CONFIDENTIAL

Application for radio frequency spectrum licenses for International Mobile Telecommunications (IMT) spectrum bands in the ranges of 703 – 790 MHz (“IMT700”), 790 – 862 MHz (“IMT800”), 2500 – 2690 MHz (“IMT2600”), and 3400 – 3600 MHz (“IMT3500”)

Volume 2 of 3

28 December 2020

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APPENDIX B STRUCTURE AND DOCUMENT MAPPING

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APPENDIX B

CONTEXT

OVERVIEW OF THE BROADBAND MARKET IN SOUTH AFRICA

Connectivity landscape in South Africa

Despite progress, the state of broadband in South Africa remains under-developed and marked by low levels of digital inclusion, broadband availability and affordability

The overall demand of broadband connectivity in South Africa has increased, particularly in recent years with headroom for increased and improved broadband connectivity. As illustrated in Figure 1, South Africa experienced double-digit year-on-year data growth of approximately 17% Compound Annual Growth Rate (CAGR) from 2011 to 2019; this growth has mimicked global trends with a strong migration from voice to data. The COVID-19 pandemic has further accelerated this growth in 2020, with growth mainly attributable to the "Work/study from Home" (WFH) practice and an increase in consumers' uptake of video conferencing, video streaming, social networking activity, online shopping, and gaming.

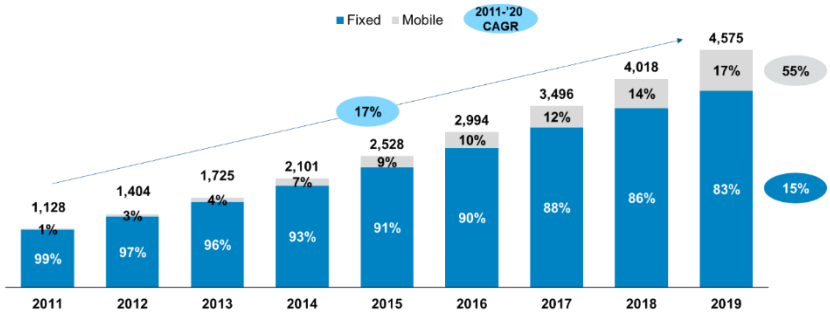

Figure 1 Composition of SA data traffic, 2011-2020 (%, PB)[6]

South African Mobile broadband (MBB) has experienced significant growth with an exponential 55% CAGR in mobile traffic (refer to Figure 1 above). The mobile technology landscape in South Africa has rapidly evolved from 2G to next generation technologies, such as, 3G and 4G, which now have a population coverage of 99.7% and 92.8% respectively[7]. In addition, mobile operators are now introducing 5G commercial offerings and conducting 5G use case trials.

Whilst this has taken place at a faster rate than other countries in Africa, the lack of spectrum, especially to market challengers, has hampered efficient technology deployment in South Africa. Therefore, despite progress, broadband connectivity within South Africa remains underdeveloped and is characterised by the poor quality of broadband availability:

- Fixed broadband penetration is low with only two connections per 100 people[8], equating to approximately 15% of the global average
- Despite the 92.8% 4G / LTE population coverage, more than 56% of subscribers remain only 3G enabled, refer to Figure 2

6 IDC
7 ICASA, 'The State of the ICT Sector Report in South Africa 2020'
8 World Bank, 'Fixed broadband subscriptions (per 100 people)'

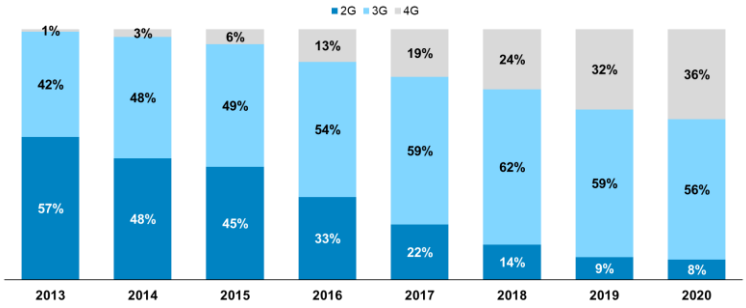

Figure 2 South Africa's technology evolution, by subscribers (2013 to 2020) (%)[9]

- The average data consumption per smartphone user of 1.2 GB/month[10] is approximately 17% of the global average[11]
- Rural areas remain less developed with limited internet access; household mobile internet access is as low as 27% in rural areas of some provinces[12]; and in many cases there is limited or no 4G / LTE network coverage
- South Africa's mobile network performance lags that of global operators, ranking 69th of 121 in the Network Readiness Index[13] measure of access to technology
- It is widely recognised that both broadband connectivity and digitisation are key to ensure that countries advance their digital economies. South Africa is ranked 59th of 63 by the IMD Digital Competitiveness Index technological framework, indicating a high level of immaturity in preparation for digital service provision[14]

A key contributing factor to the poor state of broadband has been stated as the historically high data prices offered by the entrenched Mobile incumbents viz.; MTN and Vodacom. Figure 3 below refers to World Bank analysis that concludes the bottom eight socio-economic deciles in South Africa cannot afford broadband; with connectivity packages greater than 5% share of income per capita being categorised as unaffordable[15].

9 TeleGeography, 'Globalcomms database – South Africa'
10 TeleGeography, 'Globalcomms database – Data Traffic'
11 Ericsson, 'Mobile data traffic outlook'
12 ICASA, 'The State of the ICT Sector Report in South Africa 2020'
13 Portulans Institute, 'Network Readiness Index' – Ranks countries across mobile & handset prices, households internet access pen., 4G mobile network coverage, FBB subs, international internet BB, internet access in schools
14 IMD 'World Digital Competitiveness Ranking 2019' – Ranks countries across their ability to meet business requirements through voice & data, 3G & 4G markets, wireless BB and penetration, no. of internet users per 1,000 people, average internet bandwidth speed & manufactured exports'
15 World Bank 'Broadband affordability – We're still not there yet'

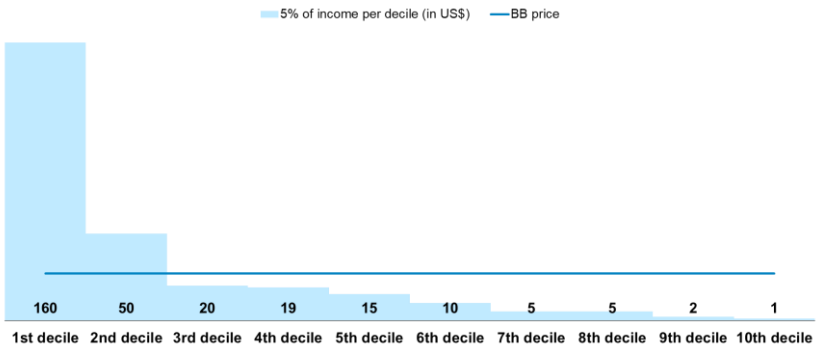

Figure 3 Broadband affordability in South Africa

In addition, the average historic price of 1GB in South Africa has been 70% higher than the African median price, placing South Africa's pricing at 27th out of 36 countries across Africa. This comparison is shown in Figure 4 and in Figure 5. More recent Competition Commission (CC) recommendations have exerted pressure on MTN and Vodacom to reduce data prices by at least 30%[16]

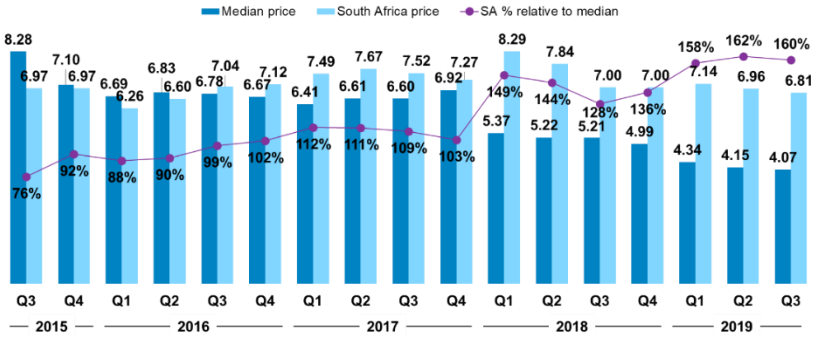

Figure 4 Comparison of 1GB price in South Africa versus 36 African countries (USD)[17]

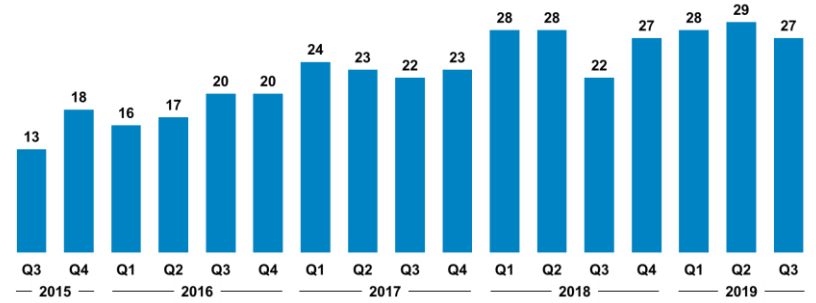

Figure 5 South Africa's ranking for 1GB price against 36 African countries[18]

Progress in delivery of affordable broadband in South Africa has been stunted for many years with the entrenched duopoly players MTN and Vodacom making it difficult for late market entrants to offer competitive products. Telkom Mobile's focus on driving a data-led strategy

16 Competition Commission
17 Competition Commission, 'Data services market inquiry 2019'
18 Competition Commission, 'Data services market inquiry 2019'

and market proposition has helped disrupt this. Telkom Mobile has been transformational in driving down the cost of data in South Africa by providing value-rich broadband products and services to customers.

Economic impact of broadband access

Broadband access and digital inclusion are globally recognised drivers of economic growth and equitable societies. A recent Google and IFC study correlates a 10% increase in internet mobile penetration to a 2.5% increase in GDP per capita in Africa, greater than the 2% expected global increase[19]. UNCTAD recognises the positive effects of greater digitisation on value creation[20,21] of which internet connectivity is a foundational enabler.

The South African government has set an agenda for growth and equitable development as part of the National Development Plan (NDP) and this includes increasing employment from 13 million to 24 million by 2030. Achieving these targets is becoming increasingly reliant on ubiquitous and affordable broadband, which will be accelerated with the promotion of sustainable competition.

Role of wireless technology in driving South Africa's digital inclusion

Wireless technology will be the primary and most feasible means to deliver upon national broadband objectives

Wireless technology will be paramount to rapid and feasible delivery of affordable, high quality broadband to all South Africans (rural and urban). The evolution of wireless technology has enabled operators globally to rapidly deploy low-cost broadband via mobile and Fixed Wireless Access (FWA) as a viable, cost effective network deployment strategy to enable broadband across the country.

Telkom has played a critical role in the establishment of the fixed wireless access market, by being at the forefront of the products servicing this segment of the broadband markets - bringing connectivity to the underserved market at scale and a value compelling price point.

19 Google and the International Finance Corporation, 'e-Conomy Africa 2020'
20 United Nations Conference on Trade and Development, 'Digital economy report 2019'
21 Value creation relates to productivity, value add, employment, income, and trade

KEY MESSAGES

- Despite positive growth and overall progress made through infrastructure expansion, the state of broadband connectivity in South Africa remains under-developed, marked by low levels of digital inclusion, broadband availability and affordability fuelled by mobile market concentration
- Broadband access & digital inclusion are major enablers to economic growth and an equitable society
- Wireless technology will continue to be the primary means to deliver upon national broadband objectives to drive broader digital inclusion, economic and societal growth in South Africa
- However, the dominant duopoly of MTN and Vodacom have for many years resisted transforming the delivery of affordable broadband access in South Africa
- Instead, it has required the entrance of smaller operators to introduce more value-rich products into the South African mobile market for the benefit of consumers
- Telkom Mobile's data strategy and market proposition, in particular, have been transformational in driving down the cost of data in the South Africa, providing more value for customers

IMPACT OF COVID-19 ON THE TELECOMMUNICATIONS SECTOR IN SOUTH AFRICA

COVID-19 has widened the digital divide, increasing inequality and cementing the criticality of broadband as an economic and social enabler

COVID-19 has further widened the Digital Divide[22] for the underserved. The criticality of broadband access was put into the spotlight during the pandemic. South Africa had hitherto experienced delays with making spectrum available and in response to the pandemic made available temporary additional spectrum allocations to operators to improve access and ease network congestion.

Several common themes with a direct bearing on spectrum assignment have emerged since the outbreak of the pandemic and have relevance for the local market:

- As lockdown regulations prescribed a shift to remote working and service delivery; **high quality and affordable broadband became an essential service**. Without broadband access, citizens would be excluded from parts of the labour market and access to education and health systems would be limited, resulting in potential lifelong disadvantage
- **The Digital Divide has widened**. In parallel, to achieve the NDP targets it is even more reliant on ubiquitous availability of affordable broadband. Broadband acceleration is key, for in the absence of this, society and the economy will suffer rising levels of inequality and deprivation
- **Effective and sustainable competition between networks is essential**. South Africa had already entered into a regressive economic growth period and this became exacerbated during the pandemic, triggering increased levels of unemployment in the country. Customers including Small and Medium Enterprises (SMEs) have become more financially constrained; impacting on their ability to afford broadband services. To emerge out of this situation and to encourage the growth of sustainable market

22 Refers to lack of access to connectivity and digital services

competition is required to promote efficiencies, exert downward pressure on prices, and ensure that operators are continually investing in network infrastructure and new technologies

- **Spectrum is an indispensable component** in ensuring affordable and effective broadband access. The majority of South Africans access broadband via wireless technologies. Therefore, an equitable distribution of spectrum resources is a **key determinant of market dynamics and thus broadband access**

Telkom played a critical role throughout COVID as an essential provider of broadband connectivity (fixed line, fixed-wireless and mobile services), enabling significant sectors of the economy to continue functioning. Telkom Mobile specifically, rapidly deployed the allocated temporary COVID spectrum, which provided Telkom Mobile access to sub-1 GHz spectrum for the first time, which, in conjunction with capacity bands allocated, resulted in significantly enhanced network coverage and throughput, despite traffic increases (refer to III-Construction of Network, section 1.1.2. for details on deployment and overall network coverage and throughput improvements). This is corroborated by a recent MyBroadband article which states that Telkom Mobile network had shown between 34% - 62% increase in download speeds because of the temporary spectrum deployment.

In addition, we worked closely with Samsung, the National Department of Health (NDOH), the National Institute for Communicable Diseases (NICD) and the Council for Scientific and Industrial Research (CSIR) to develop a novel track and trace solution to identify people who may have contracted COVID-19. This system is designed to consider South Africa's unique circumstances which include high-income inequality, poverty, and overcrowding.

KEY MESSAGES

- COVID-19 has widened the Digital Divide and increased inequality. The corrective impact of broadband as an economic and social enabler for all South Africans cannot be overstated
- The intervention by the South African government to allocate temporary spectrum is welcomed by industry. However, a more permanent solution for spectrum assignment on an equitable and pro-competitive basis is required, placing importance on the upcoming spectrum auction process
- Telkom played a critical role throughout COVID-19 as an essential provider of broadband connectivity, using the temporary COVID-19 spectrum allocated to rapidly enhance network coverage and throughput

COMPETITIVE LANDSCAPE

Highly concentrated mobile market

The South African mobile market remains highly concentrated, dominated by MTN and Vodacom

It is widely accepted that the South African Mobile market is highly concentrated, dominated by Vodacom and MTN. Despite inroads made by Telkom Mobile and other smaller operators, South Africa's mobile market remains highly concentrated; scoring 3,413 on the Herfindahl–

Hirschman Index[23], and is significantly above the 2,500-threshold considered as highly concentrated.

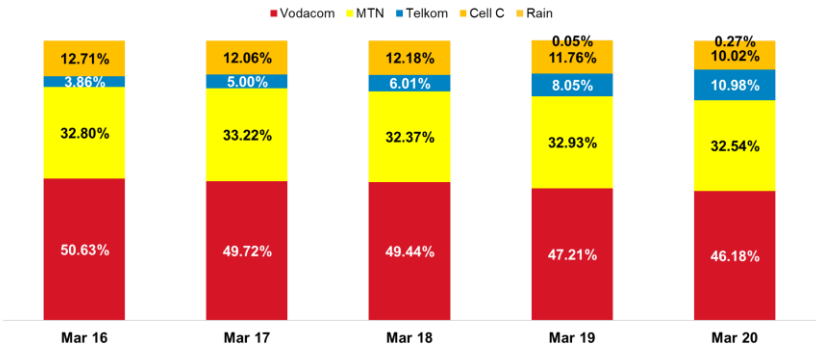

Figure 6 South African mobile market revenue share (%)

Vodacom and MTN have a combined revenue market share of almost 80% as can be seen in Figure 6. Late entrants, Cell C and Telkom Mobile, have struggled with neither managing to meaningfully grow revenue market share. Importantly, when collectively analysing revenue share with market subscriber shares as shown in Figure 7, it also becomes evident that the smaller operators have lower ARPUs thus placing emphasis on smaller players being able to sustainably exert competitive pressure in the market.

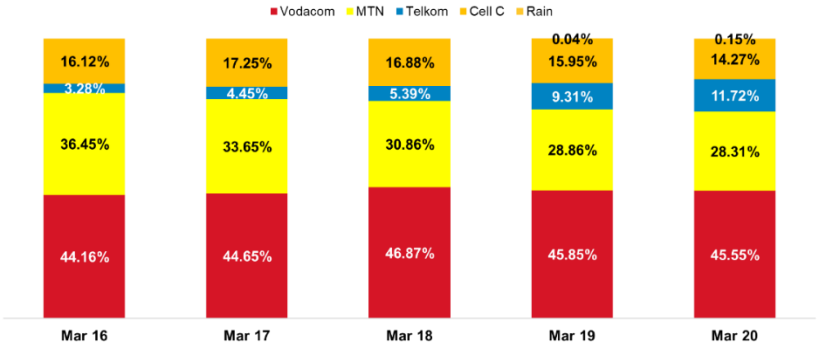

Figure 7 South African mobile market subscriber share (%)

The mobile market, hamstrung by the entrenched duopoly and constrained operating conditions due to sub-optimal spectrum allocation, has had limited growth with a 5.6% CAGR from 2015-2019, experiencing comparatively low data growth of 38% CAGR for this period versus the global average of 69%. As mentioned in the earlier section, Connectivity landscape in South Africa, a key contributor to low growth is the prohibitive data pricing offered by the duopoly, discriminating against entry-level customers. This is illustrated in Figure 8 and Figure 9[24], also showing that the pricing exceeds benchmarks.

23 Herfindahl–Hirschman Index is a well-known measure of market concentration
24 Competition Commission, 'Data Services Market Inquiry 2019'

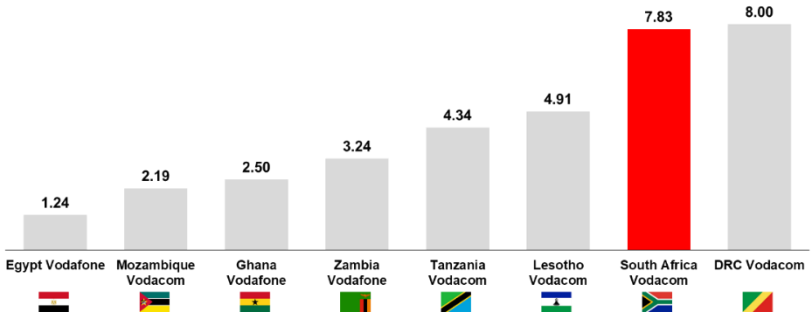

Figure 8 Vodafone 1GB tariffs across Africa, 2019 (USD)

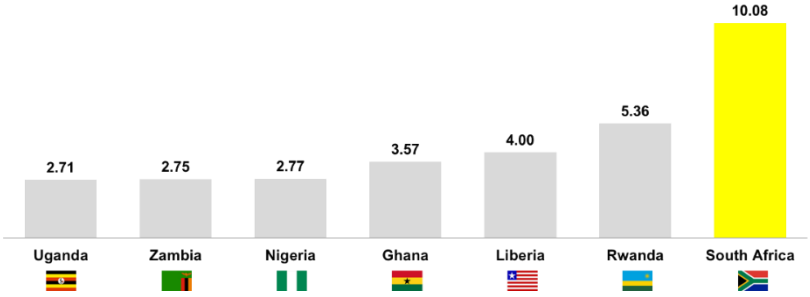

Figure 9 MTN 1GB tariffs across Africa, 2019 (USD)

In addition to above average tariffs, Figure 10 [25] illustrates the significant discrepancies evident between the implied price/GB across bundle sizes, thereby further discriminating against entry-level consumers. Increasing competition needs to be a top ICASA priority to improve digital inclusion by ensuring ubiquitous access to affordable broadband for all.

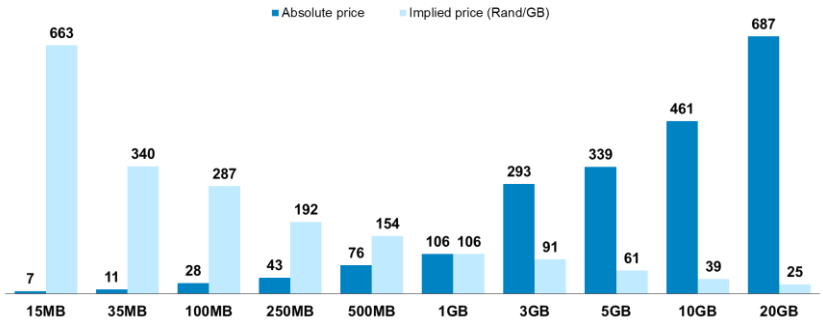

Figure 10 Example of Vodacom's price discrimination by bundle size, 2019 (ZAR)

Importance of spectrum as a competition enabler

Unequal spectrum distribution, particularly in <1GHz band, is a key inhibitor of sustainable competition and broadband penetration, exacerbated by network sharing arrangements and temporary COVID-19 spectrum assignments

Telkom Mobile, Cell C and MVNOs have found it difficult to compete at sustainable, profitable levels with incumbent MNOs. The main barriers are high capital investments to improve deployment of the network to ensure good quality and coverage, sub-optimal spectrum

25 Competition Commission, 'Data Services Market Inquiry 2019'

holdings and barriers such as site acquisition and termination rates. These characteristics have entrenched the dominance of the two large operators.

