

IDENTIFICATION OF SITES FOR NUCLEAR POWER STATIONS

LAND-USE AS A CONSIDERATION CRITERIUM FOR THE RANKING OF CANDIDATE AREAS

- 1. DEFINITION
- 2. DESK STUDY FOR PHASE IA (IDENTIFICATION OF CANDIDATE REGIONS AND AREAS)
- 3. STUDY FOR PHASE IIA (RANKING OF CANDIDATE AREAS)
 - 3.1 Regional In-situ Investigation
 - 3.2 Data-base
 - 3.3 Scoring and Ranking

KEYWORDS

LAND-USE CONSIDERATIONS DURING FOLLOWING PHASES

- APPENDIX I - Maps depicting relevant data
- APPENDIX II - Map showing candidate areas with normalized scores

O.F. GRAUPNER on
behalf of Commercial
Manager

³⁰
Rev. June 1984.

NATIONAL SURVEY FOR THE IDENTIFICATION OF SITES FOR
NUCLEAR POWER STATIONS

LAND-USE ASPECTS

1. DEFINITION

For the purpose of the project the term land-use will define all surface use activities of man on both the terrestrial and marine environment as well as the air space. It will therefore include forestry, agriculture, mining and exploration, aqua and marine culture, fishing (commercial), resource based recreation, harbours and ports, air, land and sea traffic routes, infrastructure and decentralised industries and hotels. It will however exclude nature conservation areas (i.e. National Provincial and Municipal Nature Reserves) townships and cities, military areas and installations, recreational resorts (i.e. holiday homes) and mineral potential because these are dealt with by other consideration aspects.

2. DESK STUDY FOR PHASE IA (IDENTIFICATION OF CANDIDATE REGIONS & AREAS)

Because of the complex and dynamic nature of land-use it was considered inappropriate and unpractical to apply this consideration aspects during the Phase IA desk study.

3. STUDY FOR PHASE IIA (RANKING OF CANDIDATE AREAS)

3.1 Regional In-situ Investigation

During the aerial reconnaissance of the candidate areas detail recordings were made of all land use activities as described above.

3.2 Data Base

A comprehensive data base of relevant literature was also established. Amongst others these consisted of Guideplans, C.S.I.R. Estuary and coastal zone land-use reviews, pollution and effluent source reports, commercial resources of the marine environment, commercial sea and air routes, afforested areas and agricultural production areas.

The detailed elements that were taken into consideration for the ranking of the nineteen candidate areas, were as follows :-

1. Demarsal fish grounds
2. Pelagic fish grounds
3. Commercial cropping areas for molluscs and crustaceans
4. Decentralized Industries and Hotels
5. Extensive Agriculture
6. Intensive Agriculture
7. Afforestation
8. Oil Consession Areas
9. Diamond Mining Areas
10. Heavy Metal Mining Areas
11. Infrastructure
12. Commercial Harbours
13. Fishing Ports and small Boat Harbours
14. Marines, sports fishing, scuba diving areas
15. Bating and leisure areas (high and low density) along the beaches
16. Commercial sea routes
17. Commercial flight paths

Appendix 1 is a set of maps showing some of the relevant data.

3.3 Scoring and Ranking

Each candidate area was scored from an allotted range of points for each element which varied according to the importance of an element. The higher score represented the least sensitive or more suitable situation for the establishment of a nuclear station. The totalled score for individual areas was normalized to 10. The overall performance of candidate areas is given in the table below and shown on Map 1.

AREA	1a	1b	1c	3	HK	AG	6a	6b	6c	8	PL	4	5	7	SF	3	TN	ST	KB
PERFORMANCE	7,8	6,4	6,8	7,4	7,8	6,9	8,4	7,6	9,2	9,1	5,0	5,1	4,8	10	9,0	8,2	7,2	7,2	6,0
RANKING	7	13	12	8	7	11	5	8	2	3	16	15	17	1	4	6	10	10	14

NOTES :

KB - Koeberg	
HK - Hangklip	SF - Cape St Francis
AG - Agulhas	ST - Stanger Area
PL - Plettenberg Bay	TN - Tugela North

3/.....

4. LAND-USE CONSIDERATIONS DURING FOLLOWING PHASES

Because of the intricate and varied nature of land-use, including the economical, political and emotional elements associated therewith, it will be necessary to liaise with outside bodies and persons for two main reasons :-

- Firstly to obtain updated information at the required level of detail for each phase, in order to assess the preferred area(s) and
- secondly to ensure timeous involvement and participation of bodies/persons with legal/statutory and or moral rights.

For this purpose it is considered necessary to liaise with the undermentioned bodies to finalize phase IB and IIB and to open communication links for the future. A strategy for their involvement however, still needs to be devized.

- Department of Constitutional Development and Planning
(Physical Planning Branch)
- Department of Agriculture (Regional Directors)
- Department of Environment Affairs
 - Directorate of Water Affairs (Pollution Control Branch)
 - Sea Fisheries Branch
 - Directorate of Forestry and Environmental Conservation
- Department of Mineral and Energy Affairs
 - Regional Mining Inspectors
- Municipalities and Divisional Council
- Department of Transport Services (Various Branches)
- Regional Development Advisory Committees

RESULTATE VAN SENSITIWITEITSONTLEDINGS

TABEL 1

		RANGORDE					
		1	2	3	4	5	6
OEFENLOPIES	1	8	6b	ST	KB	1a	3
	2	6b	8	1a	KB	ST	3
	3	8	ST	KB	6b	1a	3
	4	6b	KB	ST	8	2	HK
	5	KB	ST	8	6b	1a	HK
	6	8	6b	1a	ST	KB	3
	7	8	KB	ST	6b	1a	3

TABEL 2

RANGORDE					
1	2	3	4	5	6
6b	3	ST	HK	KB	TN
6b	3	ST	HK	KB	1a
6b	ST	3	KB	HK	8
6b	ST	KB	2	HK	3
KB	6b	ST	HK	3	2
6b	3	ST	HK	KB	8
6b	ST	KB	3	HK	TN

TABEL 3

RANGORDE					
1	2	3	4	5	6
6b	3	KB	HK	ST	1a
6b	3	KB	HK	1a	ST
6b	ST	KB	3	8	HK
6b	KB	ST	2	8	HK
KB	6b	ST	HK	3	2
6b	3	ST	8	KB	HK
6b	KB	ST	3	HK	8

Bylaag 1.

