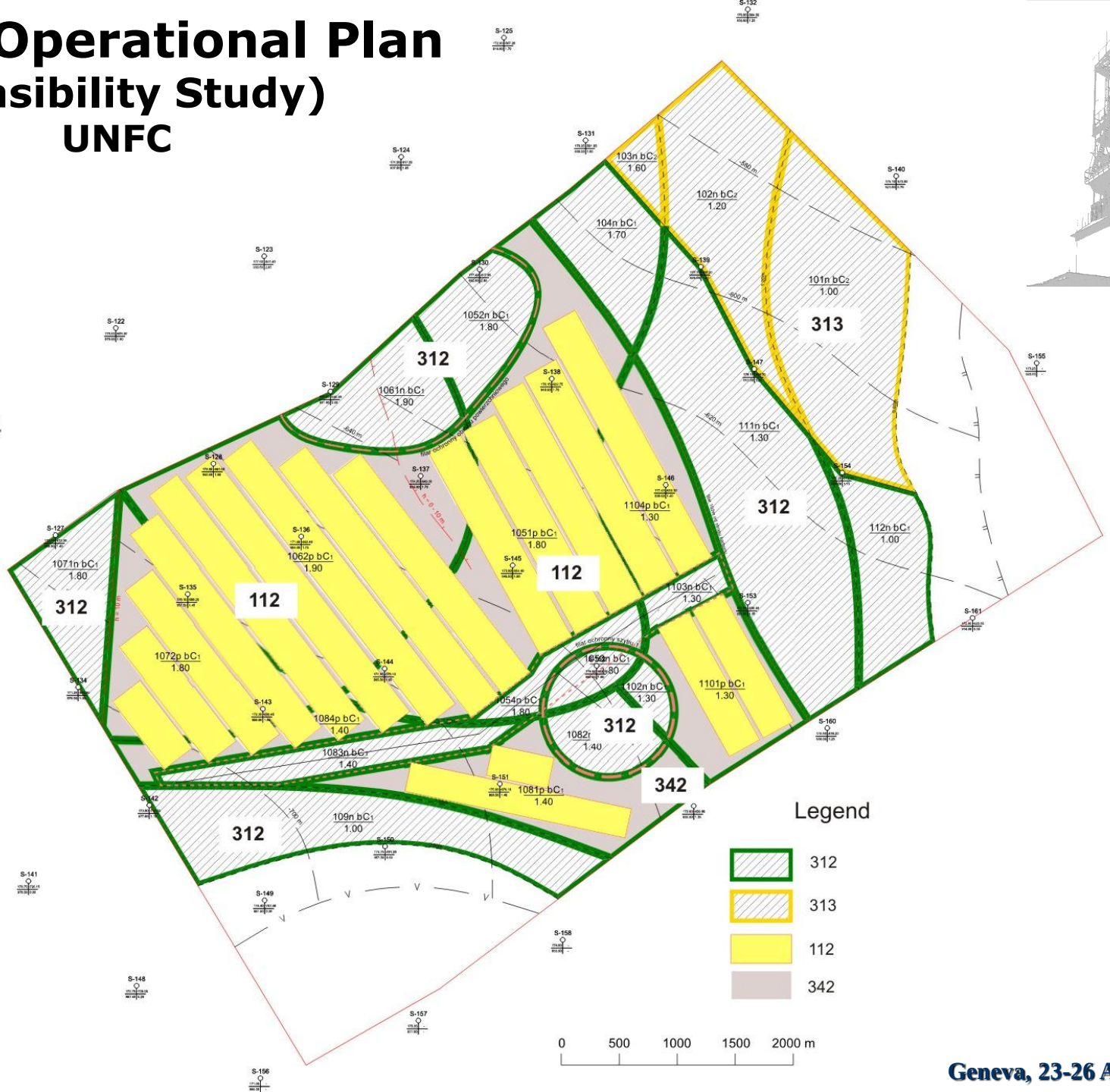
Geological Report
UNFC



Mine Development Plan
(Pre-Feasibility Study)