The importance of addressing structural issues are reflected in government policy. In the 2012 NDP, SA Connect, 2016 Integrated ICT Policy and 2019 Ministerial Policy and Policy Direction, recognition of the key role of competition in delivering policy objectives is a core theme. Despite good policy intent, implementation in the telecommunications sector is less than optimal. In addition, lack of competition and long-term structural problems have been at the centre of recent regulatory inquiries. The 2019 Competition Commission's Data Services Market Inquiry and MBB Services Inquiry both concluded structural advantages have enabled the incumbents to maintain their dominant positions; and resultantly competition and pricing remains ineffective.

Inadvertent of policy objectives, four network sharing arrangements, summarised in Table 1, between Vodacom, MTN and smaller operators, provide incumbents control over significant amounts of additional spectrum (refer to Figure 11) without accompanying spectrum licenses.

Table 1 Details of Vodacom and MTN's roaming agreements with smaller operators

	Operator roaming	Operator roamed upon	Spectrum band	Spectrum amount
1.	Vodacom	Rain	1 800 & 2 600 MHz	2x12MHz, 10 MHz and 20 MHz
2.	MTN	Liquid Telecom	1 800 MHz	2x12MHz
3.	MTN	Cell C	900, 1 800 & 2 100 MHz	22, 24 & 30 MHz
4.	Vodacom	Liquid Telecom	3 500 MHz	56MHz

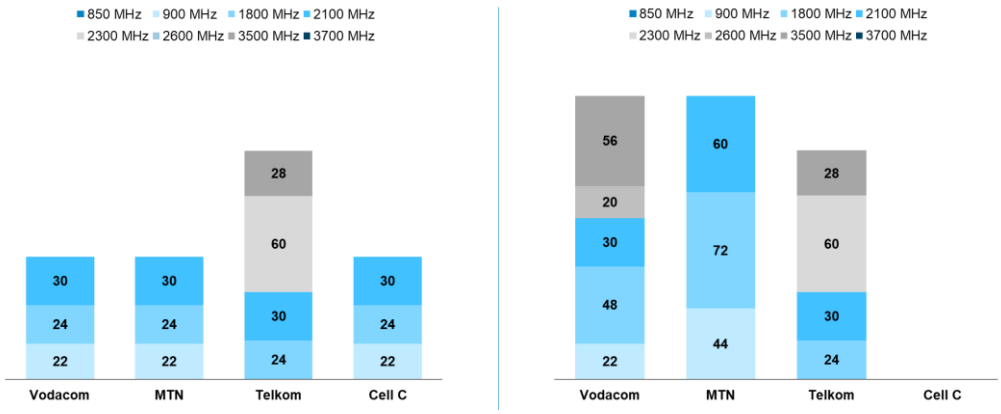

Figure 11 Comparison of spectrum holdings before (left) and after (right) the spectrum agreements

This additional spectrum has further enabled already dominant MNOs to retain and attract customers by delivering a higher Quality of Service (QoS). QoS is an area in which smaller operators have consistently struggled to compete, as illustrated in Table 2, leaving only MTN and Vodacom consistently competing for best network status.

Table 2 Opensignal network quality metric category winners, 2017 – Jan 2020[26]

	2017	2018	2019	2020
Download speed 4G	MTN/VC	MTN/VC	MTN	MTN
Download speed 3G	VC	VC	VC	Cell C
Download speed overall (experience)	MTN/VC	MTN/VC	MTN/VC	MTN
Latency 4G	VC	MTN/VC	VC	MTN
Latency 3G	VC	VC	VC	VC
Availability 4G	MTN/VC	MTN	MTN	MTN
Video experience	-	-	MTN/VC	MTN
Upload speed experience	-	-	VC	MTN/VC
Voice app experience	-	-	-	VC

The COVID-19 spectrum allocation has exacerbated the uncompetitive dynamic, by further increasing spectrum available to MTN and Vodacom. In addition, this has allowed incumbents to launch 5G services using the 3 500 MHz COVID-19 temporary spectrum; allowing the sign-up of premium early adopting 5G customers and establishing a powerful 5G brand. Prolonged market distortion resulting from unequal spectrum assignments will have long-term negative consequences unless significant pro-competitive measures are taken to address the situation.

KEY MESSAGES

- The MTN-Vodacom duopoly is a key inhibitor of broadband growth and affordability in South Africa - therefore, addressing the duopolistic market structure should be one of ICASA's top priorities
- Significant barriers to smaller competitors remain, who if adequately enabled through equitable spectrum, can play an important role in driving digital inclusion by improving broadband coverage and affordability
- Unequal distribution of sub-1GHz spectrum is a critical barrier to competition in the South African mobile market
- The Vodacom and MTN dominance has increased further due to the four network sharing arrangements and temporary COVID-19 spectrum assignments
- Market distortion because of unequal spectrum assignments will have long-term negative consequences for the overall South African Mobile sector unless significant pro-competitive measures are taken to address this situation

26 Opensignal

TELKOM MOBILE'S TRANSFORMATIVE ROLE IN SOUTH AFRICA'S MOBILE MARKET

Overview of Telkom Mobile

Despite being the 4th entrant and having a clear disadvantage with no sub-1GHz spectrum, Telkom Mobile has been a transformative force underpinned by a disruptive data-1st network strategy and ambitions to drive digital inclusion

Telkom Mobile has been a significant transformative force in the market underpinned by a disruptive "data-first" strategy. This data-lead commercial strategy has informed the network design, as shown in Figure 12, 91% of sites were upgraded to 4.5G and more than 70% of sites were equipped with fibre backhaul.

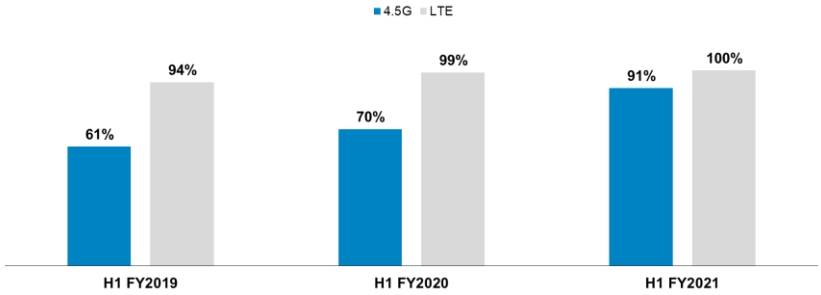

Figure 12 Telkom Mobile site type evolution, 2019-2021 (%)

Despite the constraint of lack of sub-1 GHz spectrum access (as a result expanding coverage and providing customers with good coverage at existing sites is more expensive when compared to the duopoly), Telkom Mobile's data-leadership strategy is beginning to bear fruits, with Telkom Mobile continuously growing its base and slowly gaining market share.

From a subscriber perspective, we have increased our subscriber market share by 7+pp over the three years ending Q1 2020 (refer to Figure 7 South African mobile market subscriber share (%)), with mobile data subscribers accounting for 70% of our subscriber base. This has resulted in data revenue accounting for +70% of revenue, illustrated in Figure 13, 1.7x and 2.1x greater than that of Vodacom and MTN, respectively. Figure 14 provides evidence of Telkom Mobile's positive EBITDA evolution.

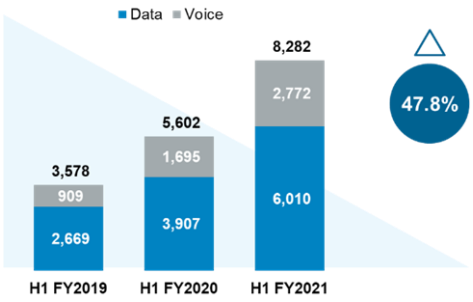

Figure 13 Telkom Mobile service revenue composition (ZAR m)[27]

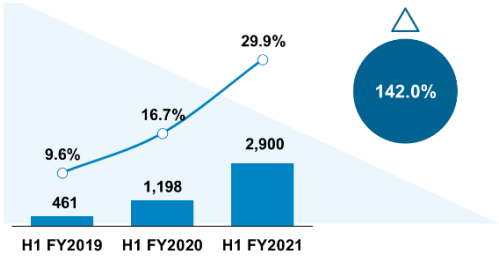

Figure 14 Telkom Mobile EBITDA/margin evolution (ZAR m, %)

In addition, Telkom Mobile has led in the delivery of entry-level, value-rich broadband services to both urban and rural South Africans with a focus on FWA. Telkom Mobile launched the first dedicated large bundle FWA product in 2012 via 2 300 MHz, and subsequently launched the first unlimited LTE products in South Africa. Our LTE FWA network covers more than 50% of the population; and we continue to offer the most diverse and affordable range[28] of FWA products and contracting options including portable FWA and MiFi devices for on-the-go connectivity.

Based on the current Tier 2 MNO challenges and Telkom Mobile's performance, Telkom Mobile is the only credible operator that has an opportunity to still challenge the duopoly with successful outcomes that will benefit the overall market. Future effective market competition is therefore dependent on enabling the success of Telkom Mobile

KEY MESSAGES

- Despite being the 4th entrant and constrained with no access to sub-1 GHz spectrum, Telkom Mobile has been a transformative force in the South African mobile market underpinned by a disruptive data-first network strategy and ambitions to drive digital inclusion for all
- In a short period of time and facing serious headwinds, Telkom Mobile has emerged as the only credible player with the potential to disrupt the entrenched duopoly; however, this requires the right spectrum enablement

UPCOMING SPECTRUM AUCTION

The upcoming spectrum auction is an important opportunity for ICASA to promote competition within South Africa's mobile sector

Spectrum is a vital resource for MNOs - without it, operators cannot compete sustainably based on network economics principles. This has been especially apt in the Telkom Mobile scenario. The GSM Association (GSMA) recognises the importance of spectrum across low, mid, and high bands in delivering widespread coverage and supporting 5G use-cases. 20 MHz of unpaired / paired low-band, 80-100 MHz of contiguous mid-band and 800 MHz of contiguous high-band (above 6GHz) is identified as sufficient for 5G service provision[29].

27 Telkom H1 FY2021 presentation
28 Telkom's prepaid FWA offerings are the most affordable in the South African market
29 GSMA, '5G spectrum – GSMA public policy position'

The upcoming spectrum auction presents ICASA with an opportunity to address the South African mobile market, promoting competition, boosting investment, productivity, and growth - and therefore key to enabling the long-term vision of being a clear data competitor across 4G, 5G and beyond by 2030.

KEY MESSAGES

- Telkom Mobile will not achieve its disruptive ambitions without access to additional spectrum
- Telkom Mobile requires sub-1 GHz spectrum to enable efficient network deployment, improve customer experience; and capacity spectrum to sustainably enable our data-first strategy.
- Addressing our coverage and capacity constraints will allow Telkom Mobile to reduce reliance upon costly roaming services to deliver high quality connectivity services to our customers and avoid the risk of churn

Application for radio frequency spectrum licenses for International Mobile Telecommunications

VOLUME 2 OF 3

APPENDIX B

I - APPLICANT DETAILS

I - APPLICANT DETAILS

No.	Information requirement	Section[30]	Pages
1	**NAME, ADDRESS, IDENTIFICATION NUMBER TELEPHONE NUMBER AND EMAIL ADDRESS OF APPLICANT:** **IF THE APPLICANT IS A SOUTH AFRICAN CITIZEN A COPY OF THE IDENTITY DOCUMENT SHALL BE SUBMITTED TO THE AUTHORITY; AND** **IF THE APPLICANT IS A FOREIGNER A COPY OF THE PASSPORT AS WELL AS PROOF OF STATUS SHALL BE SUBMITTED TO THE AUTHORITY** **IN THE CASE OF COMPANIES:** **A COPY OF THE COMPANY'S REGISTRATION CERTIFICATE; AND** **THE NAME AND ADDRESS OF DIRECTORS AND/ OR PRINCIPAL EXECUTIVES**	**I-1** Vol 1: Section D	2**0**
2	**ANNUAL REPORT OF THE APPLICANT AND ITS MAIN SHAREHOLDERS FROM THE PREVIOUS THREE YEARS (WHERE AVAILABLE)**	I-2 Vol 1: **Annexure L.1**	20
3	**FULL PARTICULARS OF THE EXPERIENCE AND EXPERTISE OF THE APPLICANT, ITS PARTNERS, SHAREHOLDERS, SUPPLIERS AND CONTRACTORS IN THE BUSINESS**	**I-3** Appendix B-I.4	21, 267
4	**EXTENT OF BENEFICIAL OWNERSHIP OF THE APPLICANT BY HISTORICALLY DISADVANTAGED PERSONS: EXTENT OF BENEFICIAL OWNERSHIP BY WOMEN; EXTENT OF BENEFICIAL OWNERSHIP BY THE YOUTH; AND EXTENT OF BENEFICIAL OWNERSHIP BY THE DISABLED.**	**I-4** Vol 1: Section F	21

[30] Refers to Volume 2, unless specified otherwise

1. NAME, ADDRESS, IDENTIFICATION NUMBER TELEPHONE NUMBER & EMAIL, IN THE CASE OF COMPANIES: A COPY OF THE COMPANY'S REGISTRATION CERTIFICATE

1.1. Name, address, identification number, telephone number and email address of applicant:

Name: Telkom SA SOC Ltd

Address: 61 Oak Avenue, The Hub Building, Highveld Park, Centurion

Tel: +27 12 311 3576

Email: SiphoMCEO@telkom.co.za

1.2. If the applicant is a South African citizen a copy of the identity document shall be submitted to the Authority; and

Not applicable

1.3. If the applicant is a foreigner a copy of the passport as well as the proof of status shall be submitted to the Authority; and

Not applicable

1.4. In the case of companies, a copy of the Company's registration certificate:

A copy of Telkom's registration certificate is included in Volume 1 of 3 Section D.

2. ANNUAL REPORT OF THE APPLICANT AND ITS MAIN SHAREHOLDERS FROM THE PREVIOUS THREE YEARS (WHERE AVAILABLE)

2.1. Annual reports

The annual reports for 2018, 2019 and 2020 are attached to Volume 1 of 3 (See Annexure L.1).

2.2. Name and address of directors and/or principal executives:

Refer to Appendix B-I.1 and Appendix B-I.2 and to Volume 2 of 3 for details pertaining to Telkom's directors and exco members, respectively.

3. FULL PARTICULARS OF THE EXPERIENCE AND EXPERTISE OF THE APPLICANT, ITS PARTNERS, SHAREHOLDERS, SUPPLIERS AND CONTRACTORS IN THE BUSINESS

Please refer to Appendix B-I.4. for details

4. EXTENT OF BENEFICIAL OWNERSHIP OF THE APPLICANT BY HISTORICALLY DISADVANTAGED PERSONS: EXTENT OF BENEFICIAL OWNERSHIP BY WOMEN; EXTENT OF BENEFICIAL OWNERSHIP BY THE YOUTH; AND EXTENT OF BENEFICIAL OWNERSHIP BY THE DISABLED.

Details pertaining to Telkom ownership structure is provided in Volume 1 of 3, Section F ("Ownership structure").

Application for radio frequency spectrum licenses for International Mobile Telecommunications

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APPENDIX B

II – DESCRIPTION OF SERVICES

II – DESCRIPTION OF SERVICES

No.	Information requirement	Section[31]	Pages
1	**DESCRIPTION OF SERVICE TO BE PROVIDED**	**II-1**	24-27
2	**PROPOSED ANNUAL COVERAGE, ROLL-OUT INCLUDING THE EXACT AREAS AND LOCATION COVERED**	II-2	27-34

[31] Refers to Volume 2, unless specified otherwise

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Market recognition of Telkom Mobile's value-rich products and service

The Tarifica Score[32] has consistently recognised Telkom Mobile's outperformance of its peers with regards to the value provided to customers across our products and services portfolio:

- Since September 2018, Telkom Mobile has led all operators in total number of postpaid awards, driven by our lowest price per GB in most categories (refer to Figure II - 1)

[32] The Tarifica Score is a comprehensive globally established model used to measure consumer value for mobile and fixed line telecommunication plans relative to all other offers by peer group providers operating in the same country

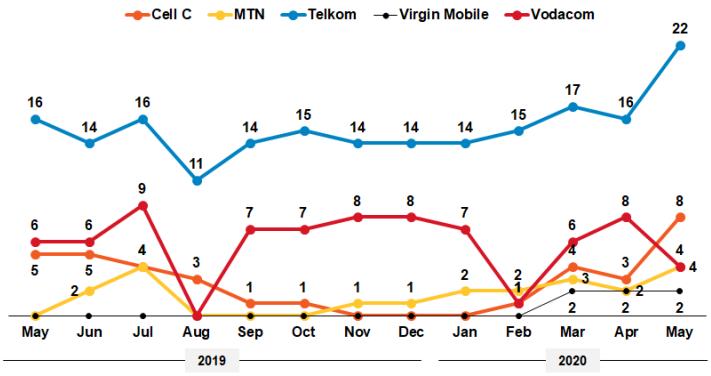

Figure II - 1 No. of postpaid Top Value Plan Awards per month for all operators

- For prepaid, Telkom Mobile has performed very well in the Top Value Plan awards (refer to Figure II - 2). We scored 93 points for our FreeMe 3 GB plan leaving a formidable 23-point scoring gap between the #1 and #2 positions

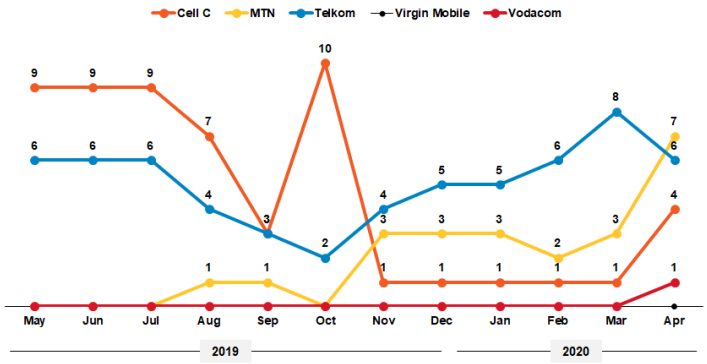

Figure II - 2 Number of Top value plan awards over a year period for all operators for prepaid

- In the Mobile Data-Only plans Telkom Mobile leads the category with a highly coveted 11 awards, due to our competitive SmartBroadband prepaid and postpaid plans (refer to Figure II - 3)