NOTAS: Omgewingsoorwegings wat in die onderskeie tabelle gegeld het.

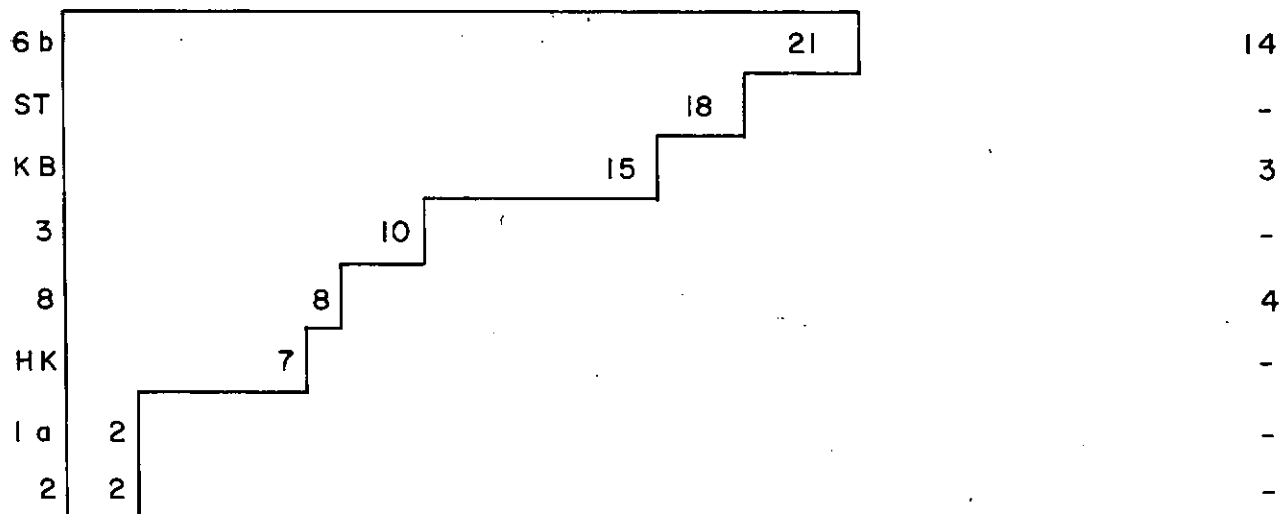
	TABEL 1	TABEL 2	TABEL 3
SEISMISITEIT	✓	✓	✓
WATER ASPEKTE	✓	✓	✓
DEMOGRAFIE	✓	✓	✓
TRANSMISSIE	✓	✓	✓
INFRASTRUKTUUR	✓	✓	✓
STREEKONTWIK.	✓	✓	✓
SEKURITEIT	✓	x	✓
GEOLOGIE	✓	x	x
TOPOGRAFIE	✓	x	x
SENS. EKOL. KOMP.	✓	x	x
GRONDGEBRUIK	✓	x	x

Bylaag 2.