UNFC



Mining Operational Plan
(Feasibility Study)
UNFC



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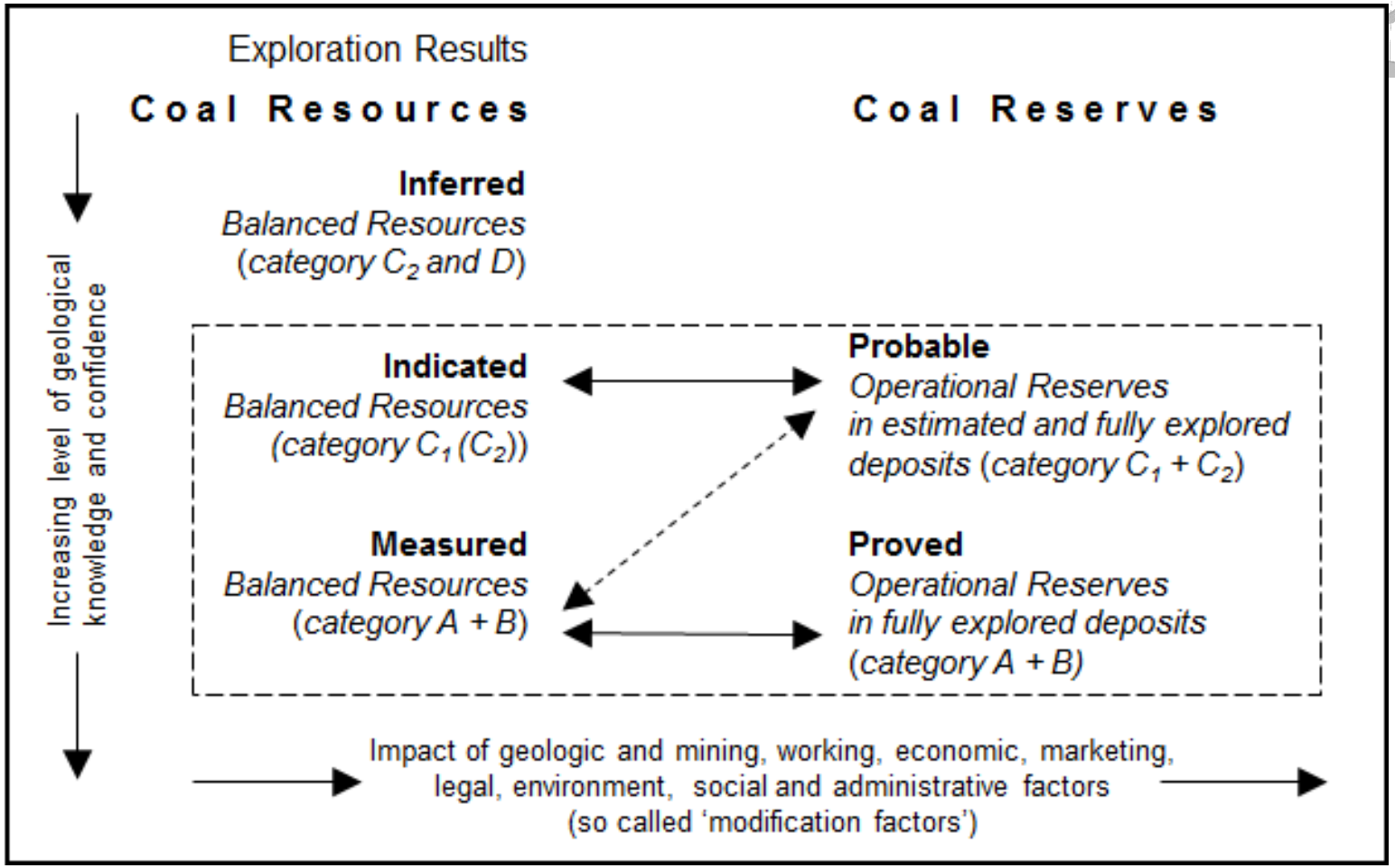
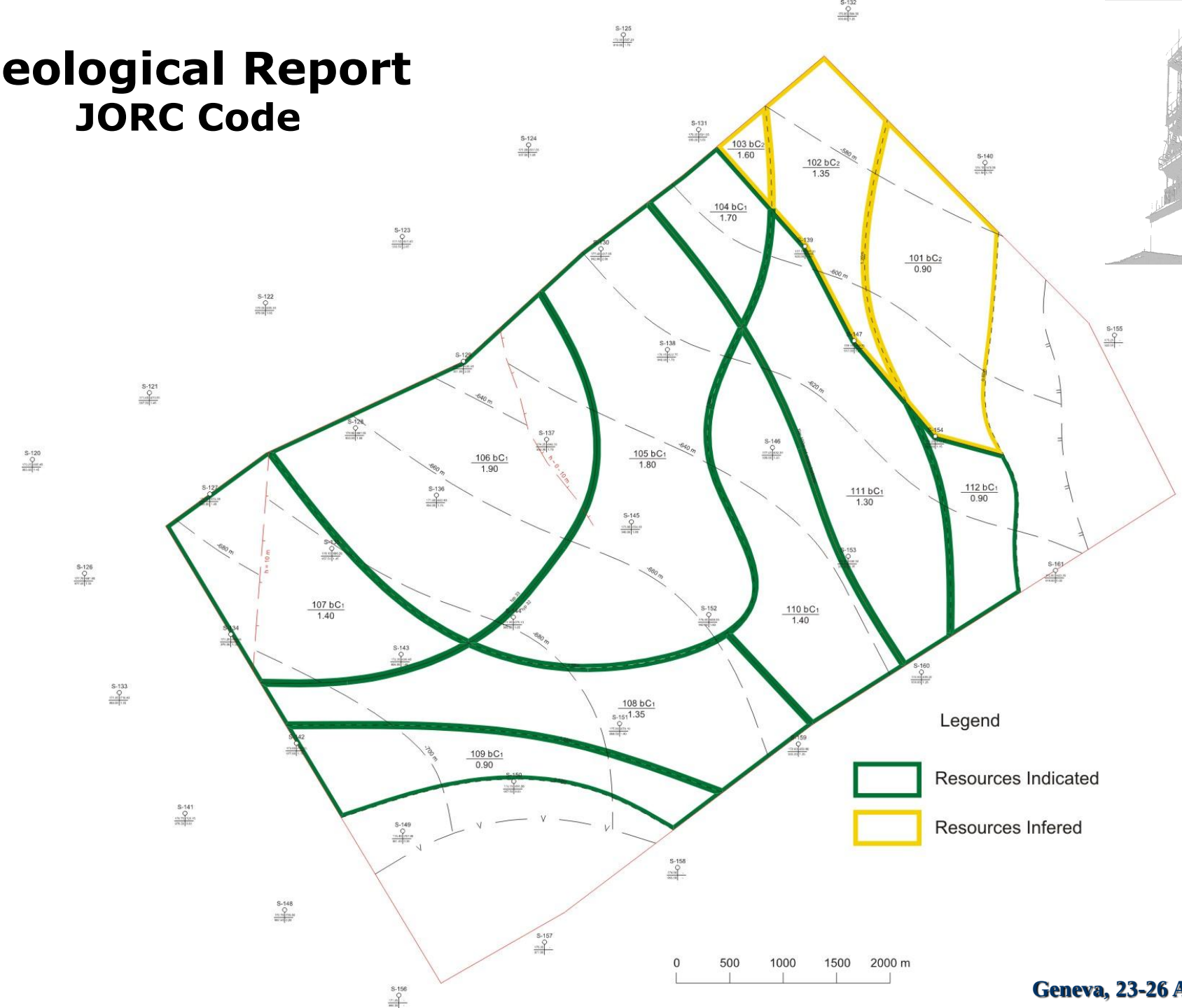