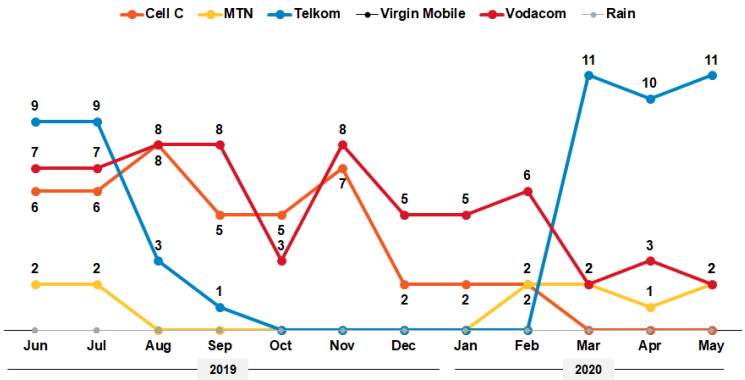

Figure II - 3 Top Mobile data-only Value Plan Awards in April 2020

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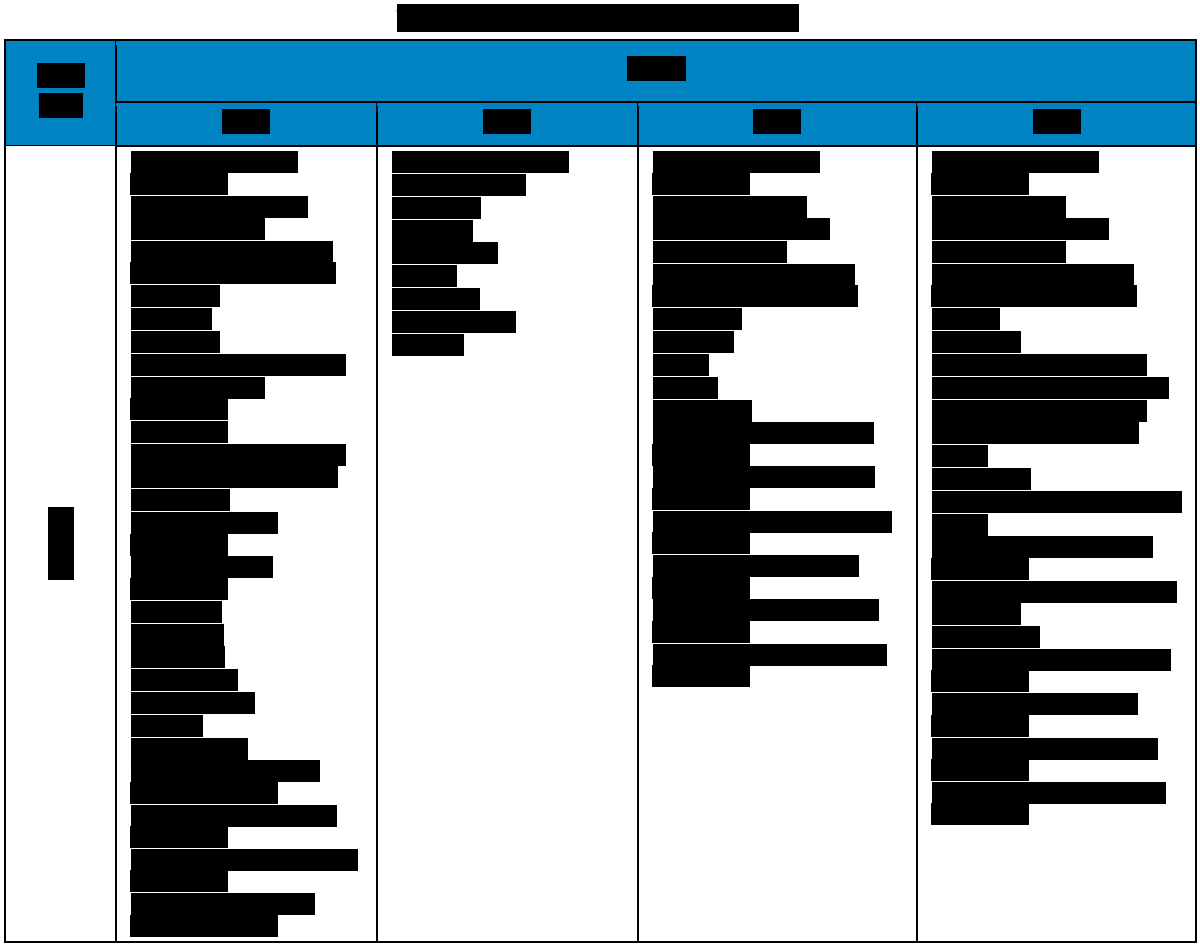
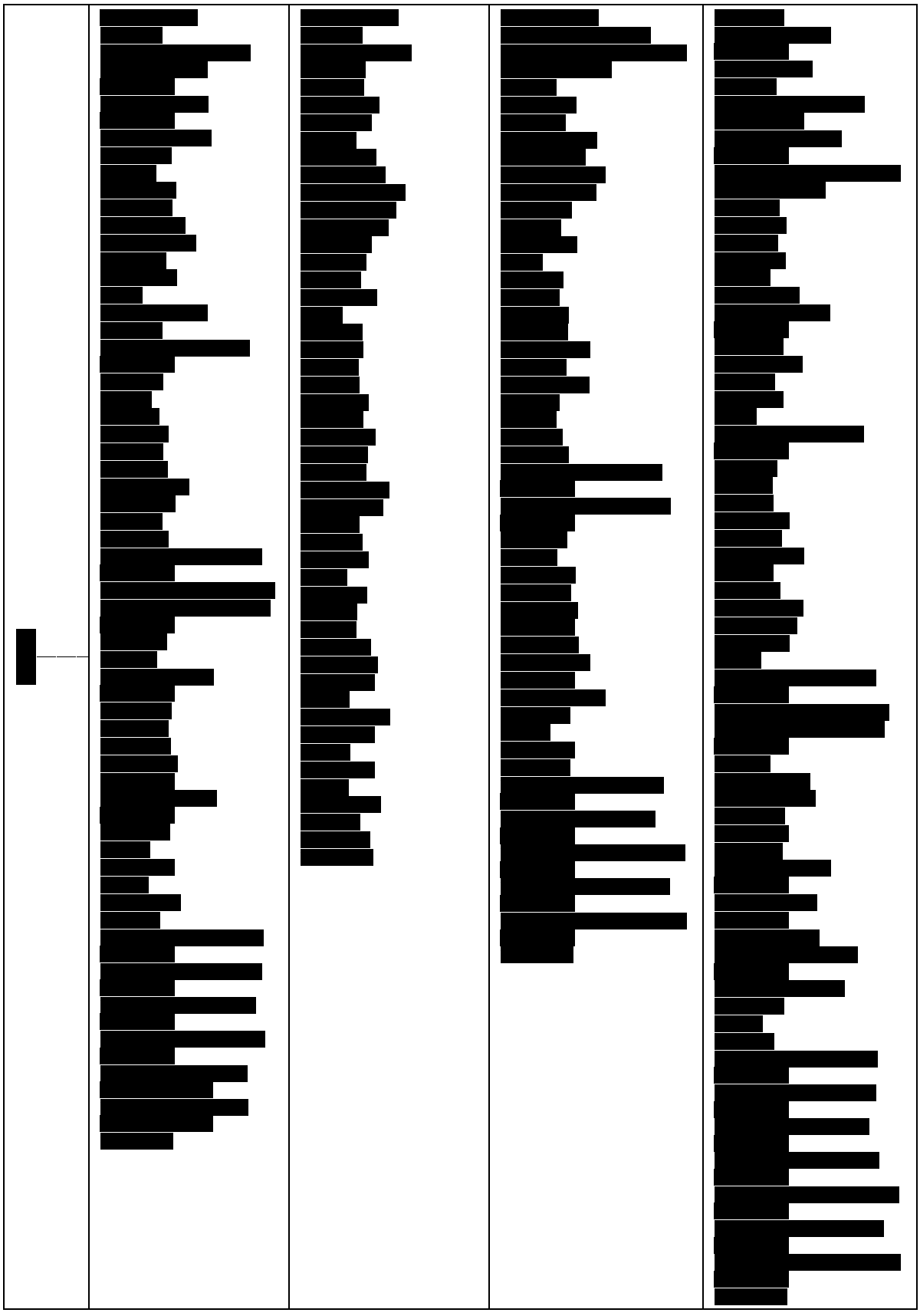
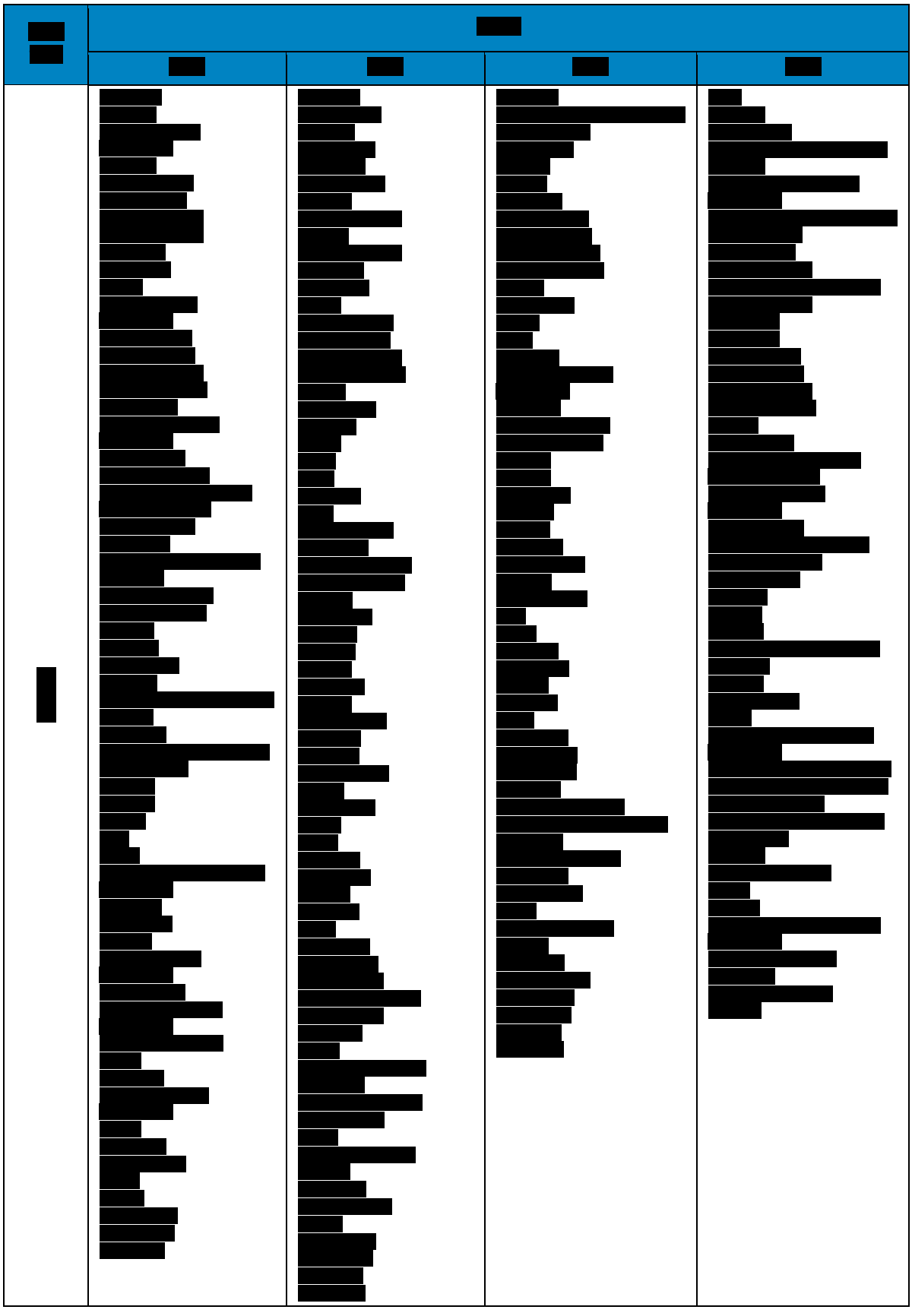
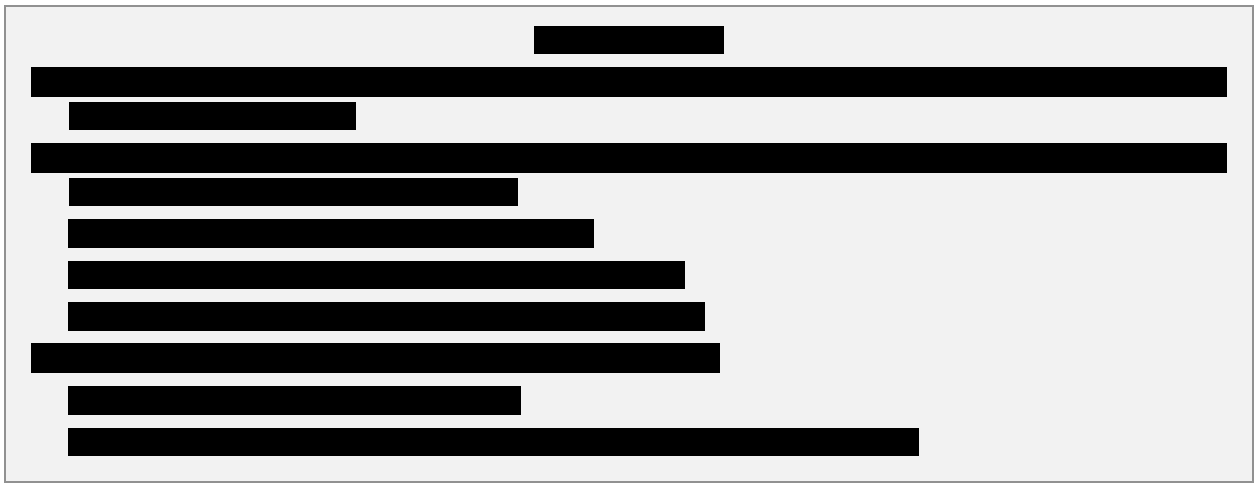








Application for radio frequency spectrum licenses for International Mobile Telecommunications

VOLUME 2 OF 3

APPENDIX B

III – CONSTRUCTION OF NETWORK

III – CONSTRUCTION OF NETWORK

No.	Information requirement	Section[34]	Pages
1	**AVAILABILITY AND EXPERIENCE OF PLANNING AND PROJECT MANAGEMENT CAPABILITIES REQUIRED FOR CONSTRUCTION OF THE NETWORK**	III-1	38-58
2	**MECHANISMS USED FOR THE PLANNING OF ANY RADIO COMPONENT OF THE NETWORK**	III-2	58
3	**PLANS TO ACQUIRE RESOURCES SUCH AS ACCESS TO SITES, OTHER PROPERTY, TECHNOLOGY, PERSONNEL AND CAPITAL**	III-3	58-65

[34]Refers to Volume 2, unless specified otherwise

EXECUTIVE SUMMARY

(1) Availability and experience of planning & project management capabilities

Telkom Mobile is well positioned to meet the ITA obligations with strong deployment credentials

Telkom Mobile's network deployment track-record clearly demonstrates our ability to effectively plan and deploy new mobile technologies and standards, and associated network upgrades. Three examples have been selected to evidence our capabilities:

1. Telkom Mobile's network roll-out: despite shorter timelines (being a 'younger network'), spectrum limitations and logistical constraints (e.g., physical access to sites, power issues etc.) in comparison to the two dominant MNOs, Telkom Mobile has achieved strong network coverage progress
2. Rapid network deployment of allocated COVID-19 temporary spectrum: we were provided access to sub-1 GHz spectrum for the first time as well as additional mid / high- band capacity spectrum. Deployment of the temporary spectrum by the Telkom Mobile Network Team enabled us to achieve rapid improvements in network coverage and performance, despite a surge in increased traffic attributable to COVID-19
3. Successful implementation of a complex Multi-Operator Core Network (MOCN) agreement with Vodacom: The tight execution timelines and complexity of the solution architecture and execution was achieved by the highly experienced Telkom Mobile Network Team working in partnership with the Vodacom team.

Our network roll-out is enabled by strong network planning and project management capabilities

Telkom Mobile has a well-defined three-step approach to network planning (1.2.1– Network deployment experience):

- Area prioritisation: prioritises areas for future network build informed by coverage demands, regulatory requirements and the business plan
- Theoretical RAN modelling planning: estimates number of required base stations using radio frequency propagation theory and modelling
- Detailed practical planning and roll-out: theoretical estimates are used as inputs to the detailed practical planning and roll-out processes

The Telkom Mobile team is made up of highly qualified engineers and project managers, with many years of relevant experience:

- Engineers with on average 15+ years' experience working on network deployment planning and execution
- Project Managers with an average of 13+ years of experience at Telkom, and 10+ years of project management experience working on large-scale infrastructure projects

(2) Mechanisms used for the planning of any radio component of the network

Telkom Mobile leverages leading state-of-the-art RAN modelling and planning tools

Telkom Mobile uses TEOCO's RAN planning tool for the modelling of detailed radio planning outputs. TEOCO is a leading provider of analytics, assurance, and optimisation solutions to more than 300 Communication Service Providers (CSPs) and Original Equipment Manufacturers (OEMs) worldwide. The tool is utilised to provide:

- RF coverage, capacity, cell parameter and neighbour planning for wireless and mobile cellular networks
- Planning multi-technology wireless networks across GSM, UMTS, LTE, and 5G all within a single project
- Accurate predict coverage
- Model traffic & dimension capacity
- Automate coverage mapping and reporting
- Multi-technology neighbor planning
- Planning for in-building systems and coordination with a carrier's macro network.
- End-to-end dimensioning of a network's radio, backhaul and core components, allowing engineers to plan upgrades and meet the demands of network traffic growth.

(3) Plans to acquire resources, e.g., access to sites, other property, technology, personnel, and capital

Telkom Mobile's full-suite capabilities required to roll-out and operate a mobile network are well established

Telkom Mobile deploys a mix of strategic insourced functions (e.g., strategy, planning, engineering, testing, operations management) and outsourced functions to suppliers (e.g., development, field operations, core operations).

Telkom Mobile has been the most aggressive operator in deploying new sites in South Africa over the last three years, deploying approximately 3,700 sites since 2017 as part of an accelerated roll-out campaign. Telkom Mobile's network deployment and operational capabilities are well established and used as the baseline for incremental improvements as roll-out intensity demands:

- Established network planning, deployment, operations, maintenance, as well as commercial capabilities and functions for Mobile RAN, Core and VAS Networks
- Key processes are well defined and documented to govern network operations, site acquisition, site, and property leasing, etc.
- Long standing relationships with a range of leading local and global vendors, enabling rapid procurement of standardised and customised equipment

Lastly, in preparation for the upcoming auction, Telkom Mobile has secured sufficient capital through a combination of internally generated cashflow sources, debt, and convertible debt.

1. AVAILABILITY AND EXPERIENCE OF PLANNING AND PROJECT MANAGEMENT CAPABILITIES REQUIRED FOR CONSTRUCTION OF THE NETWORK

1.1. Telkom Mobile's deployment experience

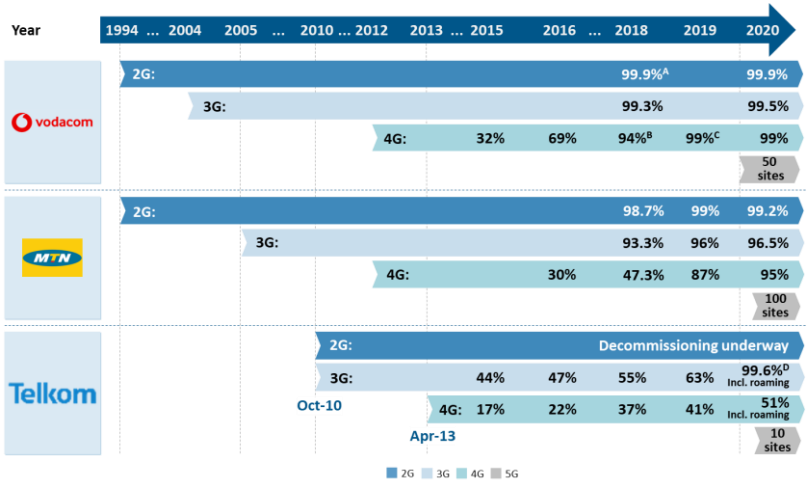
Telkom Mobile has a solid track record in network deployment and will bring this to bear in rolling out the expanded network to operate efficiently in the new spectrum bands. We have paid careful attention to both the design and implementation roll-out of the future network so that we meet the ITA coverage and throughput obligations. Three examples are provided to evidence our network deployment capabilities:

- Roll-out of the Telkom Mobile Network from 2010 to date,
- Our agility to rapidly deploy temporary sub-1 GHz COVID-19 spectrum allocated. It is noteworthy that this is the first allocation of sub-1 GHz spectrum to Telkom Mobile and our teams were able to configure the network and achieve a significant improvement in network performance in a short period of time, despite traffic increases, and
- Successful implementation of the complex MOCN agreement with Vodacom

1.1.1. Telkom Mobile's network deployment milestones:

Telkom Mobile launched in October 2010 as the 4th entrant in the market. The team was faced with an enormous challenge of needing to rapidly deploy network on a national basis, whilst working with a sub-optimal spectrum allocation. Despite these challenges, we achieved significant network coverage across South Africa in a shorter timeframe than the two dominant operators, as illustrated Figure III - 1. Telkom Mobile achieved this through the roll-out of 6,159[35] integrated mobile sites. Since 2017, we have aggressively deployed approximately 3,700 sites, doubling the deployment rate of the first six years.

[35] Integrated mobile sites measured as at H1 2021



NOTE: A98.9% rural, 99.9% urban, B59% rural, 94% urban, C83% rural, 99% urban, D Via Vodacom roaming agreement

Figure III - 1 South African operators' coverage evolution[36]

1.1.2. Temporary COVID-19 spectrum deployment

Telkom Mobile rapidly deployed the network to enable the temporary spectrum allocation (refer to Table III - 1 for Telkom's temporary spectrum assignment). This provided Telkom Mobile access to sub-1 GHz spectrum for the first time, which, in conjunction with other capacity bands allocated, has enhanced network coverage and throughput:

Table III - 1 Telkom assigned temporary COVID-19 spectrum

IMT Band	COV-19 Frequency Assignments	Operation
700	713-723MHz // 768-778MHz (2 x 10 MHz FDD)	National
800	801-811MHz // 842 – 852MHz (2 x 10 MHz FDD)	National
2 300[37]	2,360 – 2,380 MHz (1 x 20 MHz TDD)	National
2 600	2 600 – 2,640 MHz (1 x 40 MHz TDD)	National
3 500	3,428 – 3,440 MHz (1 x 12 MHz TDD)	National

[redacted]

[36] TeleGeography

[37] By including the spectrum in the 2 300 MHz frequency band in the temporary assignments ICASA has encroached upon the licence rights of Telkom in the 2 300 IMT band. Telkom re-farmed the portion of the band 2360-2387 MHz from FWA analogue systems to Fixed Wireless Access ("FWA") IMT systems by deploying 25 MHz for IMT. This was done under Telkom's existing spectrum licence issued to Telkom for the 2 300/2400 MHz frequency band (licence no. 00-536-928-2). We therefore do not recognise this as part of the temporary spectrum allocation.

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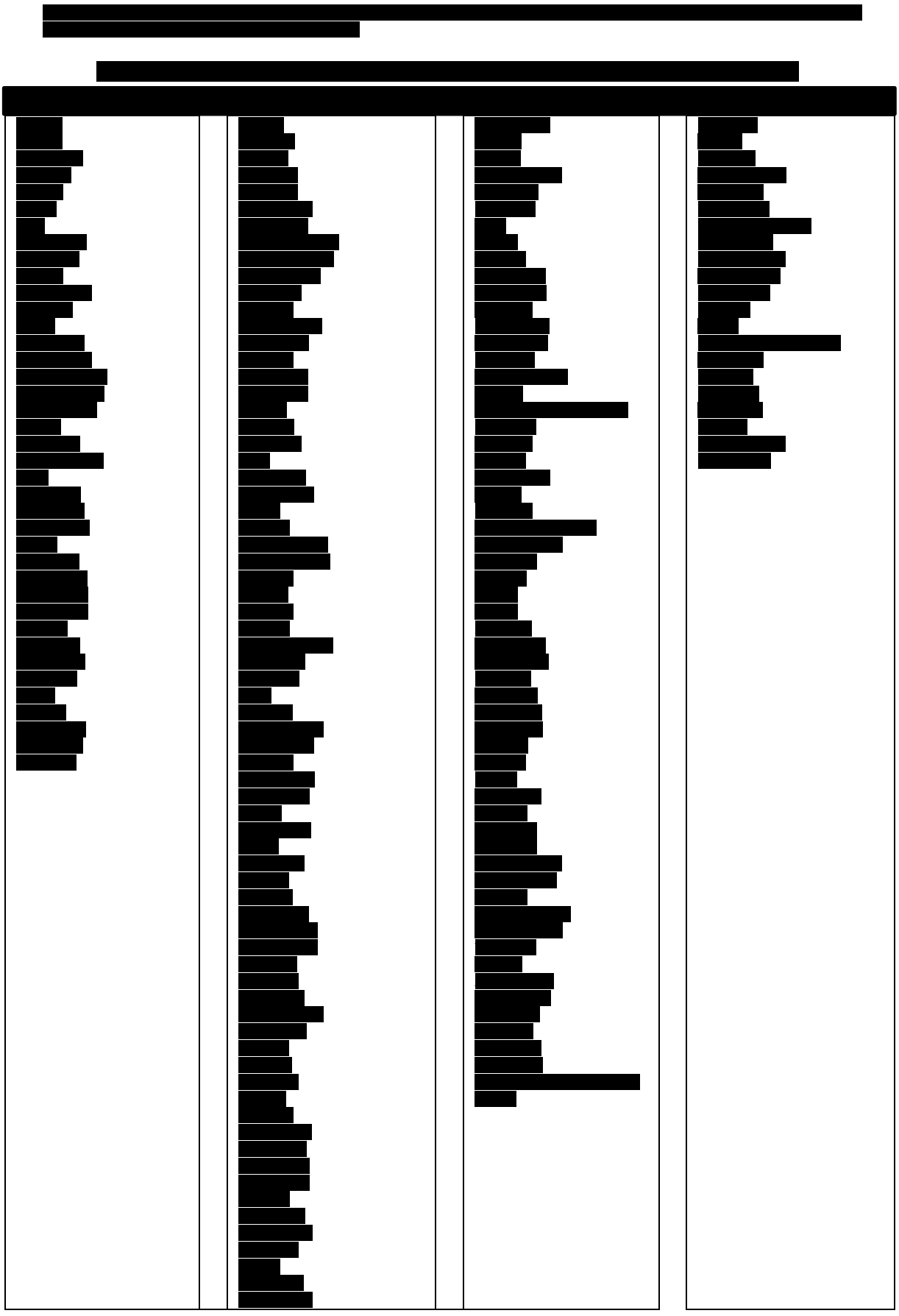

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Overall impact of temporary spectrum deployment:

Despite significant traffic increases, the temporary spectrum has enabled Telkom Mobile to substantially improve network performance. These notable network improvements have been widely acknowledged by both our customers and the South African media. To determine the effect of the COVID-19 temporary spectrum on Telkom Mobile's network, MyBroadband measured our average network performance across three time periods:

- 1 January to 31 May 2020: Before the temporary spectrum was rolled out
- 1 June to 31 August 2020: Immediately following the roll-out of temporary spectrum
- 1 September to 30 November 2020: The months following this rollout

As captured in Table III - 5 below, My Broadband found that Telkom Mobile's network had improved significantly due to the COVID-19 temporary spectrum allocation made by ICASA.