JH 001/2/0/3/1

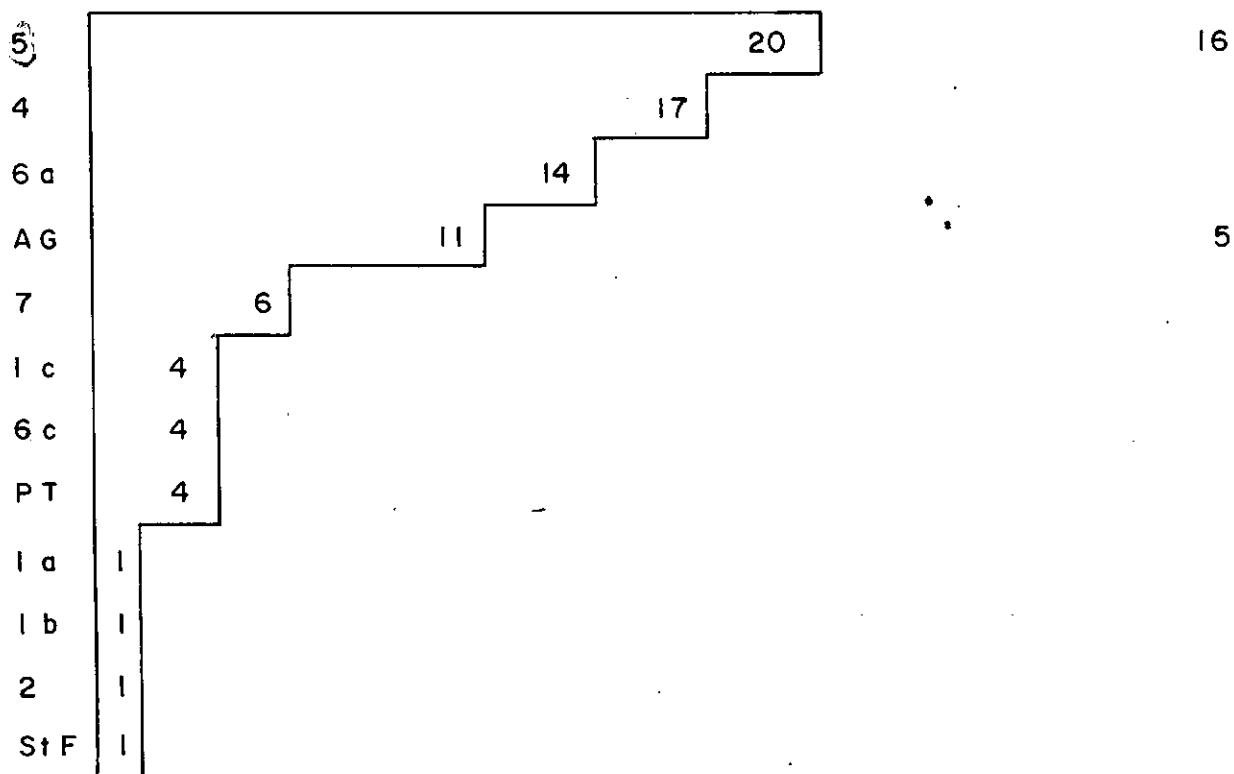
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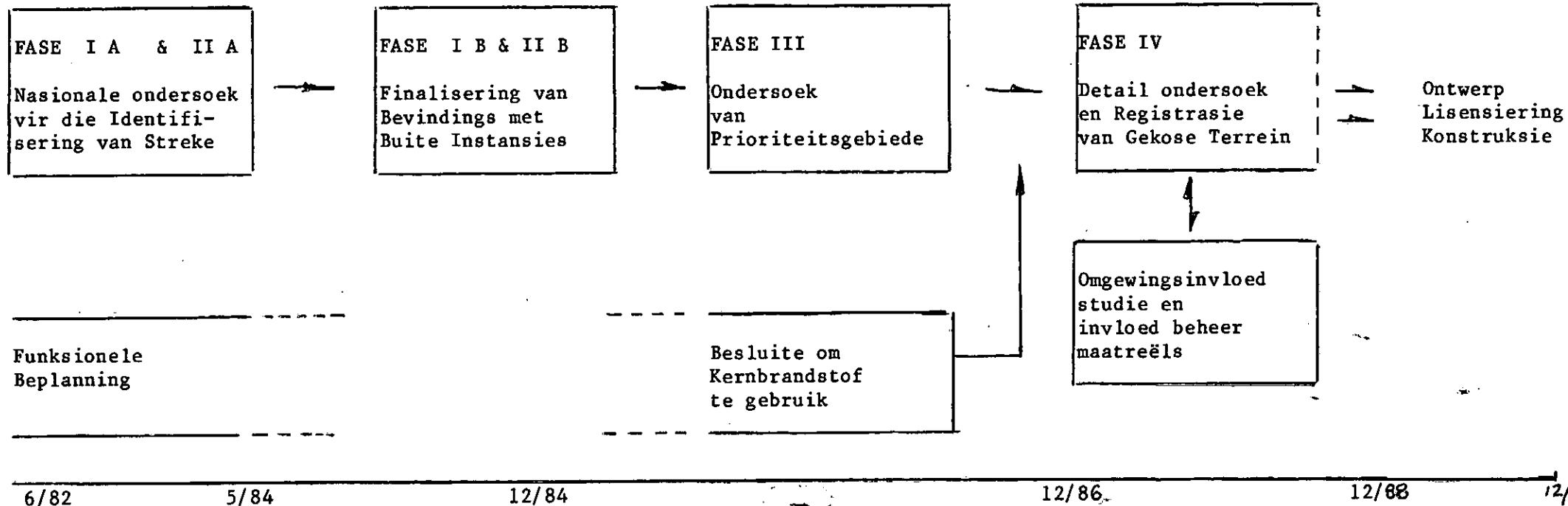
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- Department of Mineral and Energy Affairs
 - Regional Mining Inspectors
- Municipalities and Divisional Council
- Department of Transport Services (Various Branches)
- Regional Development Advisory Committees

MOONTLIKE ONDERSOEKPROGRAM :

	1985	1986	1987	1988	1989	1990
1. NATAL STREEK Tugela Suid en Noord (ST & TN)	R0,7M	R0,9M				
2. SUID-KAAP STREEK Gebiede 6a, 6b en 6c Gebied 8 Aghulas (AG) Hangklip (HK)		R0,7M	R0,9M			
3. OOS-KAAP STREEK Sondagsrivier Oos (3) St Francis (SF)			R0,7M	R0,9M		
4. NOORDWES-KAAP STREEK Gebiede 1a, 1b en 1c Gebied 2				R0,7M	R0,9M	
5. SUIDOOS-KAAP STREEK Piettenbergbaai (PT) Gebiede 4, 5 en 7					R0,7M	R0,9M
TOTAAL	R0,7M	R1,6M	R1,6M	R1,6M	R1,6M	R0,9M

PROSEDURE VAN DIE IDENTIFISERING VAN
TERREINE VIR KERNKRAGSTASIES IN DIE R.S.A.



PROSEDURE VAN DIE IDENTIFISERING VAN
TERREINE VIR KERNKRAGSTASIES IN DIE R S A - 6/84

FASE IA EN IIA	FASE IB EN IIB	FASE III	FASE IV	
Nasionale ondersoek vir die Identifisering van Streke	Finalisering van Bevindings met Buite Instansies	Ondersoek van Prioriteitsgebiede	Detail ondersoek en Registrasie van Gekose Terrein	Ontwerp Lisensiering Konstruksie
			Omgewingsinvloed studie en invloed beheer maatreëls	
Funksionele Beplanning		Moontlike besluit om Kernbrandstof te gebruik		
6/82	6/83	6/84	12/84	12/86
				12/88
				12/96

		BERAAMDE BETROUBAARHEID VAN INLIGTING	
		12 MAANDE	24 MAANDE
DEFINIEER GRENSE	SEKURITEIT	90 %	95 %
	DEMOGRAFIE	80 %	95 %
	GRONDGEBRUIK	80 %	95 %
	INFRASTRUKTUUR	60 %	90 %
	EKOLOGIES SENSITIEWE GEBIEDE	50 %	90 %
	MINERALE POTENSIAAL	80 %	95 %
	TERRAS PROFIEL	80 %	95 %
	DEKLAAG GEOLOGIE	80 %	95 %
	FONDASIE GEOLOGIE	60 %	90 %
	VERSKUIWING/INTRUSIE	50 %	90 %
	OPSPORING	70 %	90 %
	GEOHIDROLOGIE	90 %	90 %
	REGIONALE SEISMISITEIT	90 %	90 %
	MARINE GEOLOGIE EN BATEMETRIE	50 %	90 %

TYDSKALE

1984	JANUARIE 1985	JANUARIE 1986	JANUARIE 1987
EVKOM	FASE 1 & 2B	FASE 3	FASE 4
		STADIUM 1,2,3	STAD 4

ANDER ORGANISASIES

UITKLARING VAN INLIGTING EN RESULTATE (EVKOM)
INWIN VAN DETAIL INLIGTING

KOSTE

1984 PRYSE	R0,25 x 10 ⁶	R0,6 x 10 ⁶	R0,9 x 10 ⁶
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NSIT

LIAISON WITH OUTSIDE BODIES - RESPONSIBILITIES

At the NSIT meeting held on 8 February 1984, the regions 6(b), Koeberg, 3, 8, Hangklip and 1(a) were signed out by the group as the starting point for Phase III investigations.