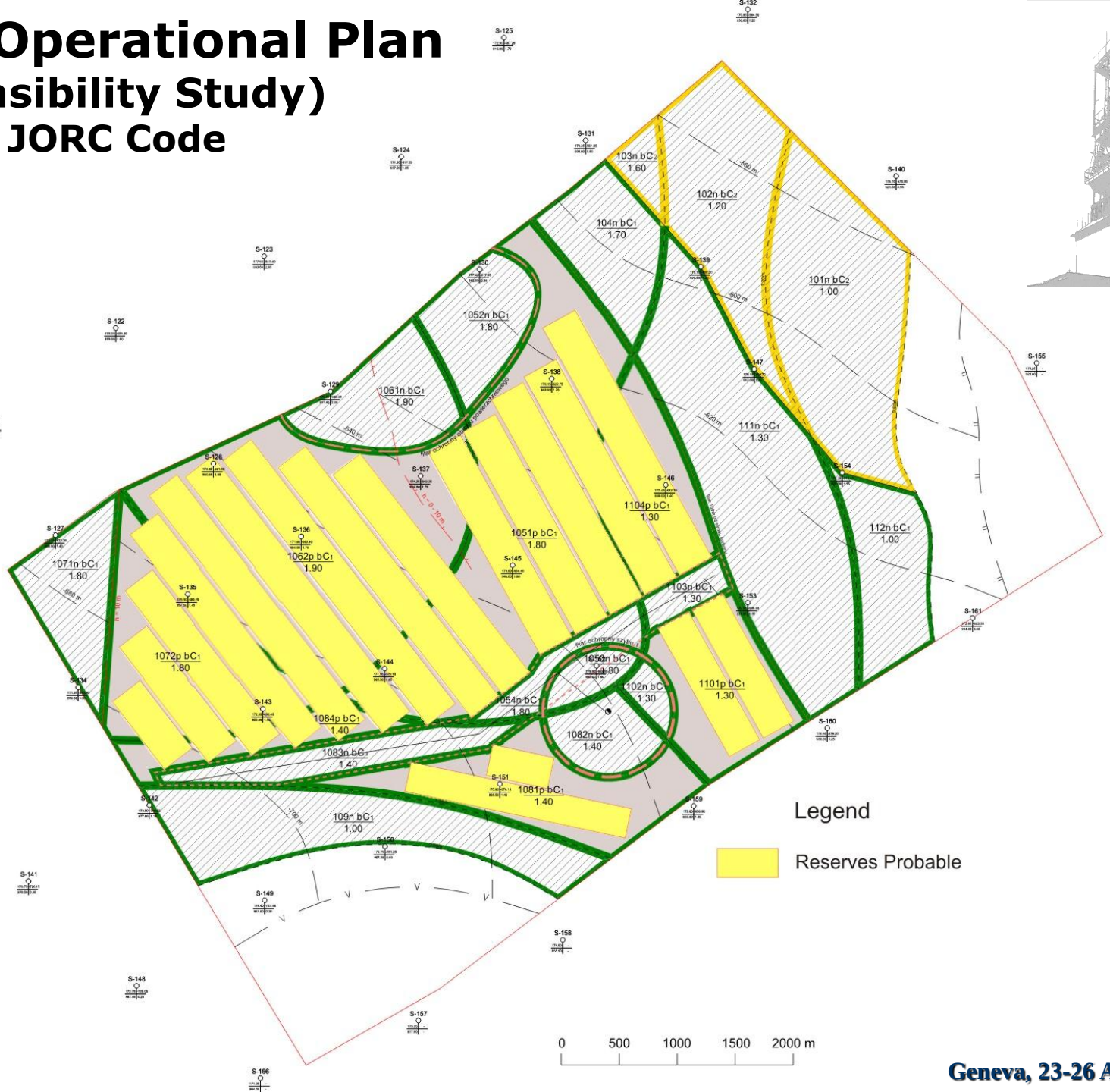
CRIRSCO (JORC Code) and Polish resources/reserves classification