Table III - 5 Telkom's national network performance impact of COVID-19 spectrum[38]

	Before spectrum	Immediately after spectrum	Months after spectrum	Improvement since start of lockdown
Download	20.45 Mbps	23.78 Mbps	27,39 Mbps	34%
Upload	5.01 Mbps	7.20 Mbps	8.14 Mbps	62%

[38] MyBroadband: How additional spectrum improved Telkom's network performance' – 21 September 2020

Latency	44 ms	29 ms	29 ms	34%

Telkom Mobile supported Government's emergency crisis management initiatives and improved offerings to connect South Africans during the pandemic, by zero-rating up to 1,000 sites for the National Department of Basic Education and Department of Higher Education and Training (DHET). In addition, we also offered substantial discounts on data as follows:

- Data bundles at cost price to all Universities, Technical and Vocational Education and Training (TVET) Colleges
- 40GB[39] of data at ZAR99 to identified groups
- 231,340 data bundles to multiple Universities in South Africa
- Introduced prepaid LTE offering; starting with a 10GB LTE product at ZAR99 for both pre-and-post-paid customers and we launched a 1TB package at ZAR999 to support increased requirements for big data bundles

[39] 20GB Telkom Mobile Anytime Data + 20GB Telkom Mobile Night surfer data

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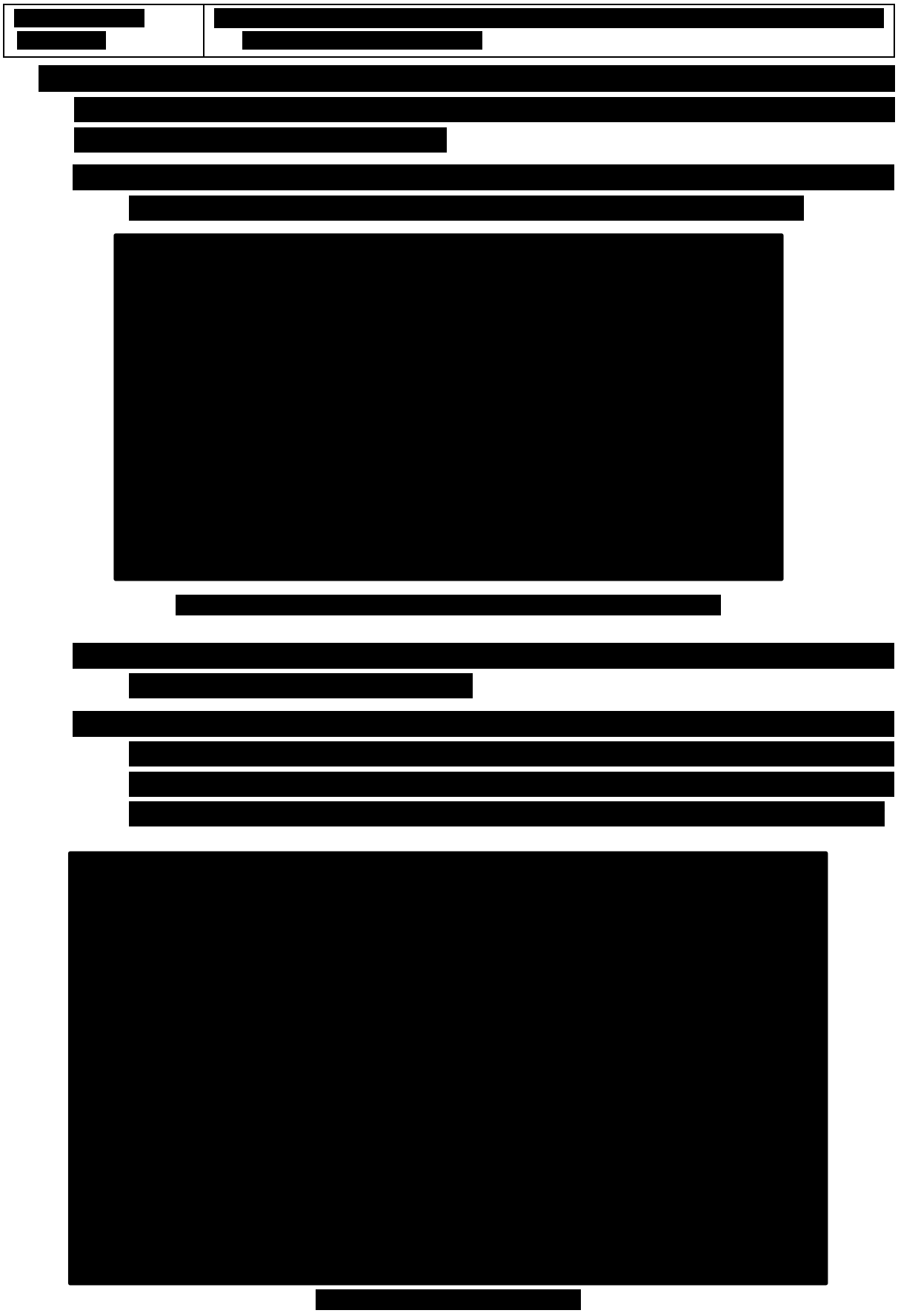

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Application for radio frequency spectrum licenses for International Mobile Telecommunications

VOLUME 2 OF 3

APPENDIX B

IV – BUSINESS PLAN

IV – BUSINESS PLAN

No.	Information requirement	Section[40]	Pages
1	**FUNDAMENTAL ASSUMPTIONS FOR THE BUSINESS PLAN WITH FINANCIAL FORECASTS FOR A MINIMUM PERIOD OF THREE YEARS**	IV-1	71-77
2	**A MARKET ANALYSIS OF THE SERVICES CONTEMPLATED TO BE OFFERED THROUGH THE RADIO FREQUENCY SPECTRUM LICENSE APPLIED FOR, INCLUDING FORECAST DEMAND**	IV-2	78-81
3	**DESCRIPTION OF PRODUCTS AND SERVICES TO BE OFFERED THROUGH THE RADIO FREQUENCY SPECTRUM LICENSE APPLIED FOR**	IV-3	82-84
4	**DESCRIPTION OF THE PRICING STRATEGY FOR PRODUCTS AND SERVICES TO BE OFFERED THROUGH THE RADIO FREQUENCY SPECTRUM LICENSE APPLIED FOR**	IV-4	84-85

[40] Refers to Volume 2, unless specified otherwise

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(3) Existing products and services

Telkom Mobile's product and services portfolio is based upon a disruptive data leadership strategy and ambitions to play a meaningful role in digital transformation and inclusion in South Africa

Telkom Mobile has championed affordable broadband in South Africa, with ambitions to be a principal protagonist in addressing South Africa's widening Digital Divide (3 – Product and services). This underpins Telkom Mobile's "lead with data, disrupt with voice" strategy, offering affordable mobile connectivity and Over the Top (OTT) services designed to address the digital requirements of customers in South African, through:

- Value-rich, data-led offerings and value enhancements, i.e., FreeMe, FreeMe Family and Data-on-the-Go, for mobile consumers
- A range of disruptive digital offerings e.g., content streaming services (e.g., TelkomOne[43], Netflix), e-Education and financial services
- Leading the fixed-LTE market with attractive product launches, e.g., first dedicated large bundle FWA products and first unlimited LTE products in South Africa

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Note 4: Obligation assumptions

The Telkom Mobile Business Plan is aligned to the Network Roll-out Plan as contained in our Technical Information (Radio System Design) submission – List of assumptions. Accordingly, our Business Plan has also catered for us to meet all obligations as set out in the IMT ITA specified obligations contained in the IMT ITA ICASA Notice 535 of 2020. These obligations are listed below:

- Adherence to the spectrum caps as listed in Item 7
- Downlink obligations as contained in Item 12.1.
- Coverage obligations for Tier 2 operators as specified in Items 12.1, 12.2
- Open access obligations as specified in Item 12.3
- Incentives to the WOAN as specified in Item 12.4
- Social obligations as specified in Item 12.5

2. A MARKET ANALYSIS OF THE SERVICES CONTEMPLATED TO BE OFFERED THROUGH THE RADIO FREQUENCY SPECTRUM LICENSE APPLIED FOR, INCLUDING FORECAST DEMAND

2.1. Telecoms market overview in South Africa

The mobile market in South Africa is expected to experience a low 1% CAGR over the next five years; with the fast-declining number of voice subscribers and ARPUs being offset by growth in data revenue and number of data subscribers. Refer to Figure IV - 3, Figure IV - 4 and Figure IV - 5 showing key forecasts for the South African mobile market pertaining to revenues, subscriber numbers and ARPUs.

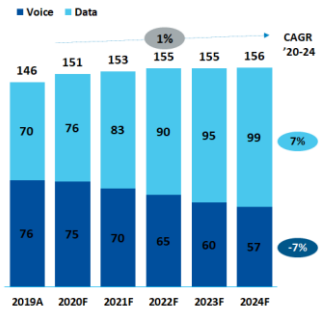


Figure IV - 3 South Africa's mobile market revenue forecast (ZAR mn)[47]

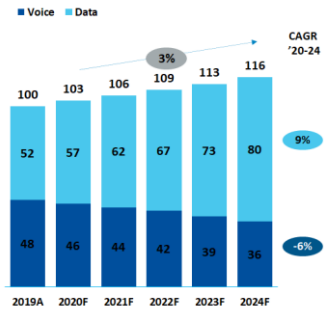


Figure IV - 4 South Africa's mobile end of period subscribers forecast (mn)[4]

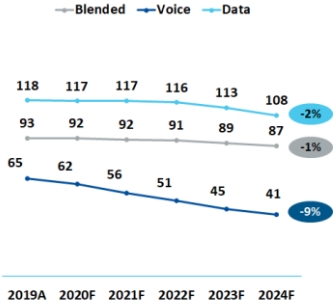


Figure IV - 5 South Africa's 5-year mobile ARPU forecast (ZAR/sub)[4]

2.2. Data services demand and pricing evolution

Several factors are forecast to significantly transform data traffic growth and price evolution[48] in South Africa, which in turn will drive growth in Telkom Mobile's data services:

- Consumer demand: Globally, subscriber consumption is growing at approx. 40% p.a. Telkom Mobile experienced 81% growth in MBB traffic as at H1 FY2021 far surpassing global benchmarks. In line with historical data[49], it is forecast that mobile traffic will increase at greater than fourfold over the next five years, primarily driven by increased consumer demand for video.
- Technology evolution and maturing device ecosystems will enable operators' networks to carry higher data volumes (whilst being able to achieve increased spectral efficiency made possible through optimal spectrum allocation)
- Spectrum release: Global benchmarks show there is typically a greater than 20pp increase in mobile data traffic growth post-spectrum release. The upcoming spectrum auction in South Africa and the introduction of the WOAN with plans to collectively

47 BMI, IDC, Operator reports, Telegeography, Delta Partners Analysis
48 Ovum, Cable, Ericsson mobility report 2019, TeleGeography, Operator website, ICASA, Statista, Delta Partners analysis
[49] Refer to Volume 2 of 3, section I-2 for the historic 2018, 2019 and 2020 Telkom Group Annual Reports

release 406MHz of spectrum into the market is set to increase operator's capacity and flexibility in data pricing particularly given that in the case of South Africa this will also include spectrum is the commonly referred to Digital Dividend 1 and Digital Dividend 2 ranges

- The COVID-19 pandemic has triggered increased global data traffic by approximately 30% whilst shifting traffic from enterprise-based locations to residential access points. It is likely these levels will be maintained as binge TV watching, remote education and WFH become part of the 'new normal'[50]
- Competition: Increased operator capacity, customer demand and regulatory pressure are already driving down data prices in emerging and developed markets. Figure IV - 6 illustrates the sharp decline in data prices in developed and emerging markets. Technology advancements and access to additional spectrum, will further increase the operator's ability to drop prices due to economies of scale and provide value-rich delivery to customers.

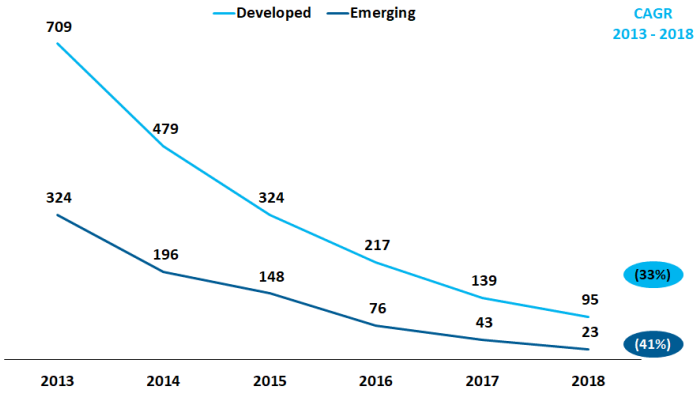


Figure IV - 6 Data price per GB benchmark (ZAR/GB)[51]

These five factors are expected to grow South Africa's mobile traffic by greater than 40% year-on-year for the next 5 years, as illustrated in Figure IV - 7.

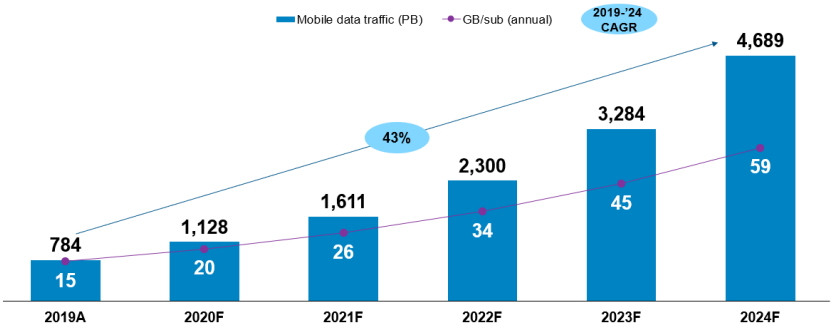


Figure IV - 7 Forecast mobile data traffic and GB/sub in South Africa

50 International Telecommunications Union, 'Economic impact of COVID-19 on digital infrastructure'
51 Ovum, Cable, Delta Partners analysis

2.3. Fixed-wireless access opportunity

Globally, FWA connections are forecast to reach close to 160 million and will account for 25% of mobile network data traffic by the end of 2025[52]: Technology advancements enable the use of wireless technologies, in the form of FWA, to provide high-capacity business and consumer broadband solutions as an alternative to fixed line technologies i.e., ADSL and fibre. FWA enables low cost, and fast deployment of high-capacity broadband particularly suitable for rural areas and regions where the economics do not drive ROI i.e., low ARPUs weighed against traditionally high CAPEX deployments for telecommunications infrastructure.

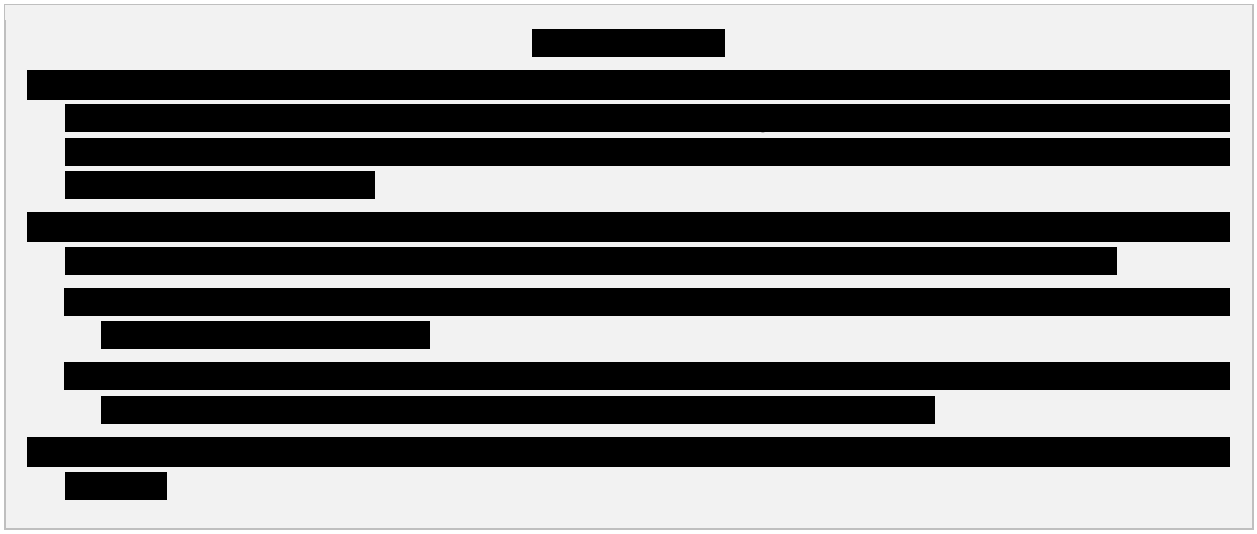
FWA is especially relevant in the South African market currently characterised by low levels of fixed broadband coverage, semi-informal dwellings within and adjacent to main suburbs, high levels of poor rural coverage, low ARPUs and a growing demand for connectivity and data usage. LTE and 5G FWA present an economical approach to deliver high-speed broadband services to homes and to SMEs where businesses operate in areas that do not have established infrastructure. Telkom Mobile, Vodacom, MTN, Liquid Telecom and RAIN have been offering LTE FWA for many years. Telkom Mobile has been particularly innovative and disrupted the market with the following value-rich product launches:

- First to market with large bundle FWA products launched in November 2012
- First Unlimited LTE products in South Africa
- Best value LTE Prepaid offers in South Africa

Despite this, FWA coverage remains very low, thereby presenting a large opportunity to increase coverage and access made more attractive with the advent of 5G[53]. It is widely believed that 5G FWA will be the first and largest commercially available use case in Sub-Saharan Africa with the first commercially available 5G FWA offerings already available in South Africa.

In reference to market sizing, COVID-19 is believed to have accelerated uptake with the WFH shift, increasing demand for affordable high-speed broadband to the home. FWA subscribers within South Africa are expected to reach approximately 4 million[54] by 2025, with a revenue forecast nearing ZAR 15 billion[20,55].