Before this can be done, Phase II has to be finalised, through liaison with various outside bodies ; these communications being carried through into Phase III.

Listed below are the various consideration aspects, with the responsible persons and the relevant outside bodies. The scales are estimated and are not "date fixed" at this stage.

These institutions and departments listed are not the total list and others will obviously be added on as the need becomes apparent.

ASPECT	ESCOM RESPONSIBLE PERSONS	OUTSIDE BODIES	TIME
Geology & Seismology	L. van Rensburg	Department of Geological Survey	KEYWORDS
		Department of Mineral and Energy Affairs	
	NUCOR		
	Department of Agriculture Soils Division		
	NRIO		
	Various Universities		
Topography & Oceanography	L.R. Huskins H. van Tonder	NRIO	
		Universities	
		NUCOR	
		Department of Transport Provincial Administration	
Demography	Dr. H.F. Rohm H. van Tonder	A.E.C.	
		Department of Constitutional Development	
		Department of Transport	
		Department of Environmental Affairs	
		Department of Health and Welfare	

ASPECT	ESCOM RESPONSIBLE PERSON	OUTSIDDE BODY	TIME
Water and Desalination	J. High H.O. Egenes	Department of Environmental Affairs Provincial Administration Department of Water Affairs CSIR - NIWR Hydrological Research Institute	
Infrastructure	M. Lindeque	Munisipalities Provincial Administrations Department of Health and Welfare Department of Community Development Divisional Council	
Ecological	O.F. Graupner	Department of Environmental Affairs Department of Mineral & Energy Affairs Department of Agriculture Department of Constitutional Development Department of Industries Nature Conservation Departments CSIR - Various Departments Various Universities Provincial Administrations	
Decentrilization	O.F. Graupner	Department of Constitutional Development Provincial Administrations	
Security	D. Olwage	Department of Defence Department of Prisons & Police AEC	Transport Services National Intellegence

Liaison with Escom Management, Escom Regions, Escom Public Relations Department, Media, AEC, Regional Development Advisory Committees, will be the responsibility of J.R. van Deventer.

H.O. Egenes will handle the group co-ordination and arrange the form 10.

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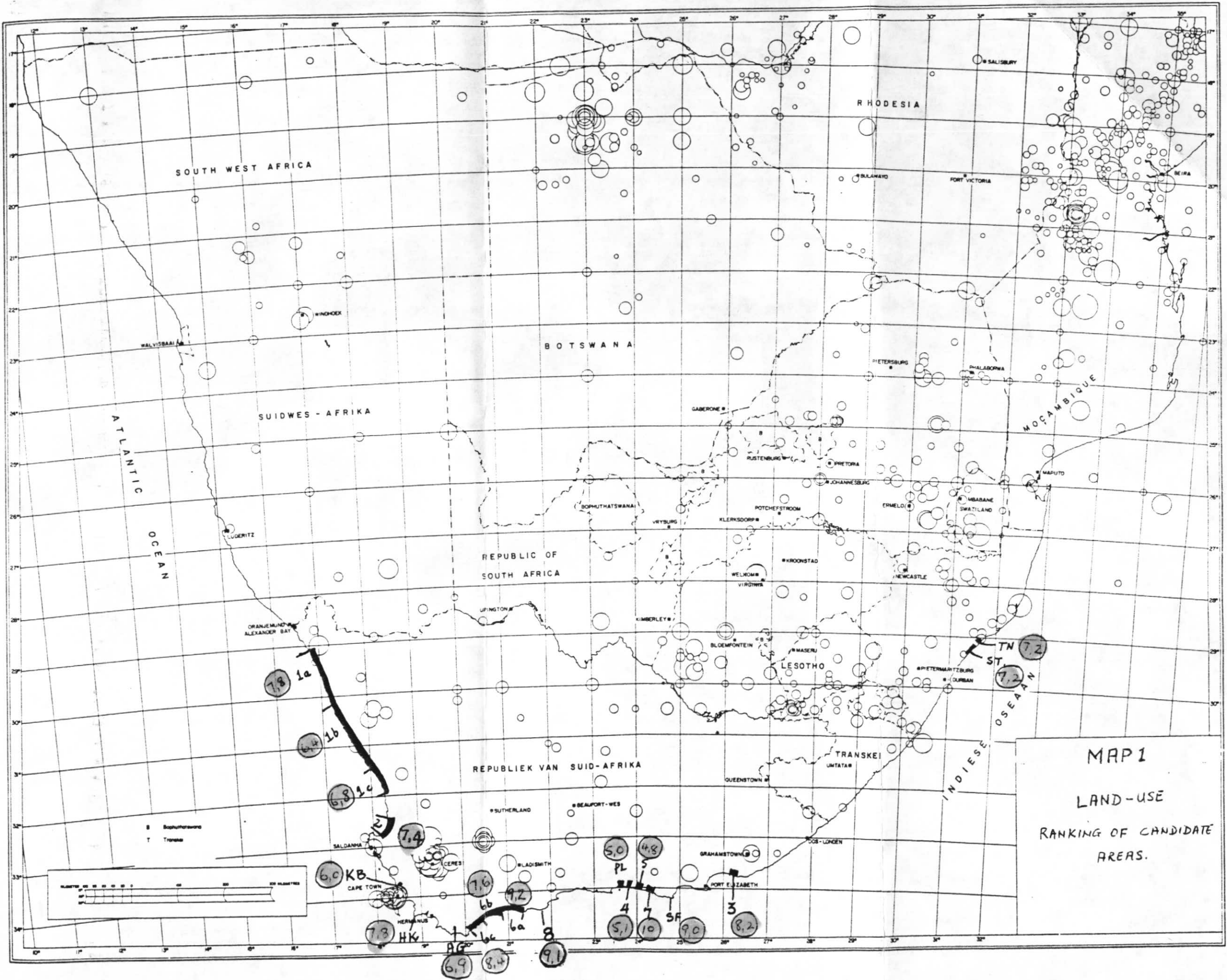
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Decentrilization	O.F. Graupner	Department of Constitutional Development Provincial Administrations	
Security	D. Olwage	Department of Defence Department of Prisons & Police	Transport. Services National Intelligence