Geological Report
JORC Code



Mining Operational Plan
(Feasibility Study)
JORC Code



Geological Report

Polish classification	UNFC	JORC Code
C2 *(7 194 tys. Mg)*	**332** *(7 194 tys. Mg)*	**Resources Inferred** *(7 194 tys. Mg)*
C1 *(60 499 tys. Mg)*	**333** *(60 499 tys. Mg)*	**Resources Indicated** *(60 499 tys. Mg)*

Balanced Resources

C1, C2 - Accuracy of knowledge of resources (category)

Mine Development Plan

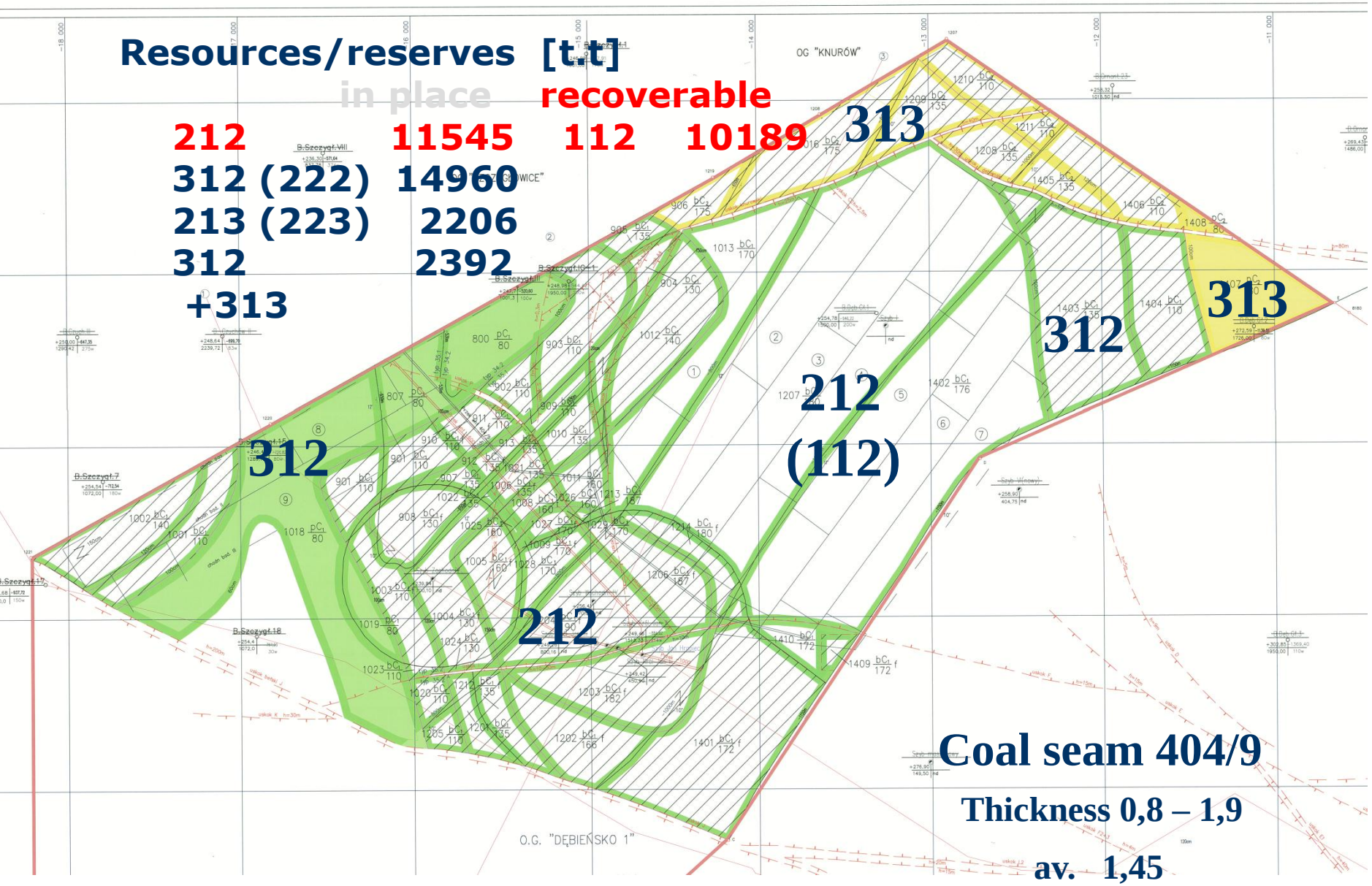
Polish classification		UNFC
Non-industrial Reserves	**C2** *(7 194 tys. Mg)*	**323** *(7 194 tys. Mg)*
	C1 *(24 177 tys. Mg)*	**322** *(24 177 tys. Mg)*
Industrial Reserves	**C1** *(36 311 tys. Mg)*	**222** *(36 311 tys. Mg)*

C1, C2 - Accuracy of knowledge of resources (category)