52 Ericsson
53 Newspaper articles, operator websites
54 Omdia, FWA market – South Africa'
55 Calculated using a R15.34/USD exchange rate



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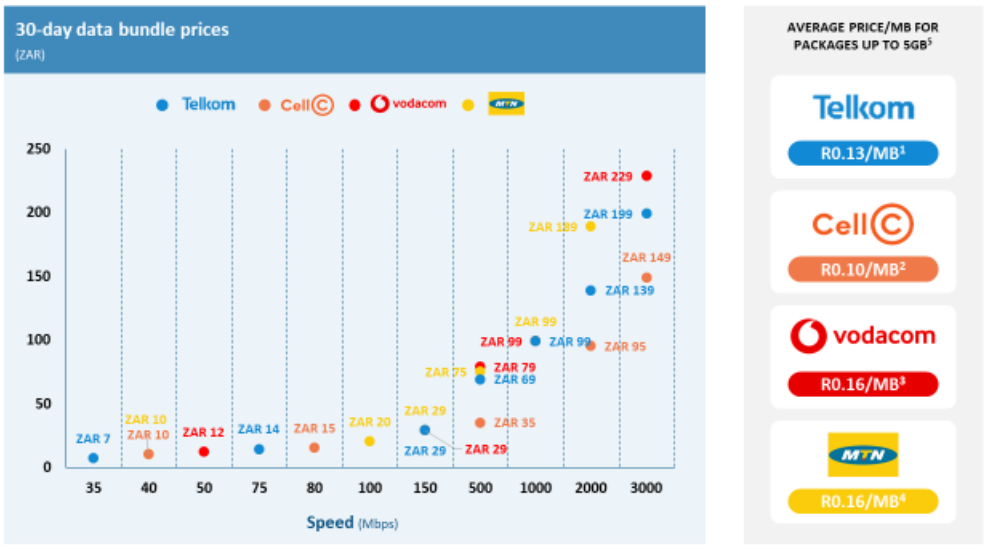

Figure IV - 8 South African mobile price benchmark

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Application for radio frequency spectrum licenses for International Mobile Telecommunications

VOLUME 2 OF 3

APPENDIX B

V – TECHNICAL INFORMATION (RADIO SYSTEM DESIGN)

V – TECHNICAL INFORMATION (RADIO SYSTEM DESIGN)

No.	Information requirement	Section[56]	Pages
1	**FULL INFORMATION OF THE TECHNOLOGY TO BE IMPLEMENTED. THIS SHOULD BE 3GPP TECHNOLOGIES INCLUDING LTE**	V-1 V-5	96-101, 118-122
2	**APPROACH TO NETWORK DEVELOPMENT AND EXPANSION. THIS SHOULD BE BASED ON CAPACITY DEMAND AND COVERAGE REQUIREMENTS**	V-2	102-108
3	**DESCRIPTION OF ALL THE RELEVANT OR IMPORTANT INTERFACES IN THE NETWORK. THIS DEPENDS ON THE TECHNOLOGY. THE INTERFACES ARE BASED ON THE 3GPP TECHNOLOGY ARCHITECTURE**	V-3	109-115
4	**REQUIREMENTS FOR INTERCONNECTION TO OTHER TELECOMMUNICATION NETWORKS OR SERVICES AND TRANSMISSION MEDIUM AND LINKS REQUIRED**	V-4	116-117
5	**UPGRADE OF THE NETWORK TO ACCOMMODATE NEW STANDARDS AND TECHNOLOGY DEVELOPMENTS**	V-1 V-5	96-101, 118-122
6	**COMPLIANCE WITH RECOGNISED INTERNATIONAL STANDARDS AND SPECIFICATIONS**	V-6 **Appendix B-V.1** **Appendix B-V.2** **Appendix B-V.3**	122-123. 268-270
7	**DETAILS OF RADIO PLANNING INCLUDING METHODS TO RESERVE FREQUENCY**	V-7 **Vol 3: Section A**	124
8	**APPLICANTS MUST PROVIDE DIAGRAMS OR SKETCHES OF PROPOSED OPERATIONS**	V-8 V-14	125-128, 138-162
9	**ADHERENCE TO EMC SPECIFICATIONS**	V-9 **Appendix B-V.2**	129, 269
10	**THEORETICAL TRAFFIC VOLUME FORECASTS AND ALTERNATIVE ROUTING AND REDUNDANCY REQUIREMENTS**	V-10	130-131
11	**NUMBERING PLAN FOR THE SERVICE**	V-11	131-133
12	**QUALITY SYSTEMS DEPLOYED, AND QUALITY TARGETS USED**	V-12 V-15 V-19	133-136, 163-166, 196-198
13	**DETAILS OF FIXED NETWORK PLANNING**	V-13	136-137
14	**PRESENTATION OF NETWORK PLANNING DATA IN THE FORM OF SCHEDULES, DIAGRAMS, TABLES AND MAPS FOR THE INITIAL PHASE AND TWO SUBSEQUENT PHASES**	V-8 V-14	125-128, 138-162
15	**NETWORK MANAGEMENT, FAULT DETECTION, SERVICE AND MAINTENANCE MECHANISMS**	V-12 V-15 V-19	133-136, 163-166, 196-198
16	**EQUIPMENT SPECIFICATIONS, TYPE-APPROVAL CERTIFICATES**	V-16 **Appendix B-V.3**	166-182, 270
17	**REGULATORY REQUIREMENTS (ITU AND ACT)**	V-17	183-184
18	**TECHNICAL EXPERTISE**	V-18	185-195
19	**SERVICE-MONITORING CAPABILITIES**	V-12 V-15 V-19	133-136, 163-166, 196-198
20	**CRITICAL EFFICIENCY FACTORS**	V - 20	199-223

[56] Refers to Volume 2, unless specified otherwise

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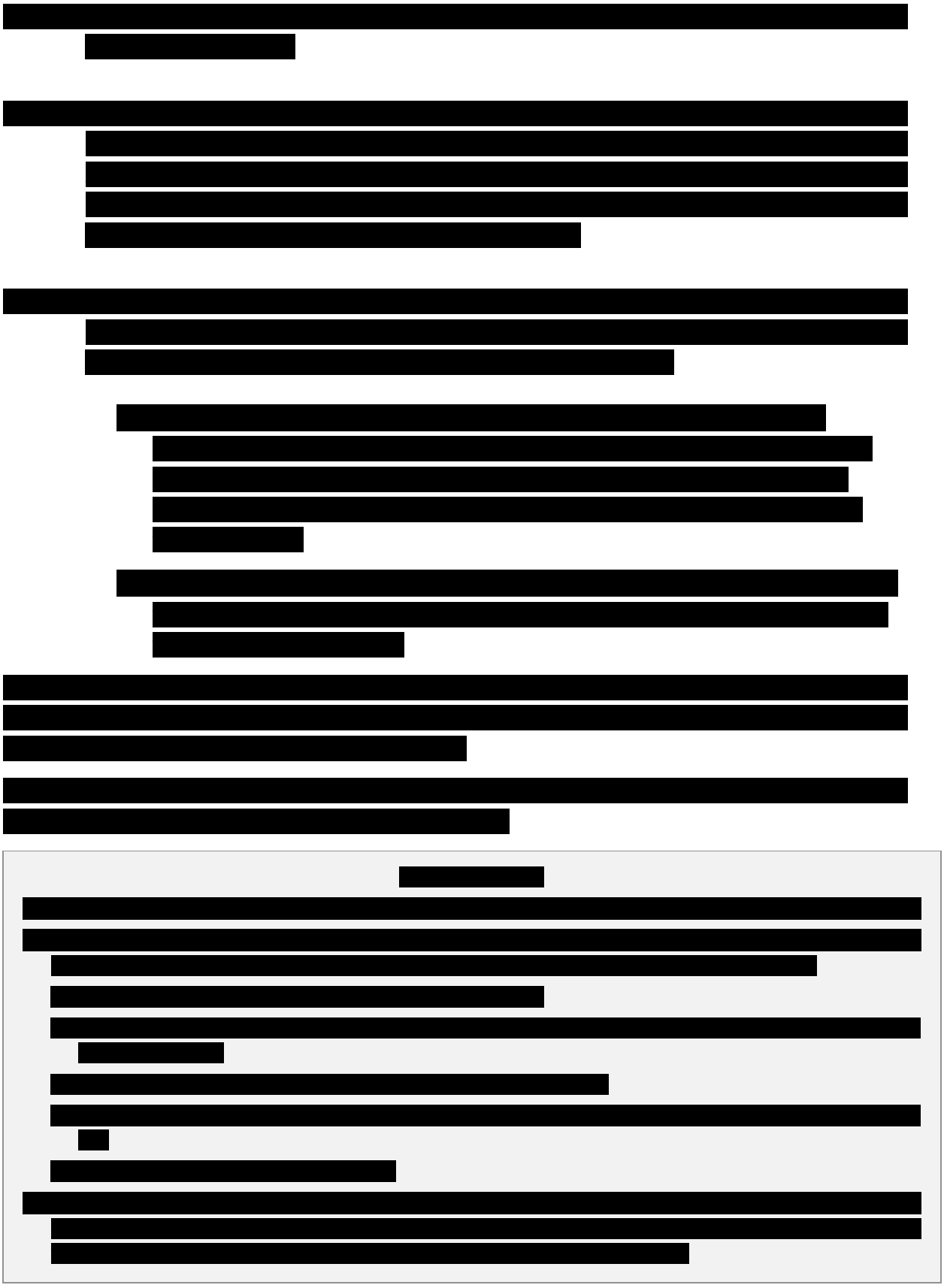

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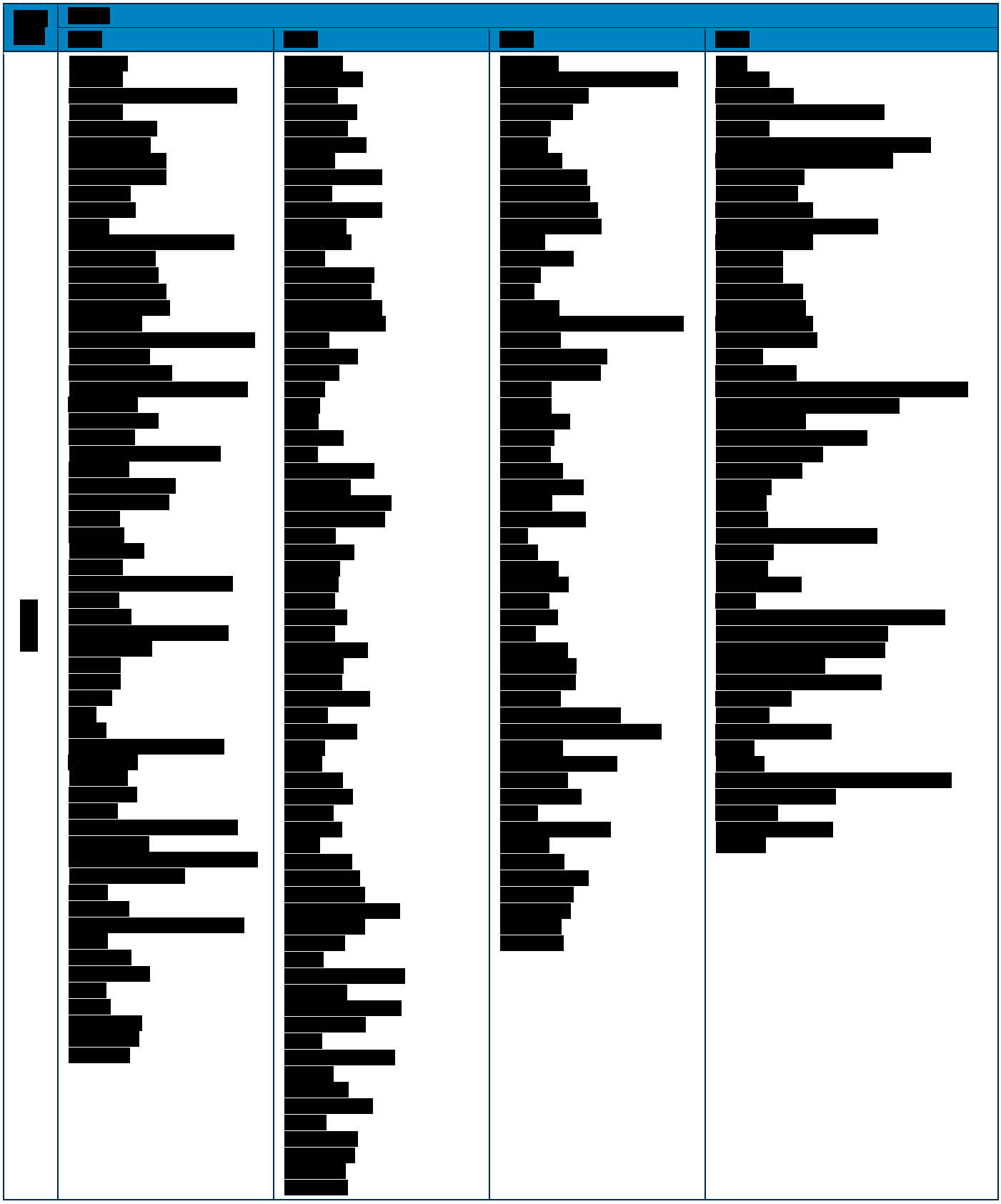

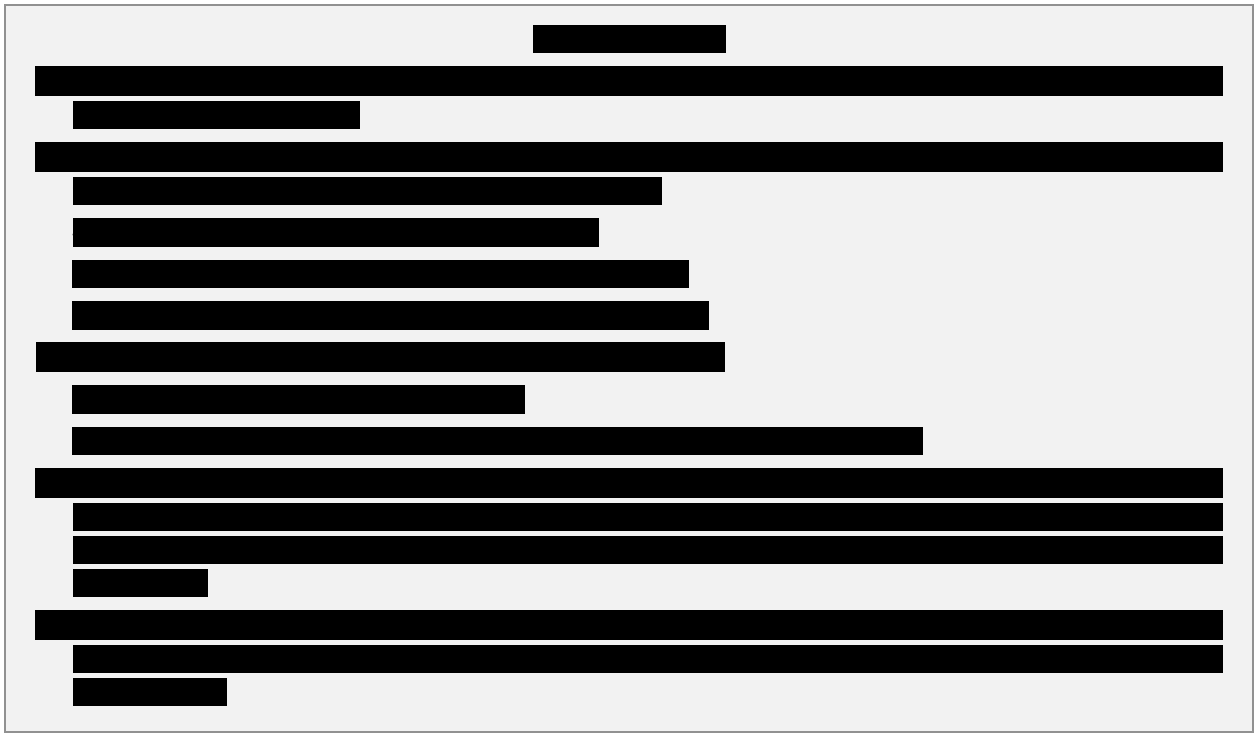

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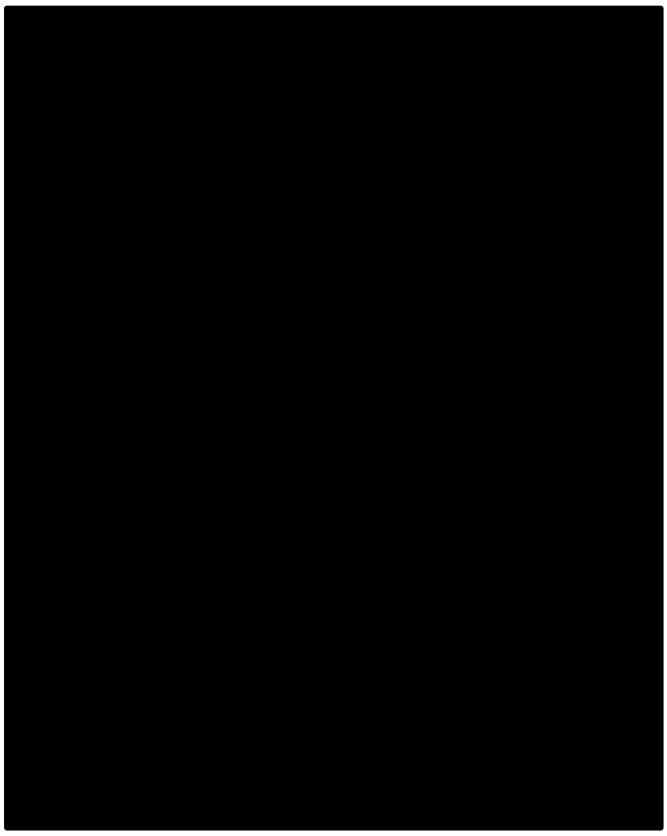

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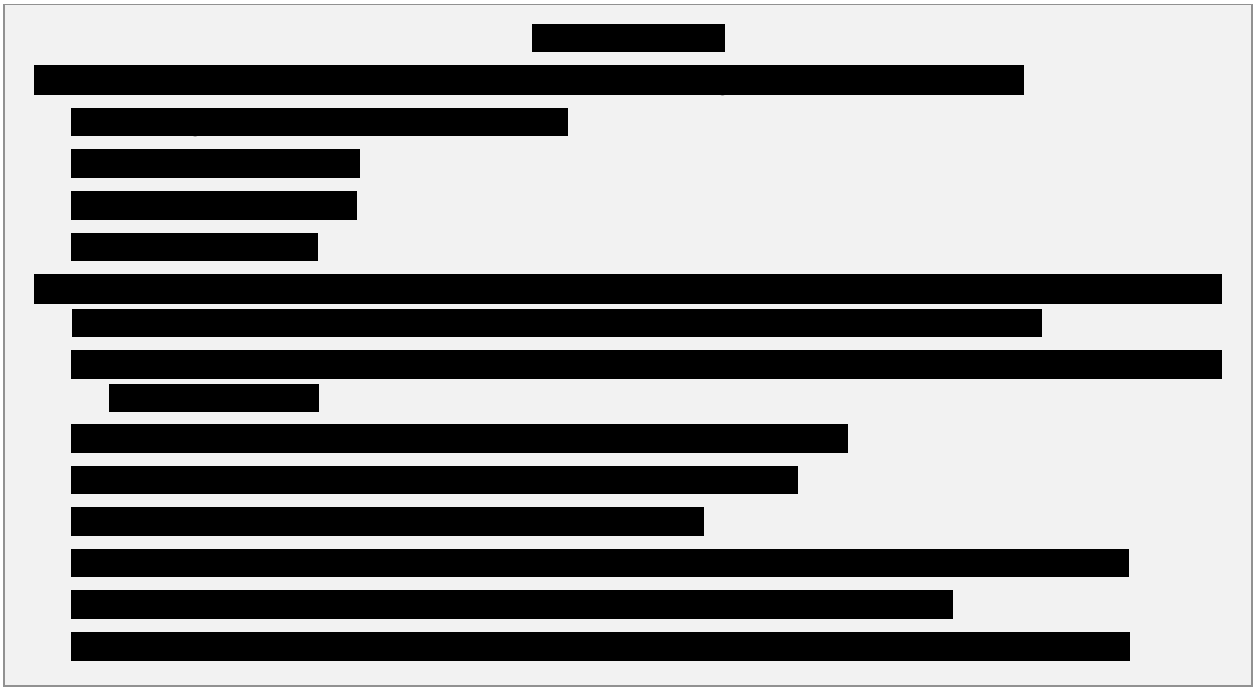

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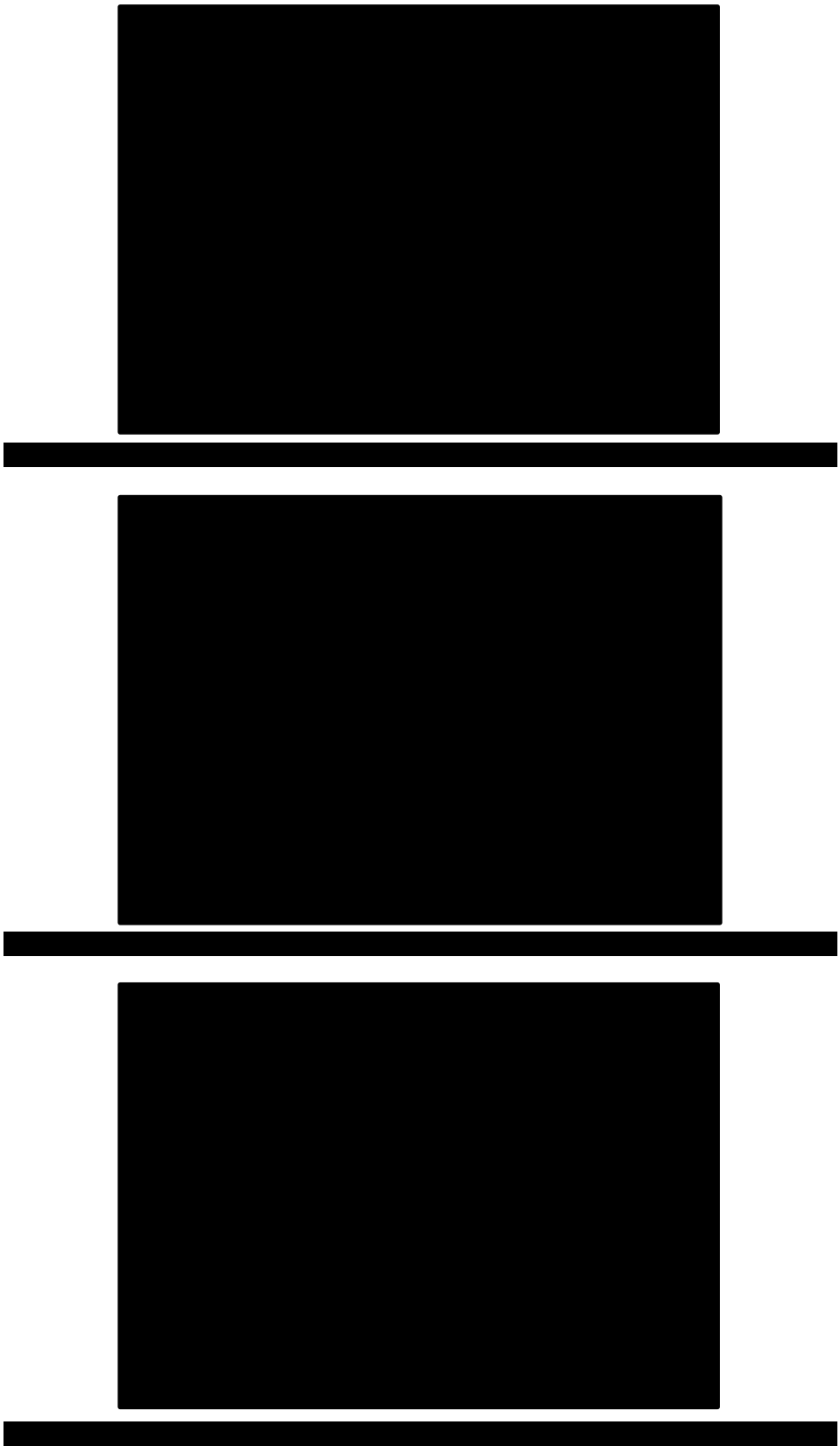