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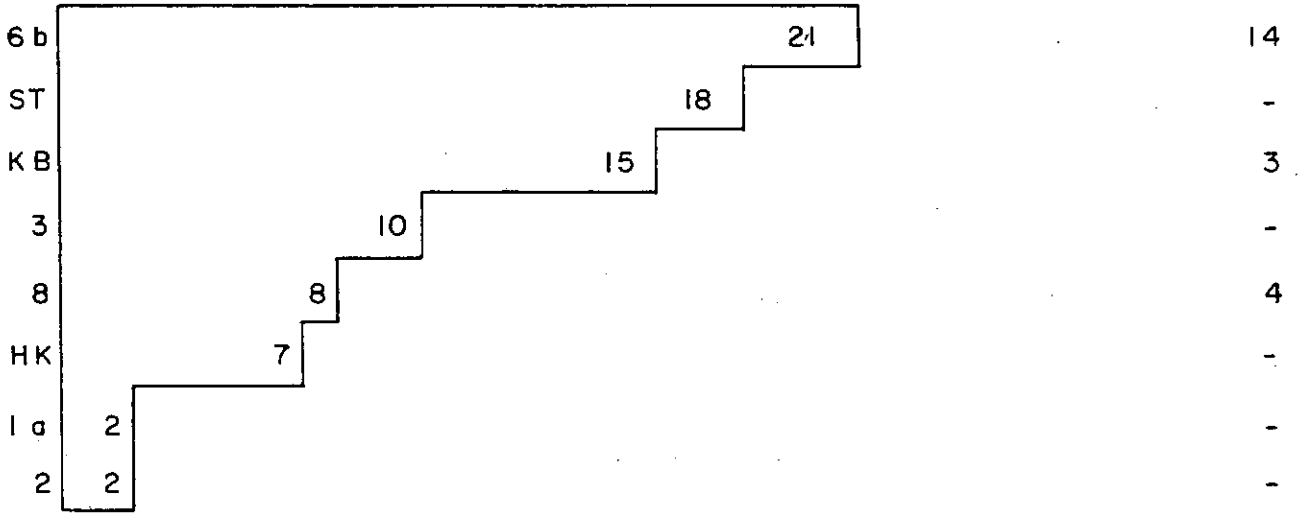


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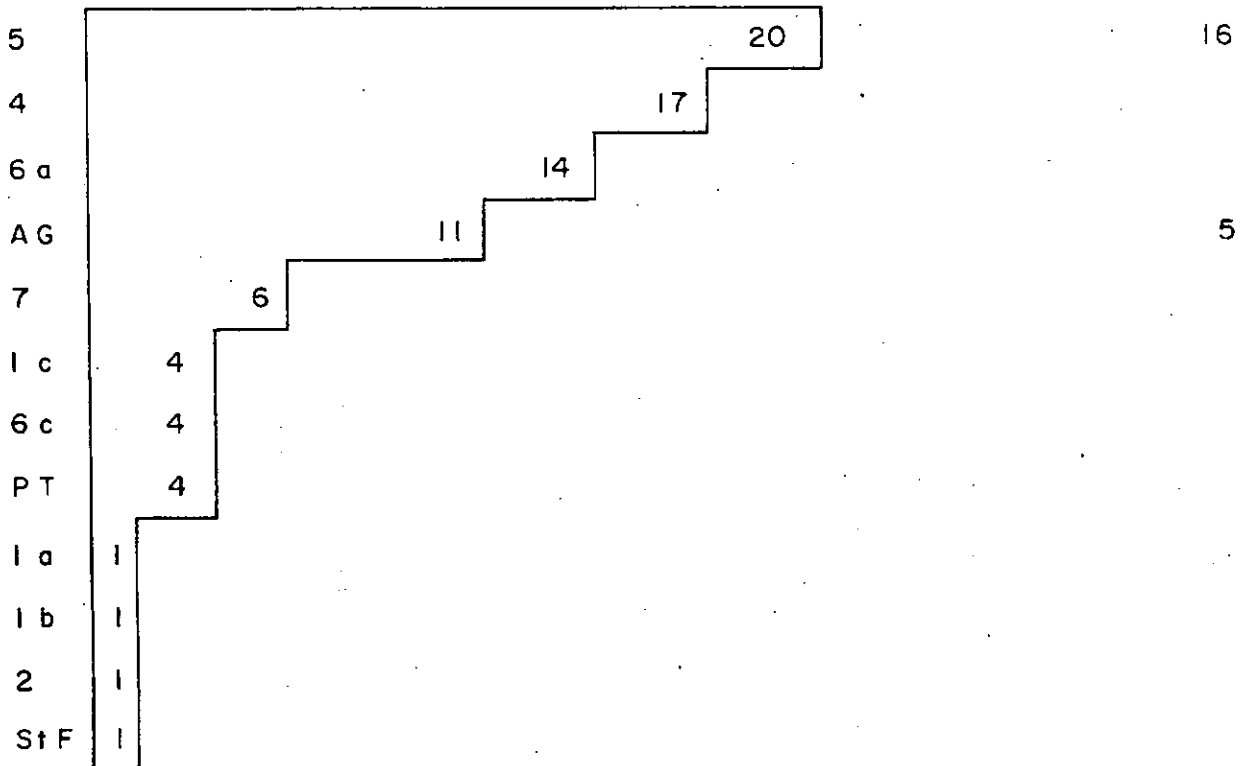
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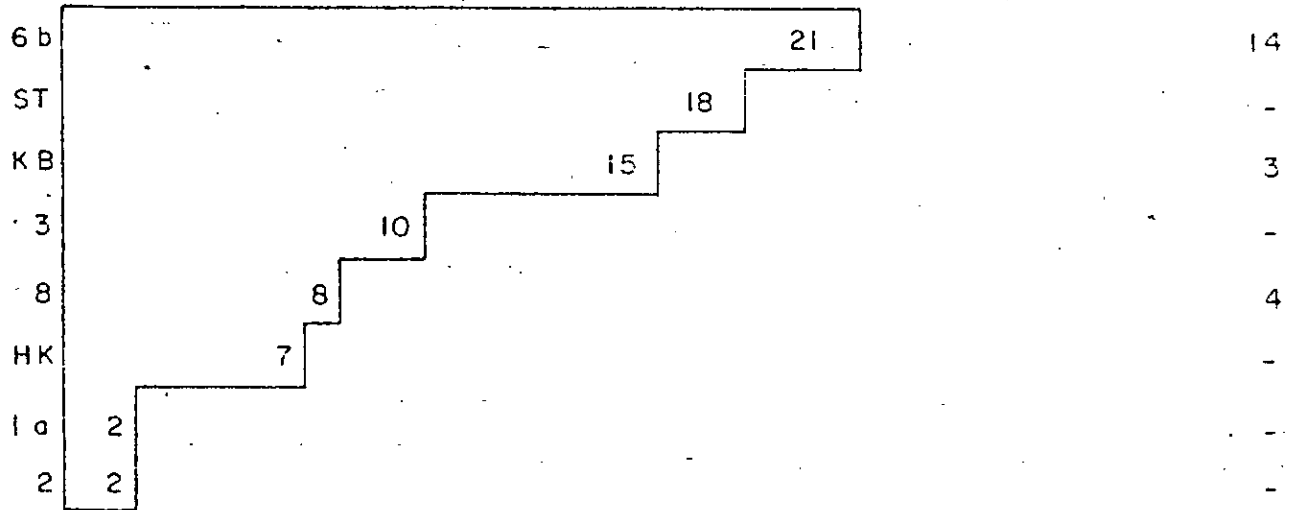
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No. of times last