Mining Operational Plan

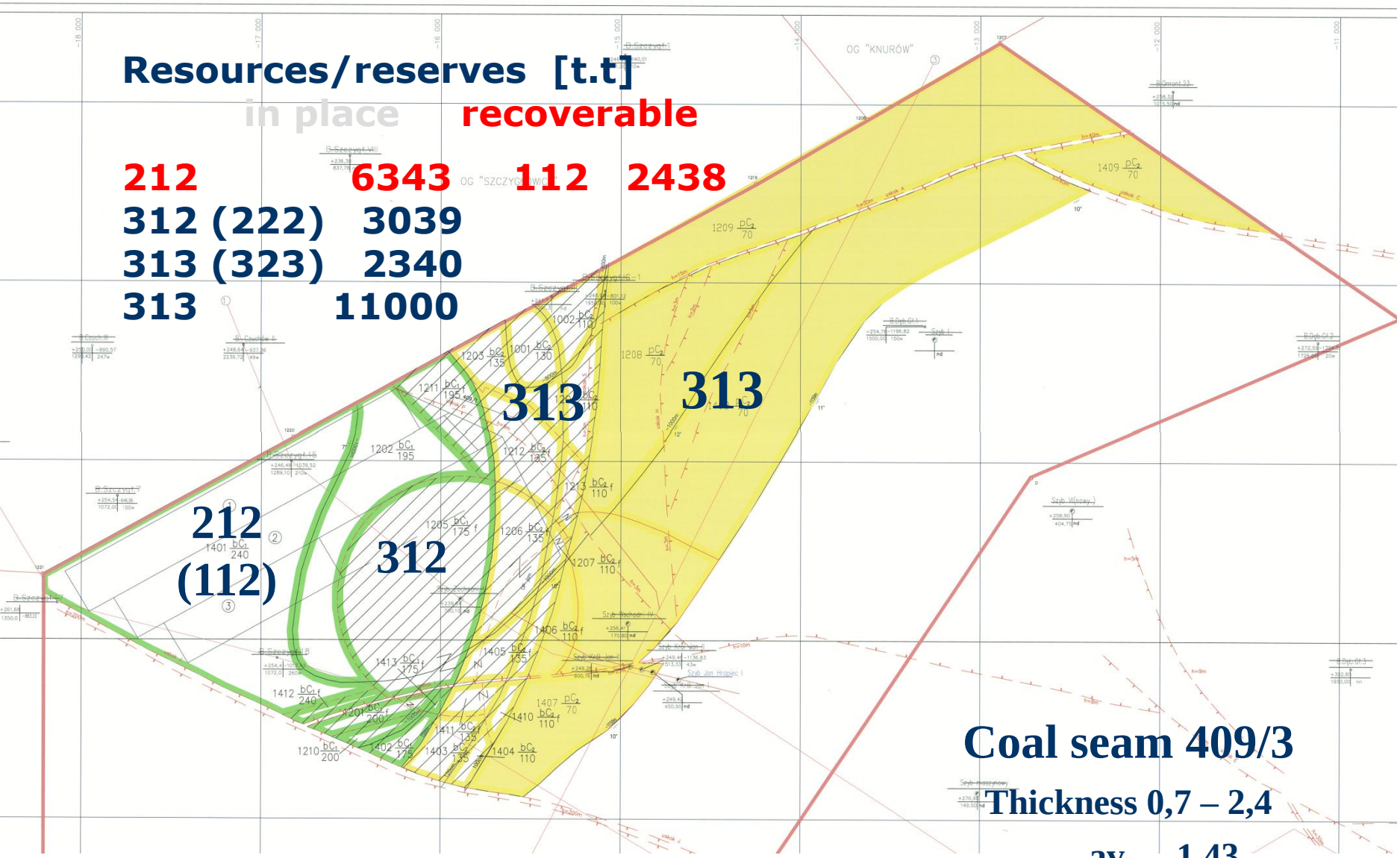
Polish classification		UNFC	JORC Code
Non-industrial Reserves	**C2** *(7 194 tys. Mg)*	**313** *(7 194 tys. Mg)*	
	C1 *(24 177 tys. Mg)*	**312** *(24 177 tys. Mg)*	
Operational Reserves	**C1** *(25 004 tys. Mg)*	**112** *(25 004 tys. Mg)*	**Reserves Probable** *(25 004 tys. Mg)*
Losses	*(11 307 tys. Mg)*	**342** *(11 307 tys. Mg)*	

C1, C2 - Accuracy of knowledge of resources (category)


Resources/reserves [t,t]
in place
recoverable
212 11545 112 10189
312 (222) 14960
213 (223) 2206
312 2392
+313
313
312
212
(112)
312
313
212
Coal seam 404/9
Thickness 0,8 – 1,9
av. 1,45
OG "KNURÓW"
O.G. "DĘBIEŃSKO 1"

Resources/reserves [t.t]

	in place		recoverable
212	6343	112	2438
312 (222)	3039		
313 (323)	2340		
313	11000		



Coal seam 409/3

Thickness 0,7 – 2,4

av. 1,43

Thank you for attention