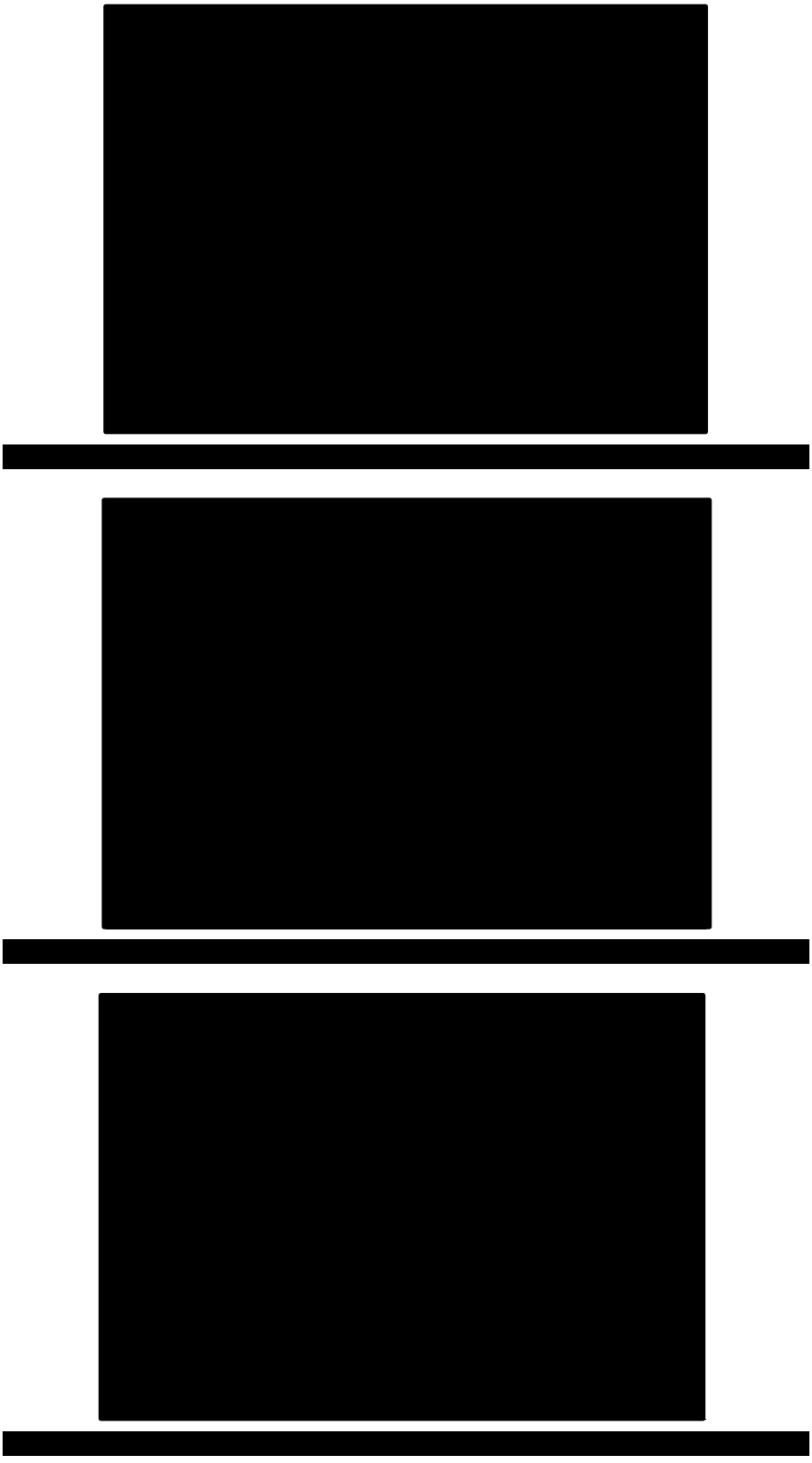

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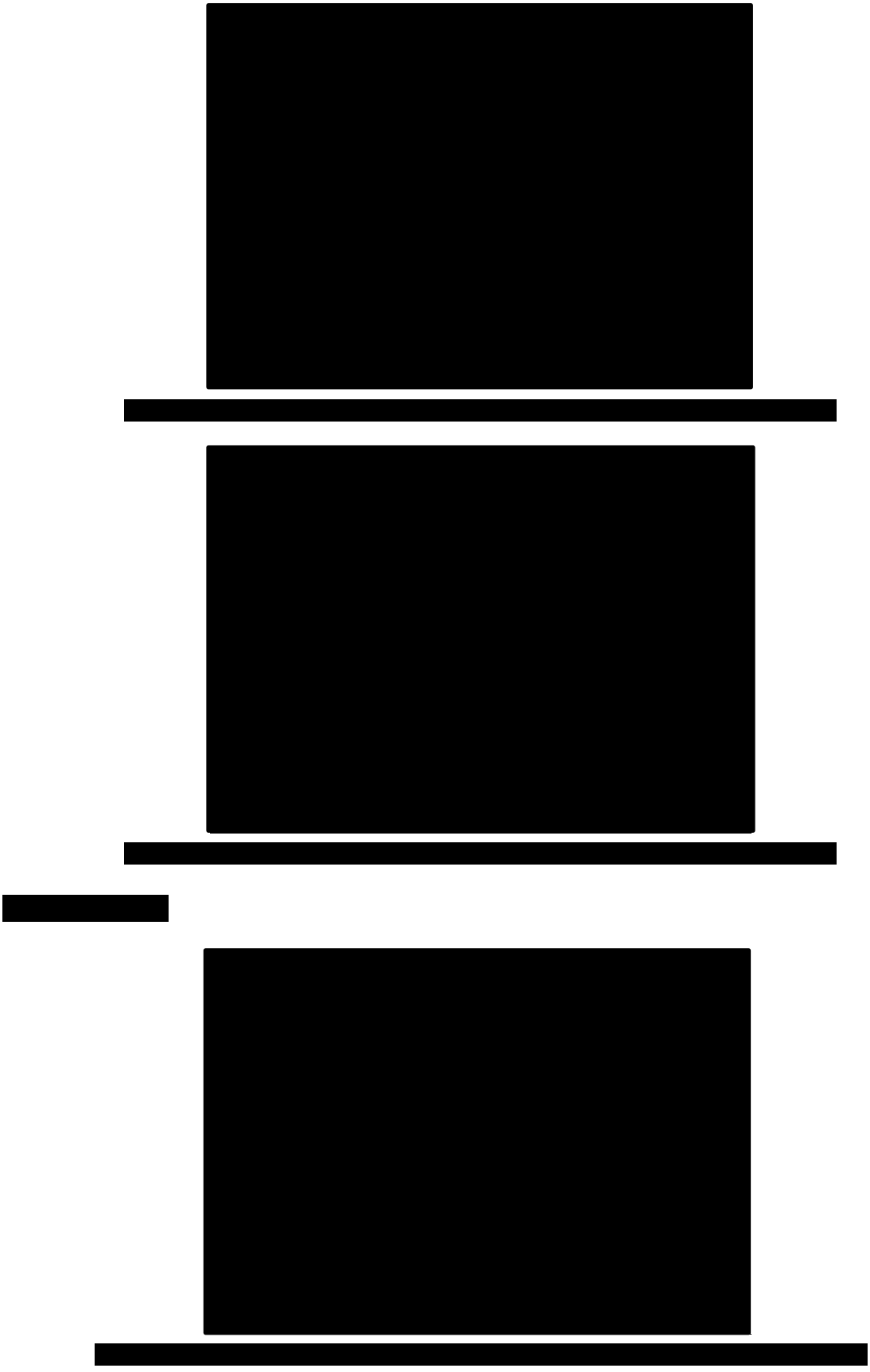

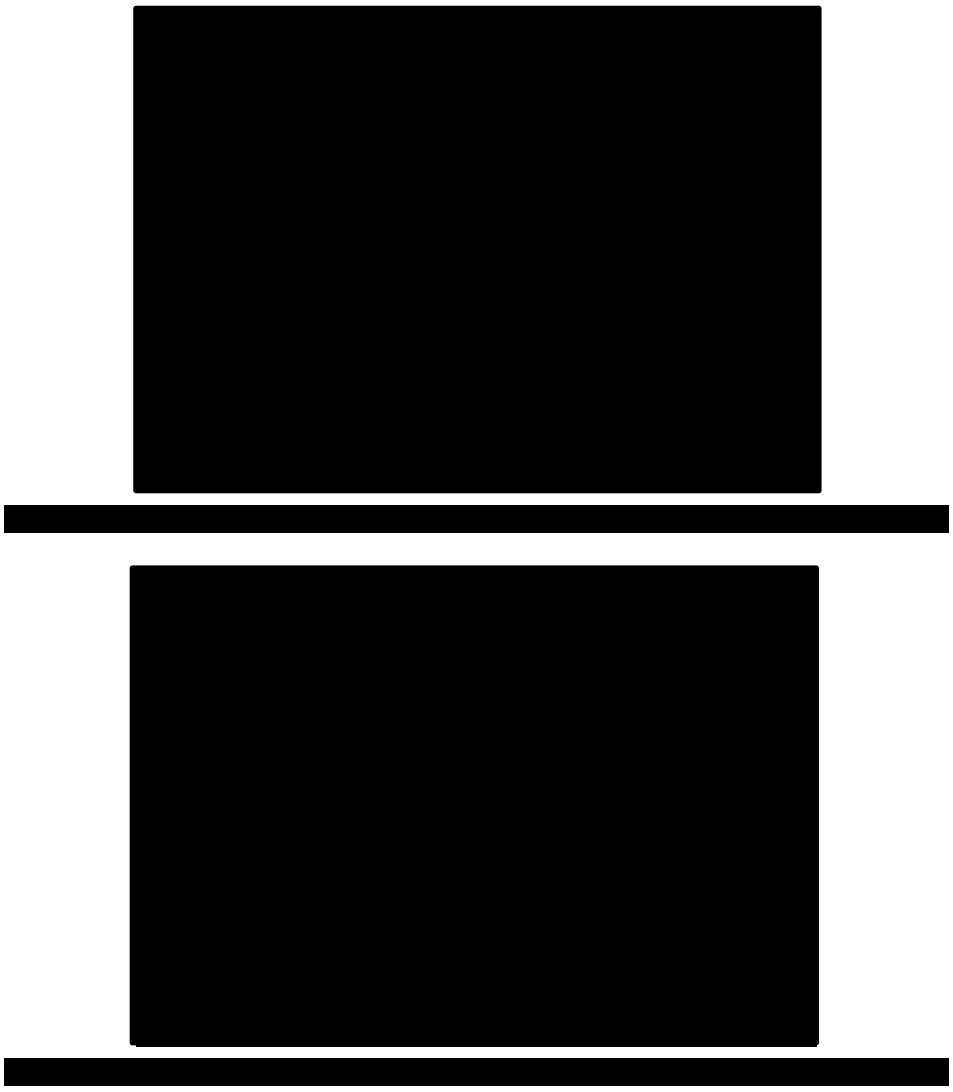

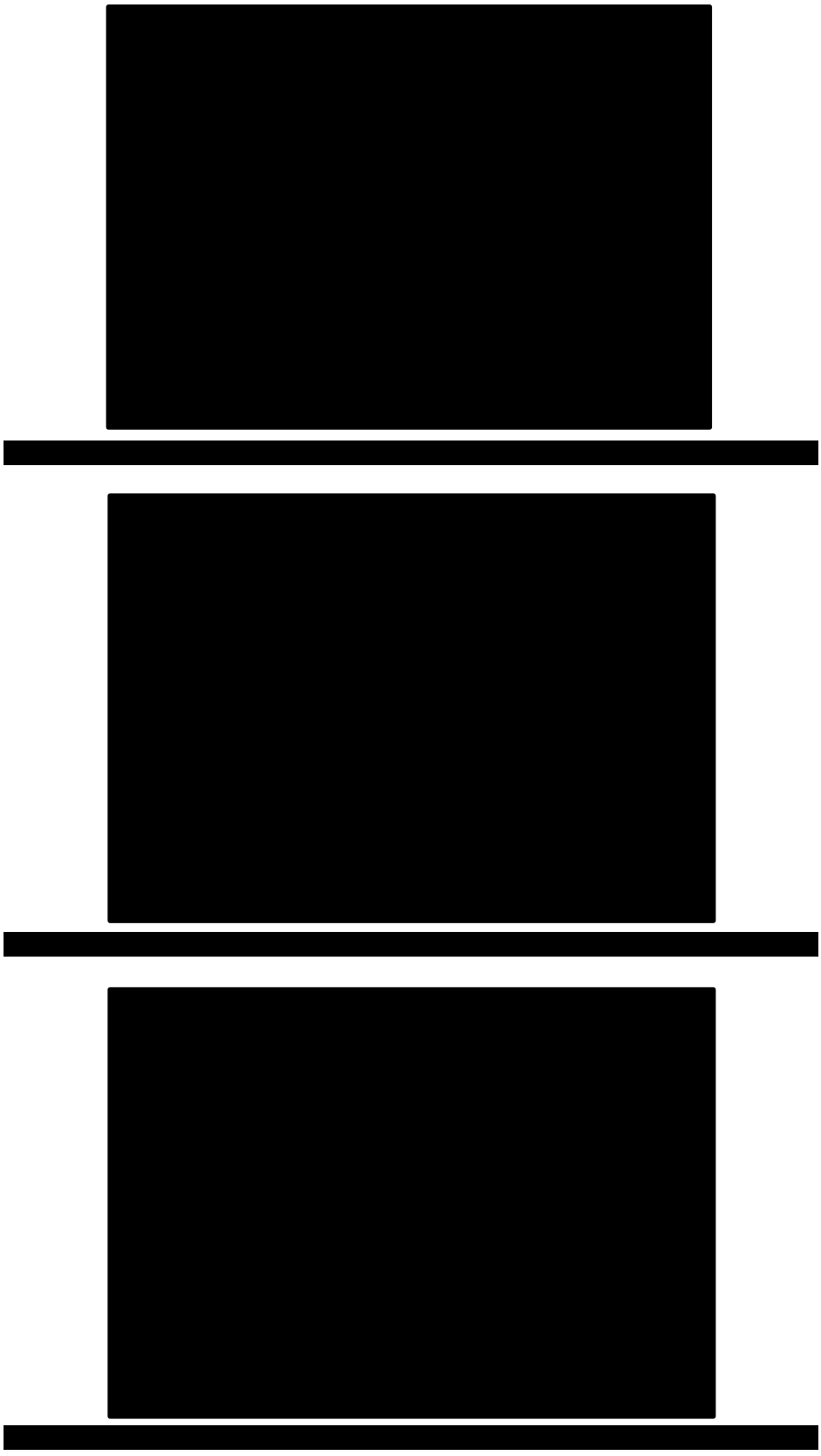

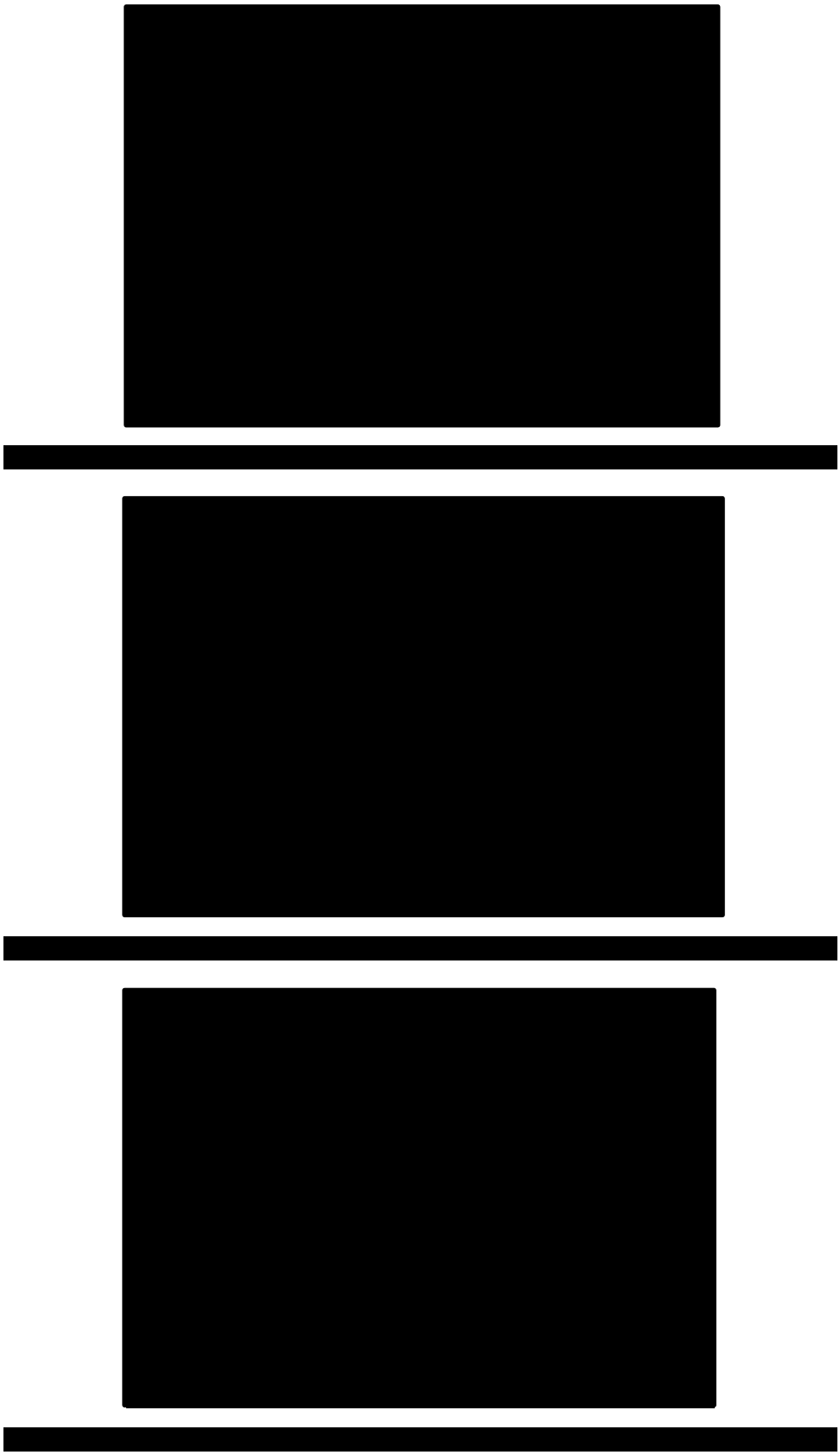

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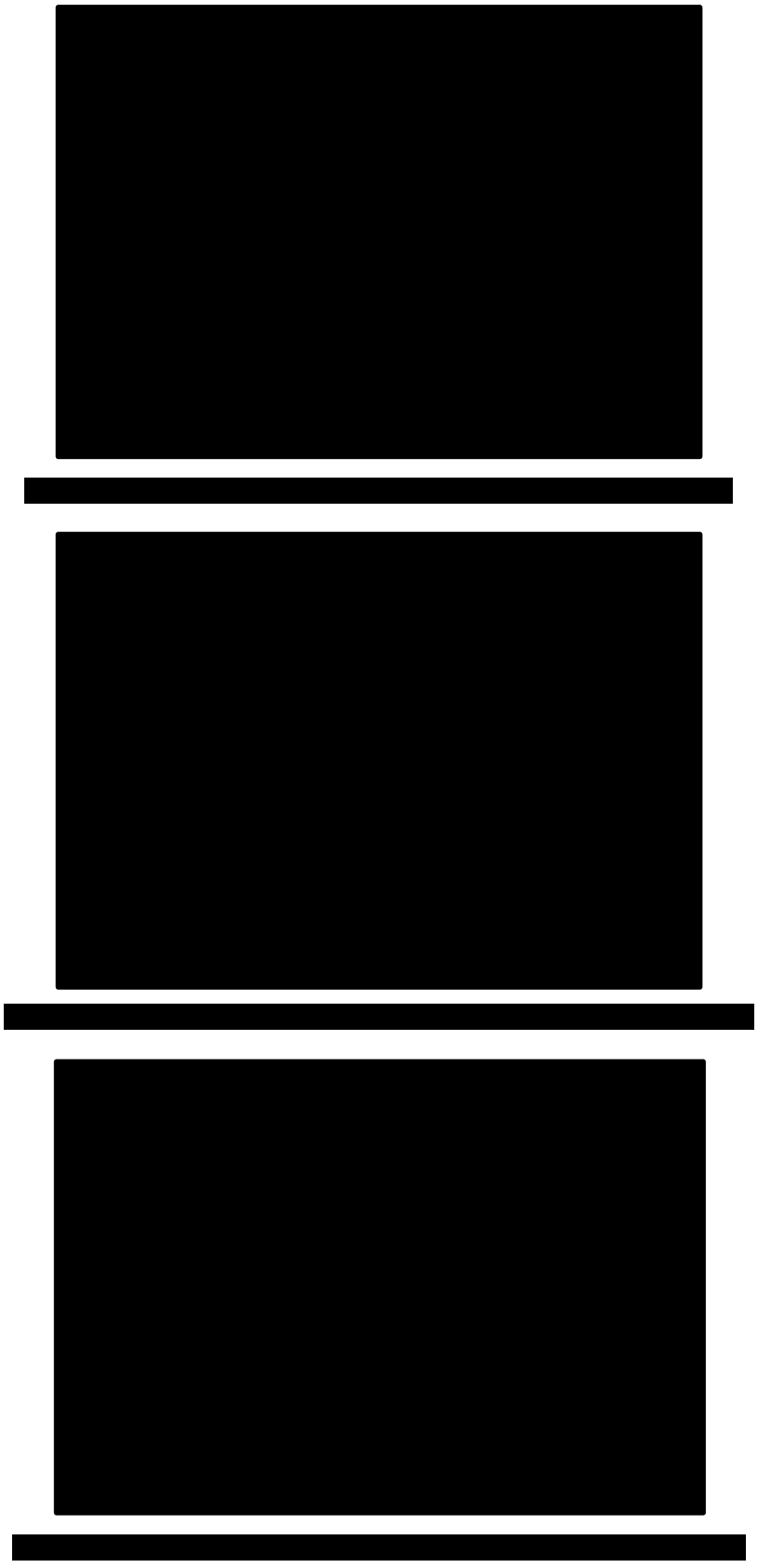