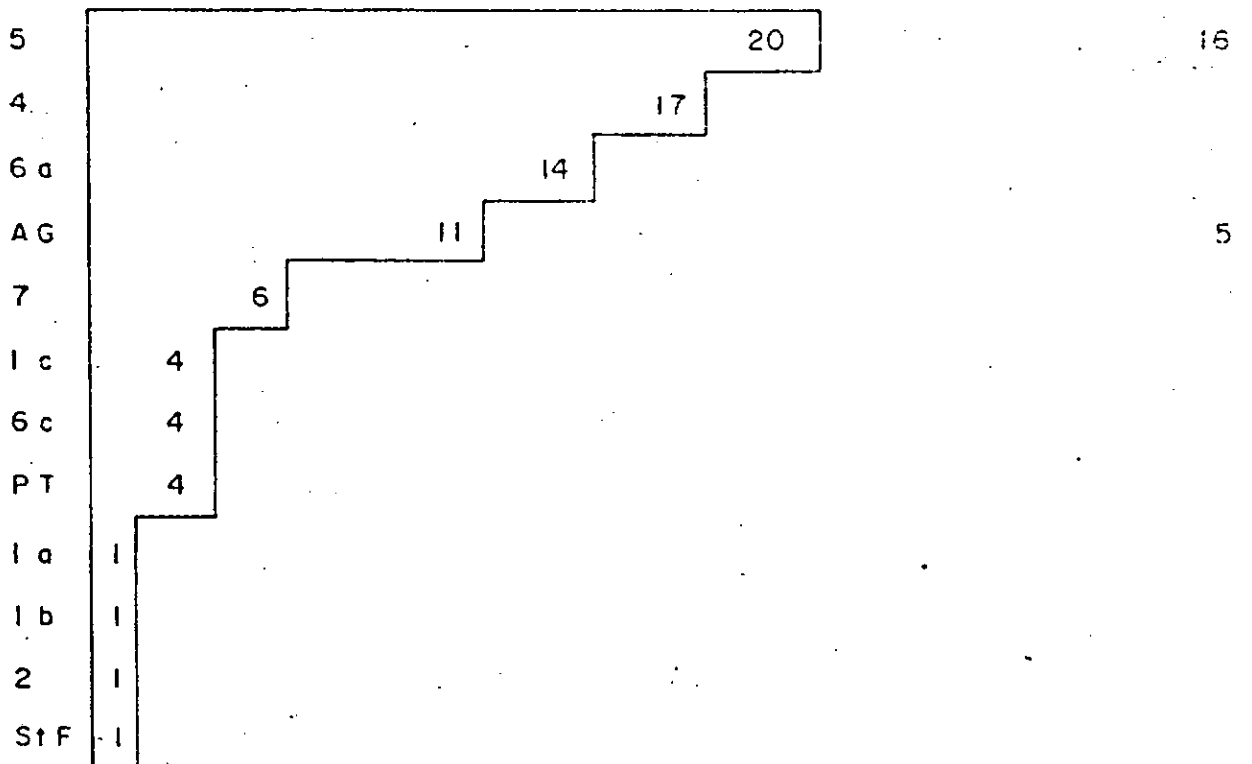
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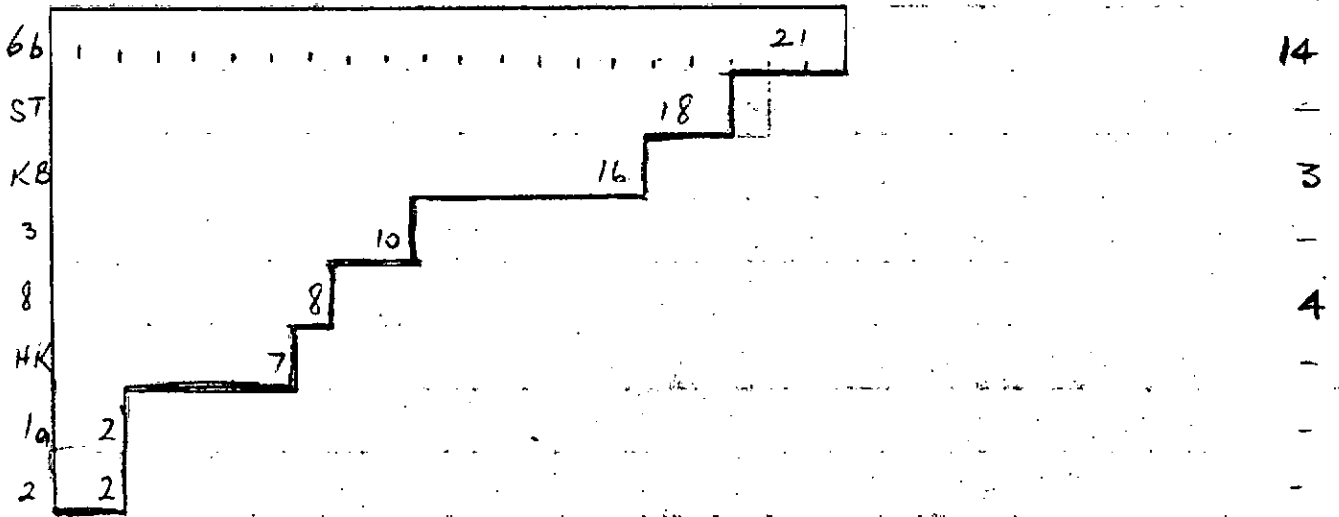