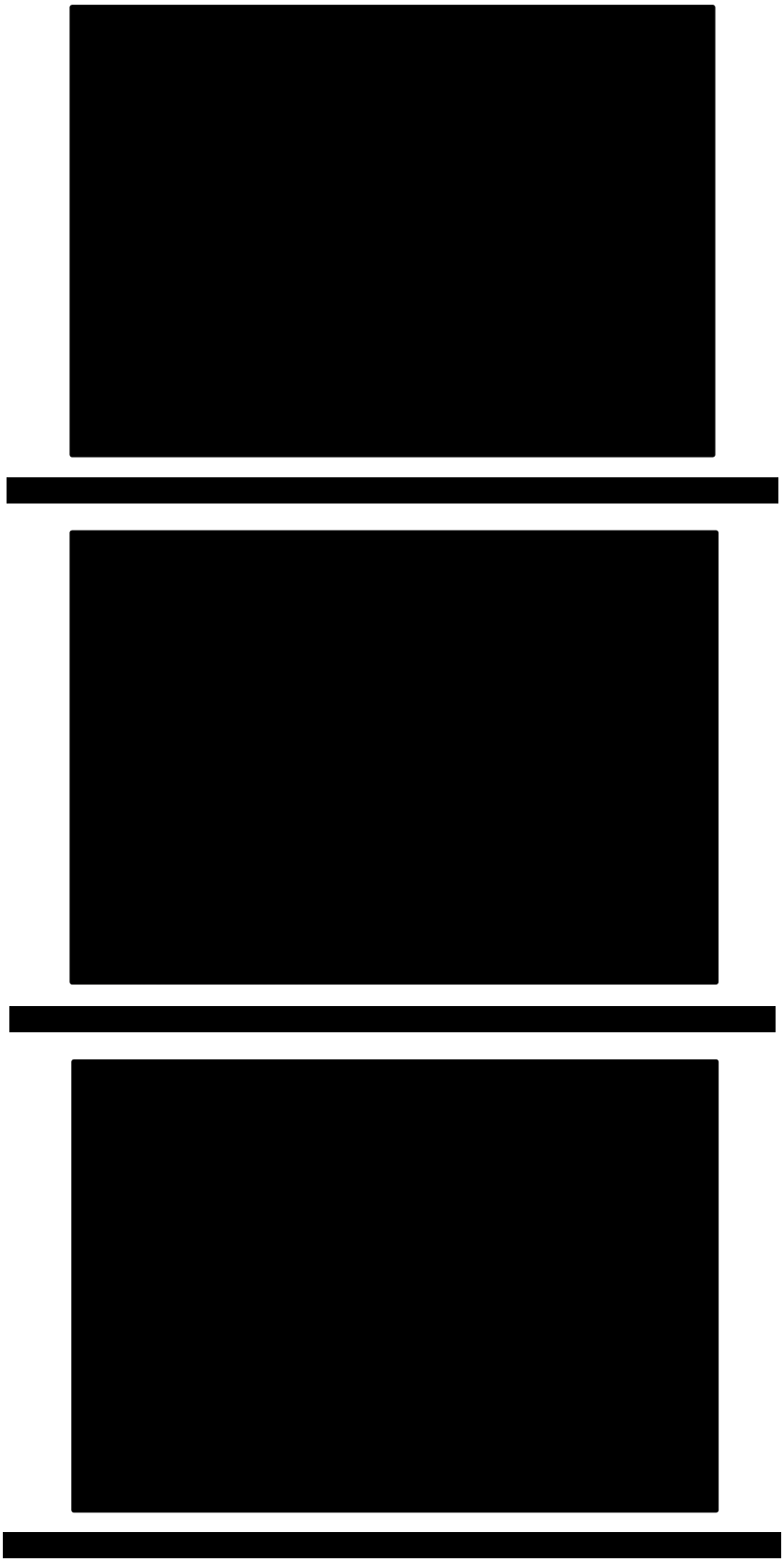

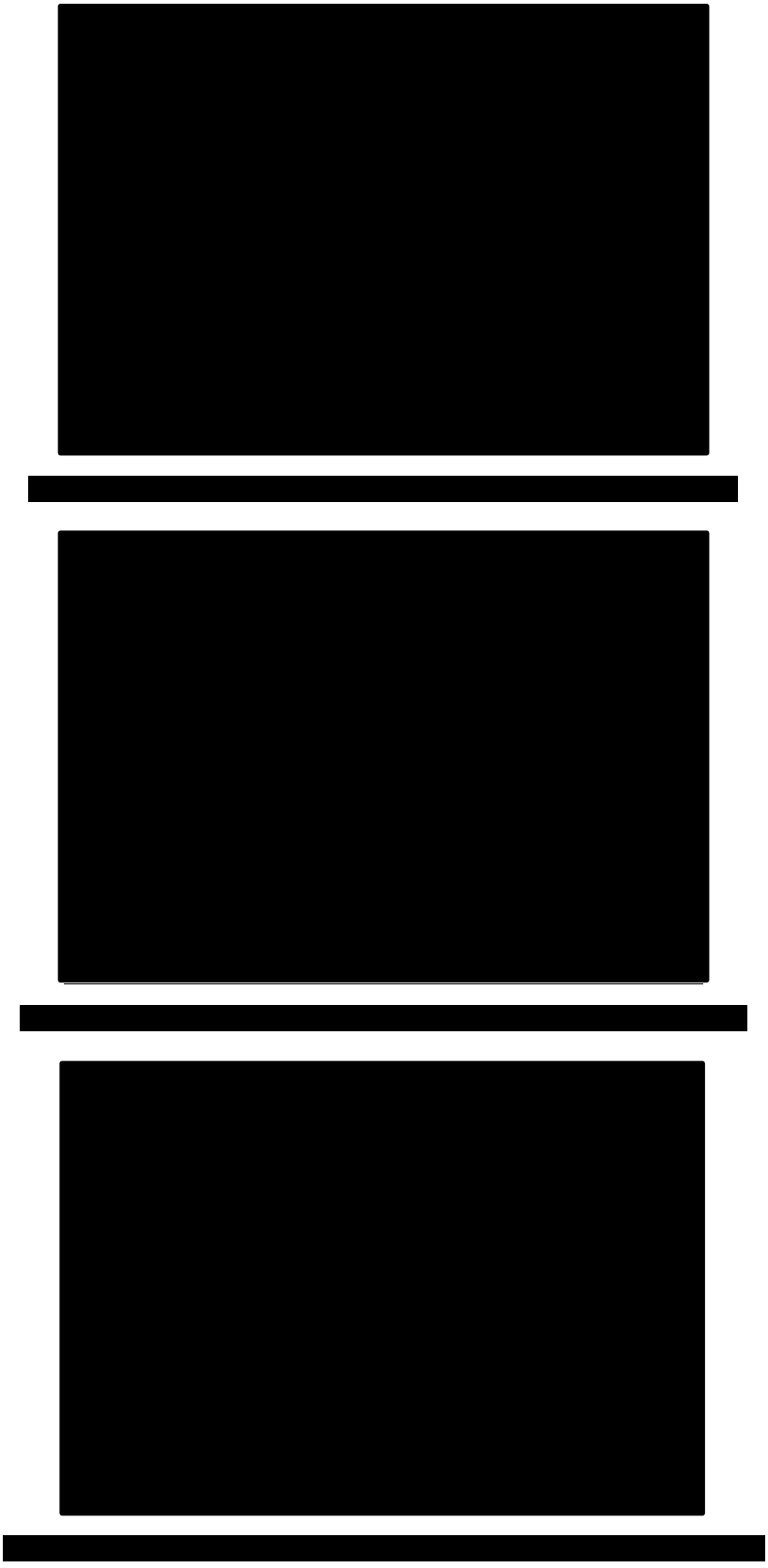

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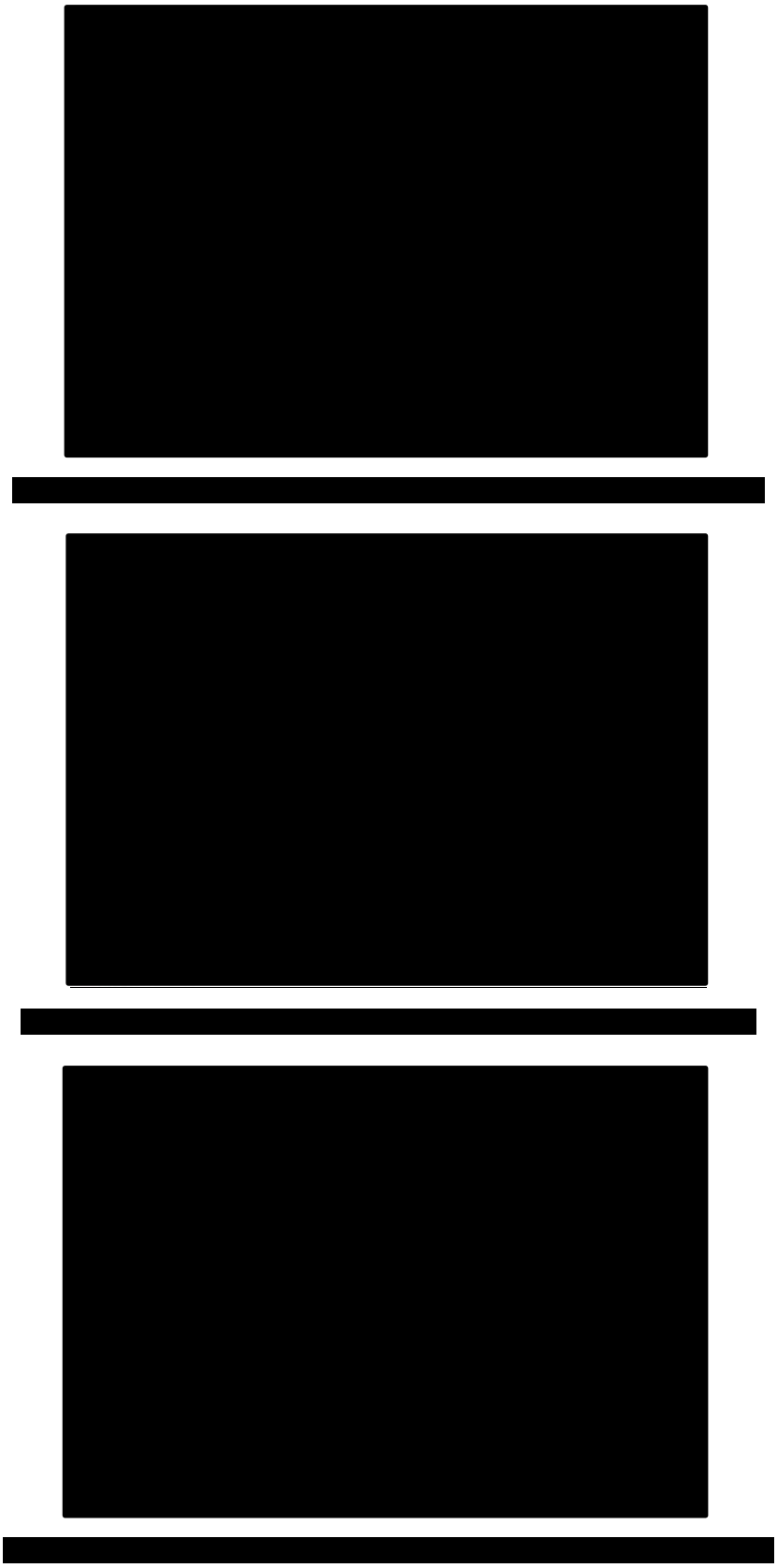

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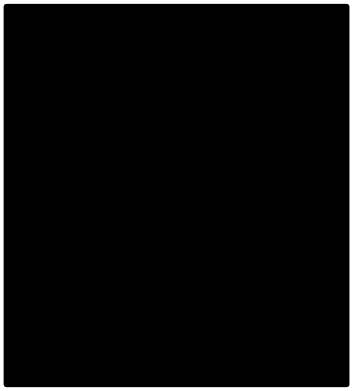

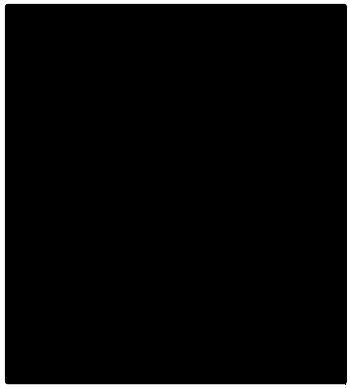

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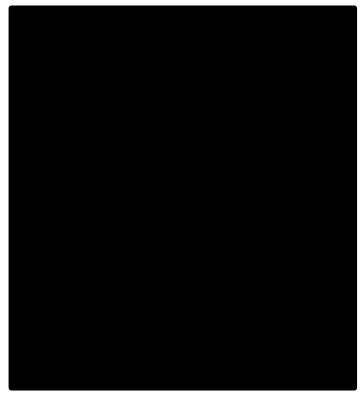

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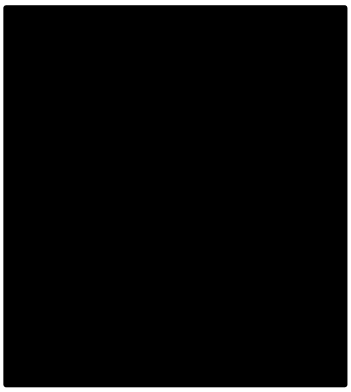

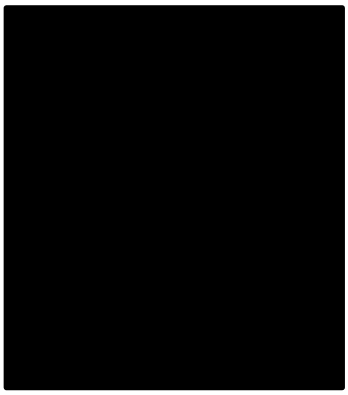

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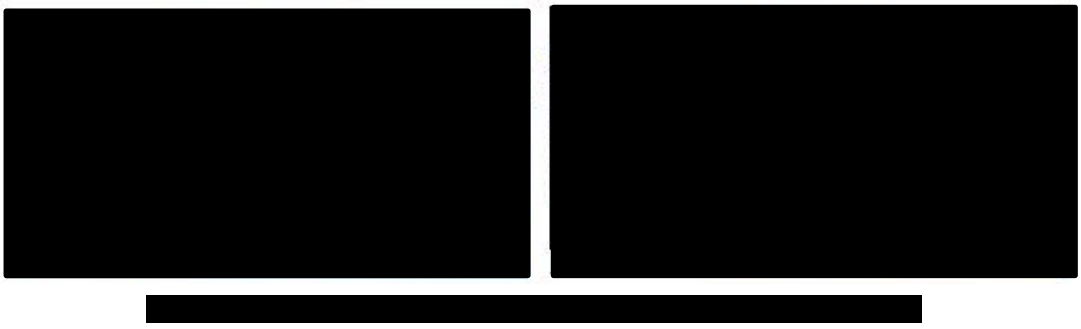

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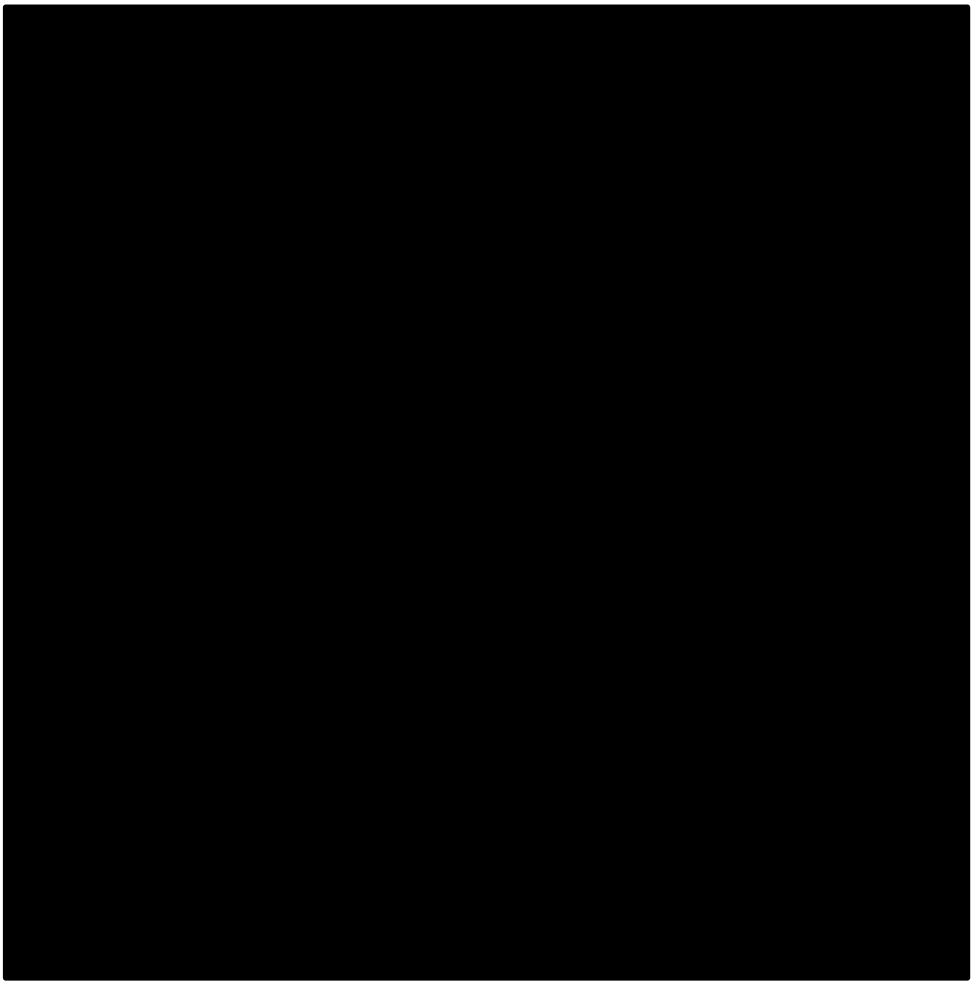

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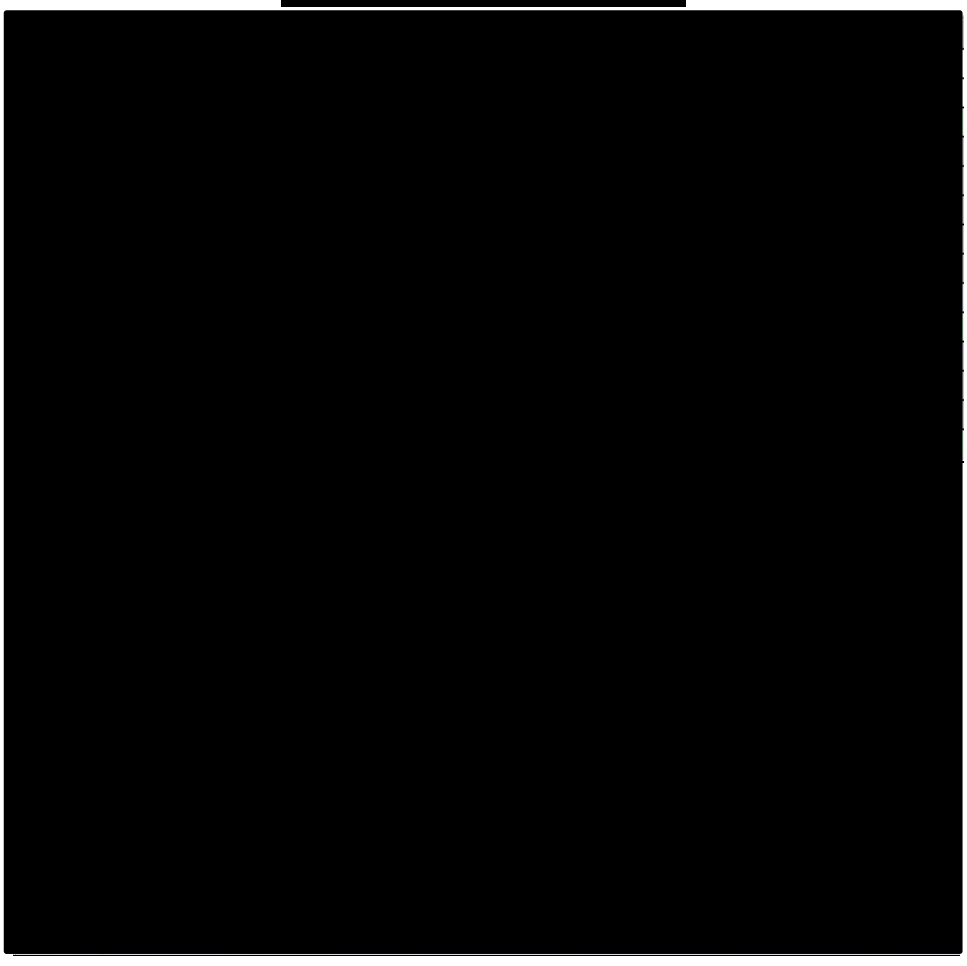

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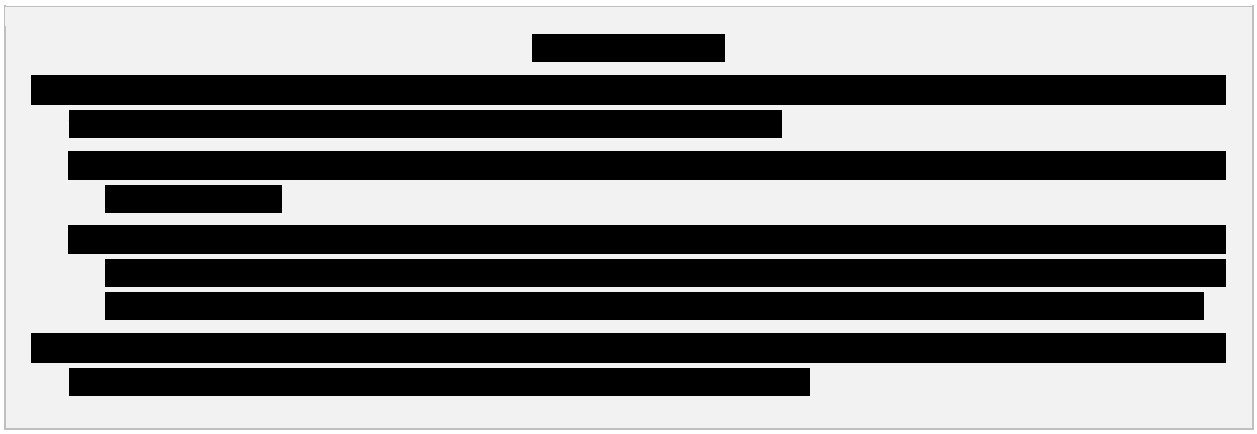