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Plot 3

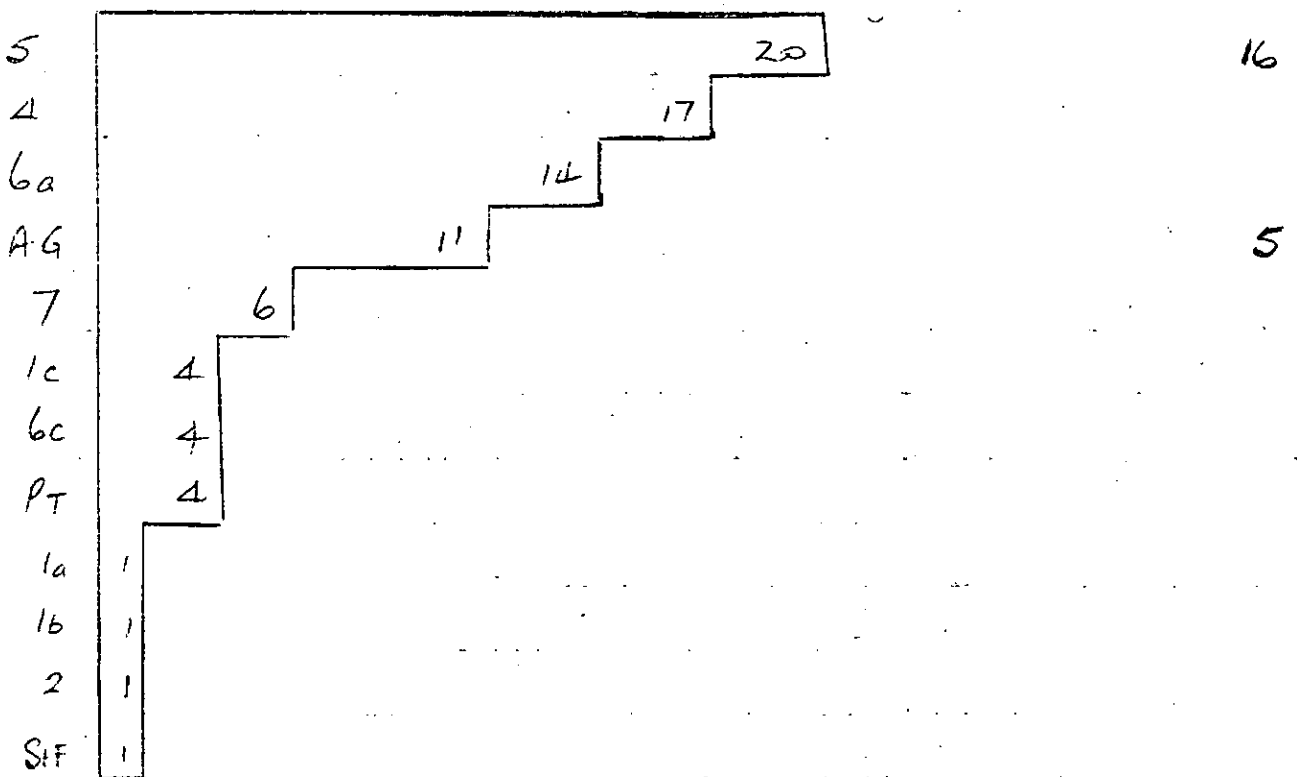
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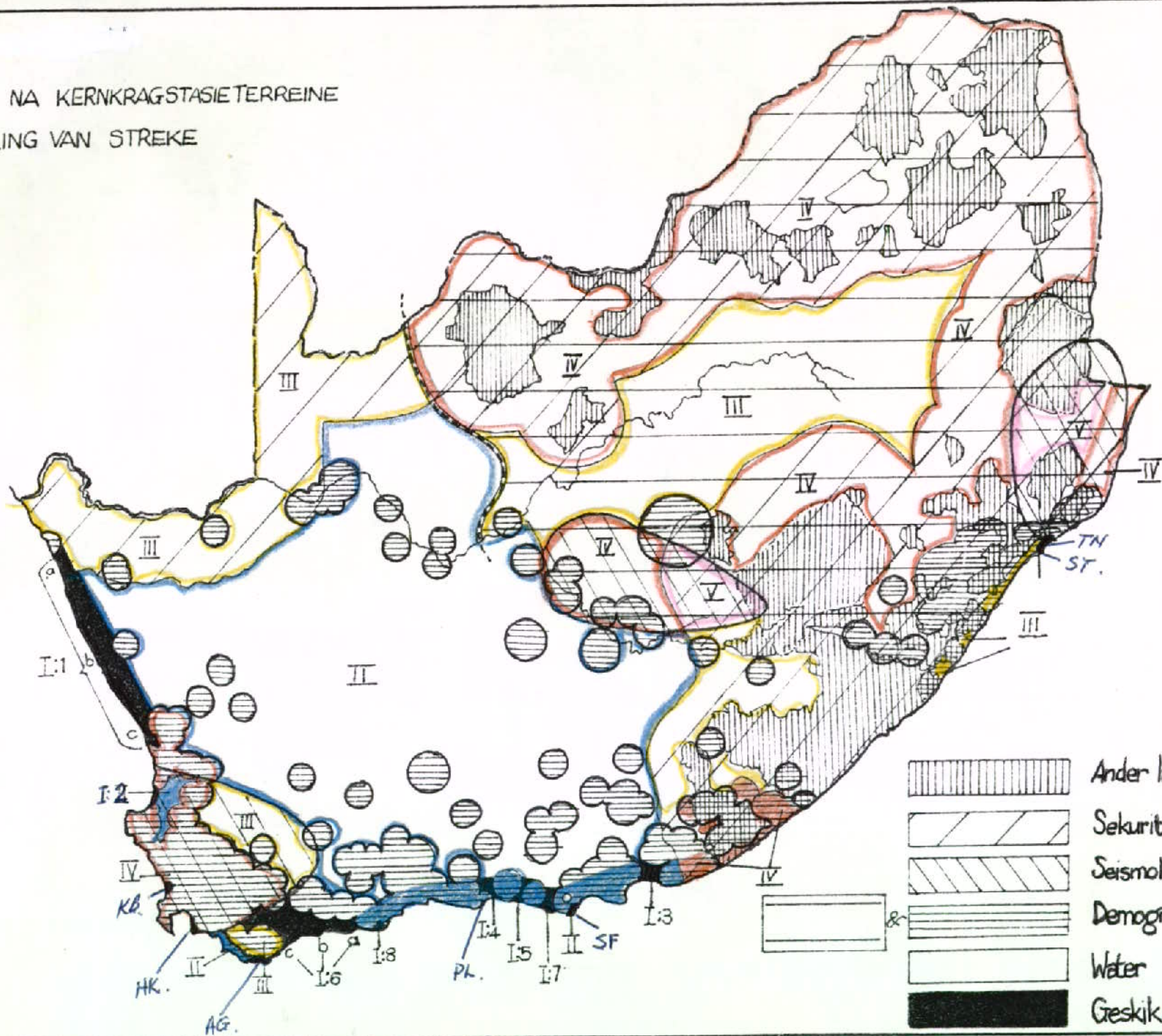


SFA.

NORMALIZED SCORES

Selection Criteria			1a	1b	1c	2	HANG ALIP	KAN INS	6c	6b	6a	8	PLATTEN DRAG BRAC	4	5	7	LAPE IN FRONT	3	LAPE BEHIND	STANGE	LAPE BEHIND					Weighted Values
TOPOGRAPHY	Ns		10	72	78	60	50	90	84	78	60	10	65	60	66	90	84	72	66		78	96				
	Ws	6,2	62	44	48	37	31	55	52	48	37	62	40	37	41	59	52	45	41		48	59				6,2
GEOLOGY	Ns		91	100	92	59	73	78	49	77	56	98	78	78	78	78	78	57	84		91	84				
	Ws	10	91	100	92	59	73	78	49	77	56	98	78	78	78	78	78	57	84		91	84				10,0
SEISMICITY	Ns		70	70	55	40	40	70	70	70	70	90	90	90	90	90	90	90	70		70	00				
	Ws	6,2	51	51	40	29	29	51	51	51	51	66	66	66	66	66	66	66	51		51					7,3
TRANSMISSION	Ns		5	6	7	8	7	6	6	5	4	4	3	3	3	3	4	4	7		7	10				
	Ws	7,5	39	47	55	62	55	47	47	39	31	31	23	23	23	23	31	31	55		55	78				7,8
WATER ASPECTS	Ns		3	2	2	4	8	5	6	5	5	6	6	6	8	7	5	8			7	10				
	Ws	3,7	16	11	11	21	42	27	32	27	27	32	32	32	42	37	27	42			37	53				5,3
SECURITY	Ns		10	9	7	7	4	7	6	4	6	8	4	3	2	2	3	3	2		2	6				
	Ws	6,2	62	56	43	43	25	43	37	25	37	50	25	18	12	12	18	18	12		12	37				6,2
SENSITIVE ECOLOGICAL COMPONENTS	Ns		85	80	77	75	95	95	89	71	94	96	87	88	88	88	94	92	100		95	97				
	Ws	7,5	57	54	52	50	64	64	59	48	63	64	59	59	59	59	63	63	67		64	65				6,7
LAND/MARINE USES	Ns		78	64	68	74	78	69	84	76	92	91	50	51	48	100	90	82	72		72	60				
	Ws	10	50	40	44	47	50	44	54	49	59	59	32	32	31	64	58	52	26		46	38				6,4
DEMOGRAPHY	Ns		100	95	70	60	70	20	20	100	40	40	35	20	20	35	35	80	35		30	20				
	Ws	10	100	95	70	60	70	20	20	100	40	40	35	20	20	35	35	80	35		30	20				10,0
SOCIAL / PHYSICAL INFRASTRUCTURE	Ns		0.53	0.33	0.64	1.95	6.14	1.20	0.90	0.67	1.05	4.05	2.70	1.54	0.62	1.04	1.56	7.50	2.57		90	100				
	Ws	10	5	3	6	18	58	11	8	6	10	38	26	14	6	10	15	71	24		85	95				9,5
REGIONAL DEVELOPMENT (Priorities and Policies)	Ns		1.43	1.43	3.33	10	14	1.43	5.24	5.2	5	5	5	5	2	2	2	5		5	1.4					
	Ws	1,2	3	3	8	23	3	3	12	12	12	12	12	12	12	5	5	5	13		13	3				2,3
		TOTAL Normalized total	536	505	469	449	500	443	421	487	423	552	428	391	380	453	458	515	470		532	532				
		Ranking	2	5	9	12	6	13	16	7	15	1	14	17	18	11	10	4	8		3	3				

ONDERSOEK NA KERNKRAGSTASIE TERREINE
 IDENTIFISERING VAN STREKE



- I
- II
- III
- IV
- V

- Ander lande/state
- Sekuriteit
- Seismologies
- Demografies
- Water
- Geskik & TRANSMISSIE