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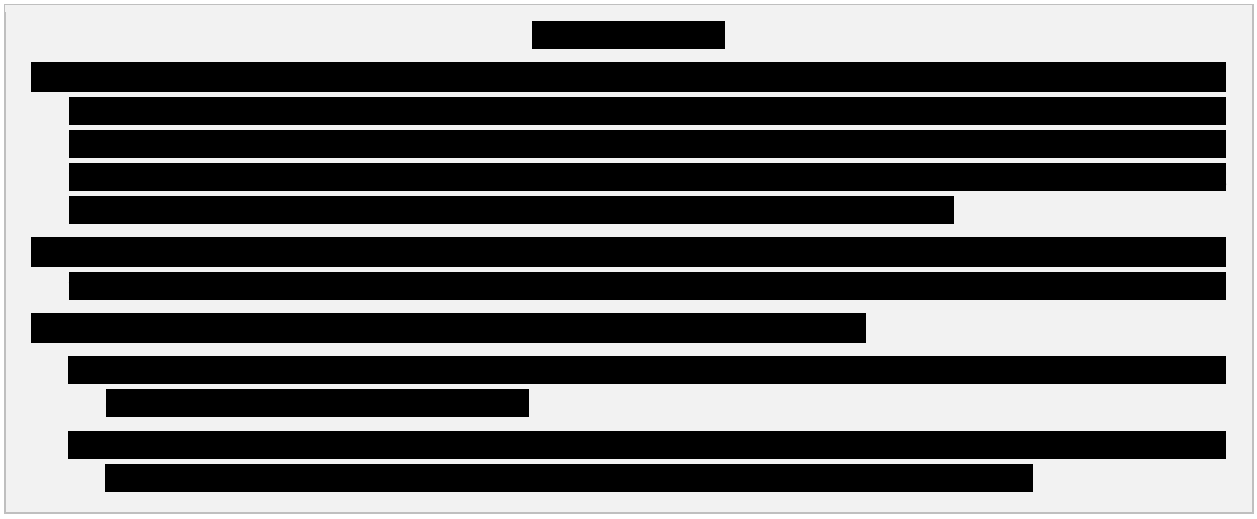

SIGNATURES AND REPRESENTATIVES

Authorised Representative 1:

Signature: 

Printed name: **Ms Beauty Apleni, Managing Executive: Sales & Technology**

Authorised Representative 2:

Signature: 

Printed name: **Mr Hugo van Zyl, Managing Executive: Mobile Networks**

Authorised Representative 3:

Signature: 

Printed name: **Mr Hasnain Motlekar, Managing Executive: Consumer Finance**

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Signature:

Printed name: **Mr Hugo van Zyl, Managing Executive: Mobile Networks**

Authorised Representative 3:

Signature:

Printed name: **Mr Hasnain Motlekar, Managing Executive: Consumer Finance**

AUTHORISED REPRESENTATIVES

Authorised representatives		
Name	**Position**	**Signature**
Beauty Apleni	Managing Executive: Sales & Technology	
Hugo van Zyl	Managing Executive: Mobile Networks	
Hasnain Motlekar	Managing Executive: Consumer Finance	

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Authorised Representative 1:		
Signature: 		
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Authorised Representative 2:

Signature: 

Printed name: **Mr Hugo van Zyl, Managing Executive: Mobile Networks**

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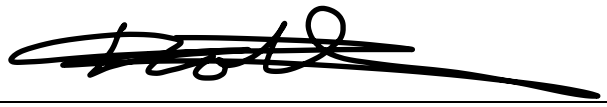
Signature: 

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Authorised Representative 2:

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Printed name: **Mr Hugo van Zyl, Managing Executive: Mobile Networks**

Authorised Representative 3:

Signature: 

Printed name: **Mr Hasnain Motlekar, Managing Executive: Consumer Finance**

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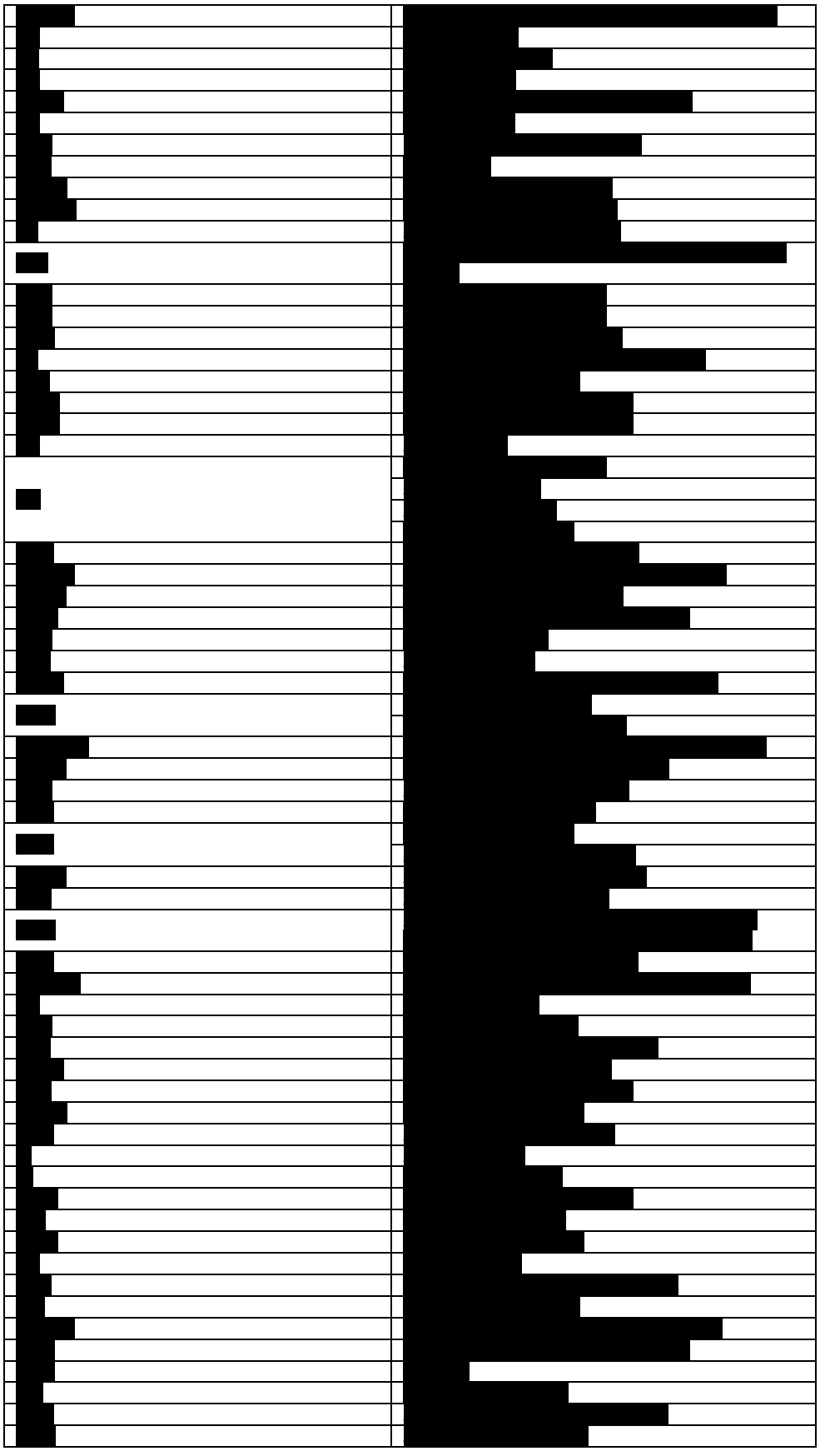

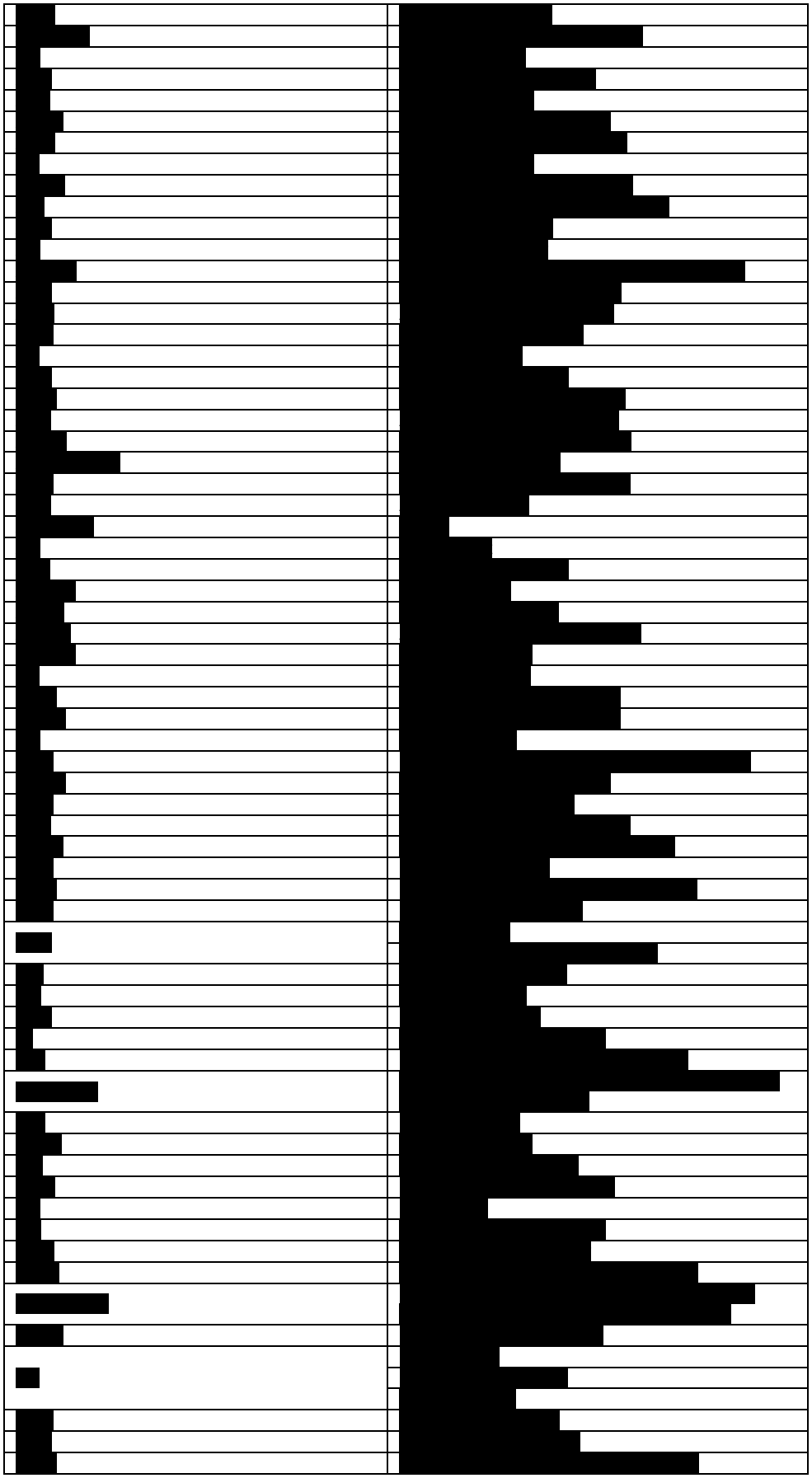

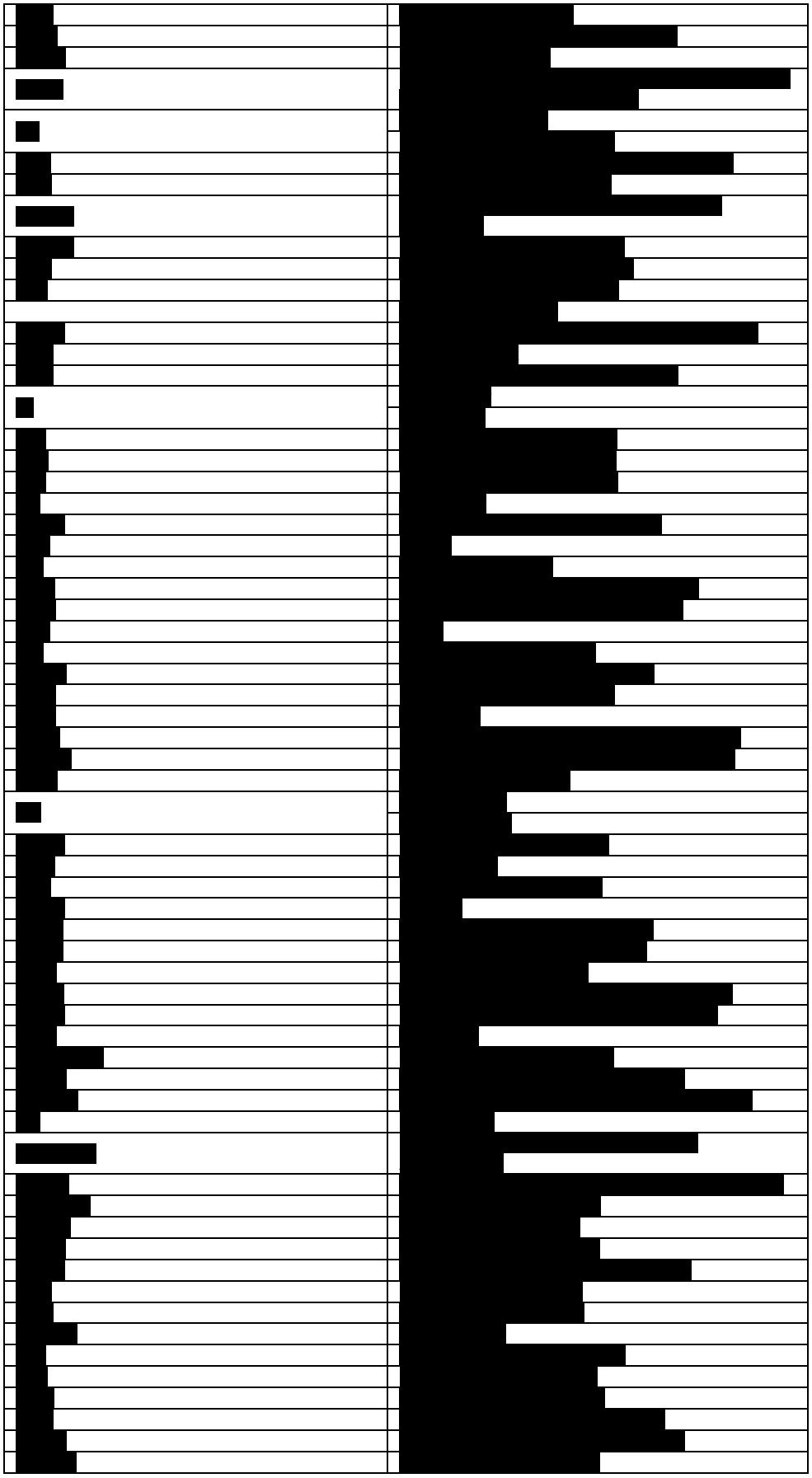

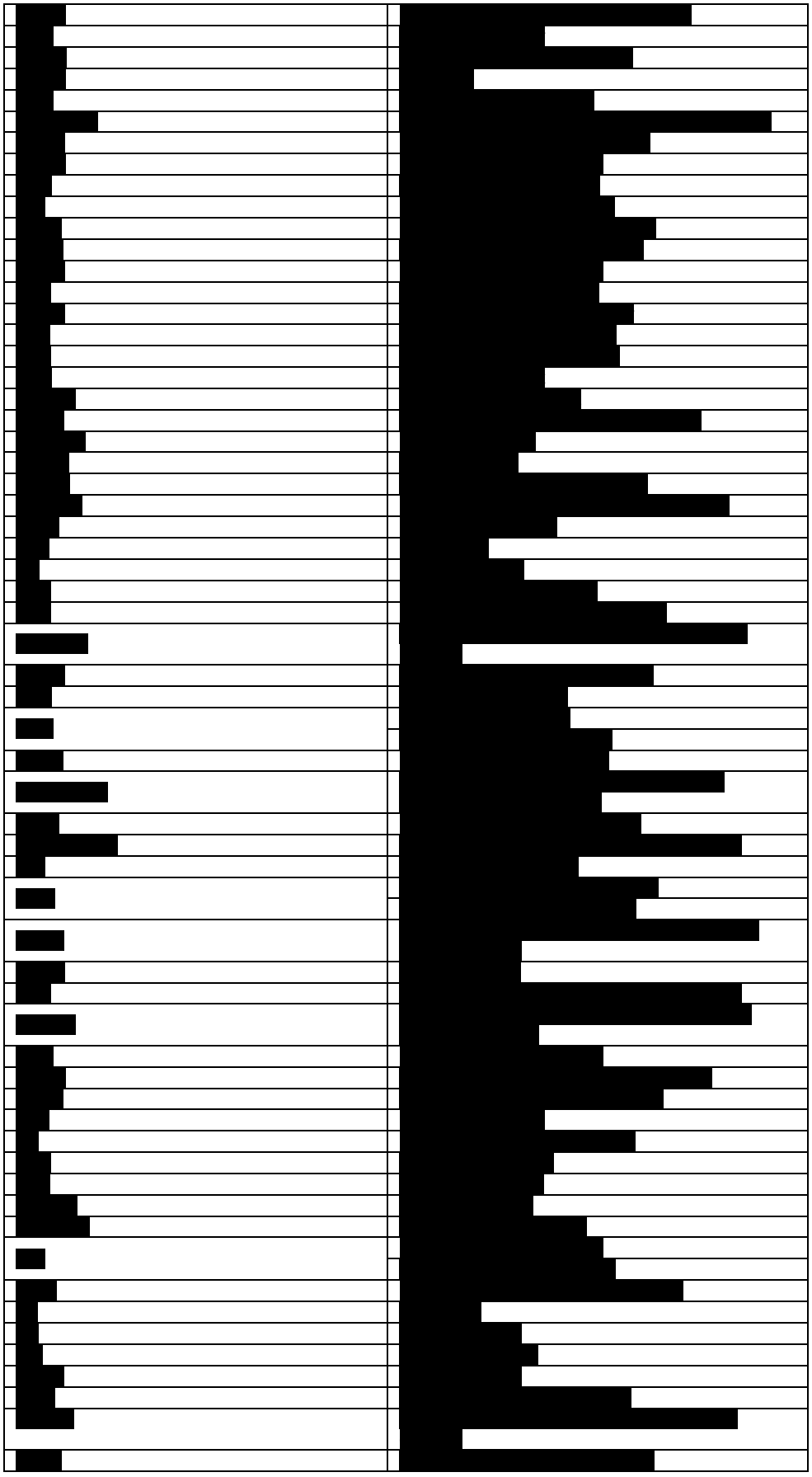

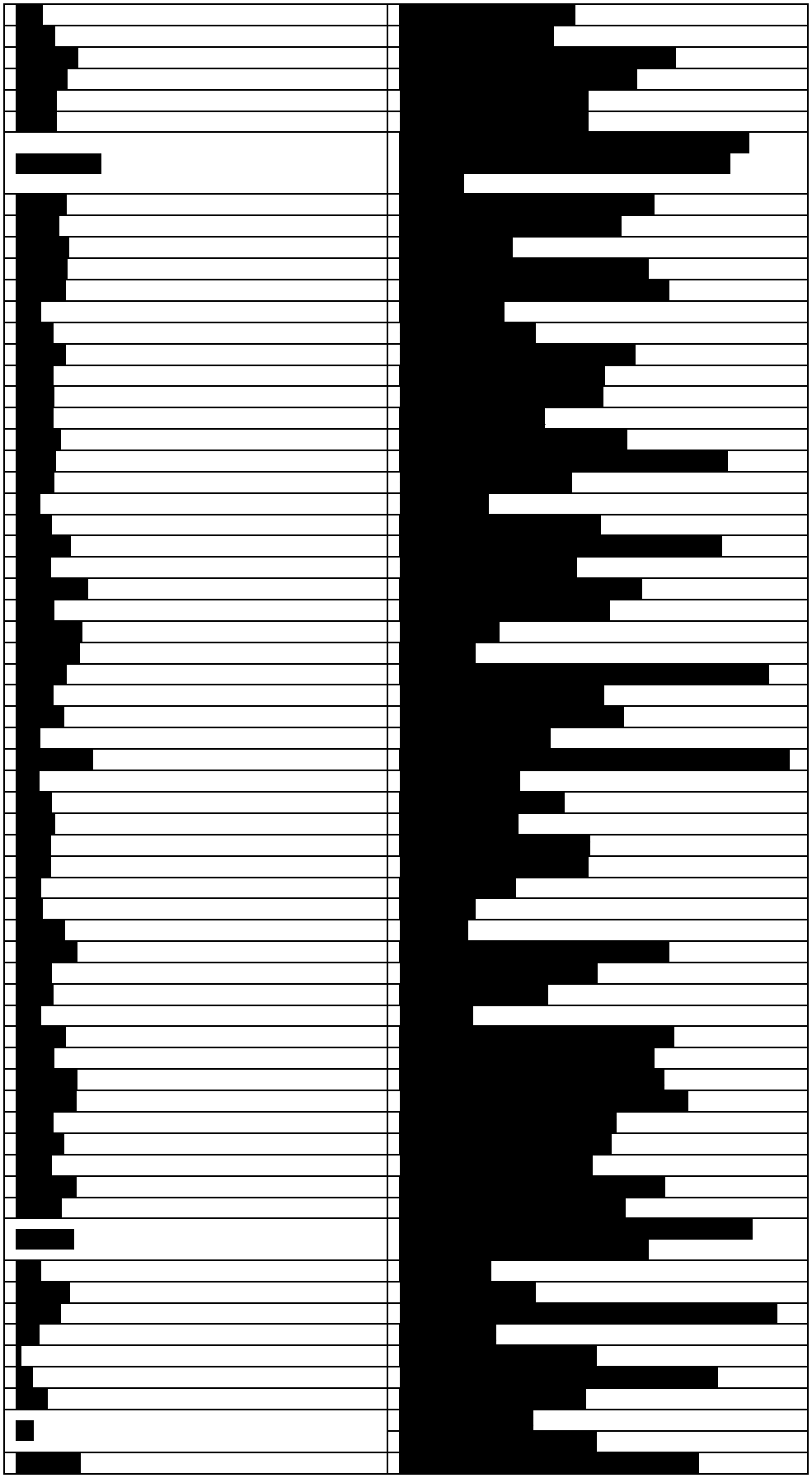

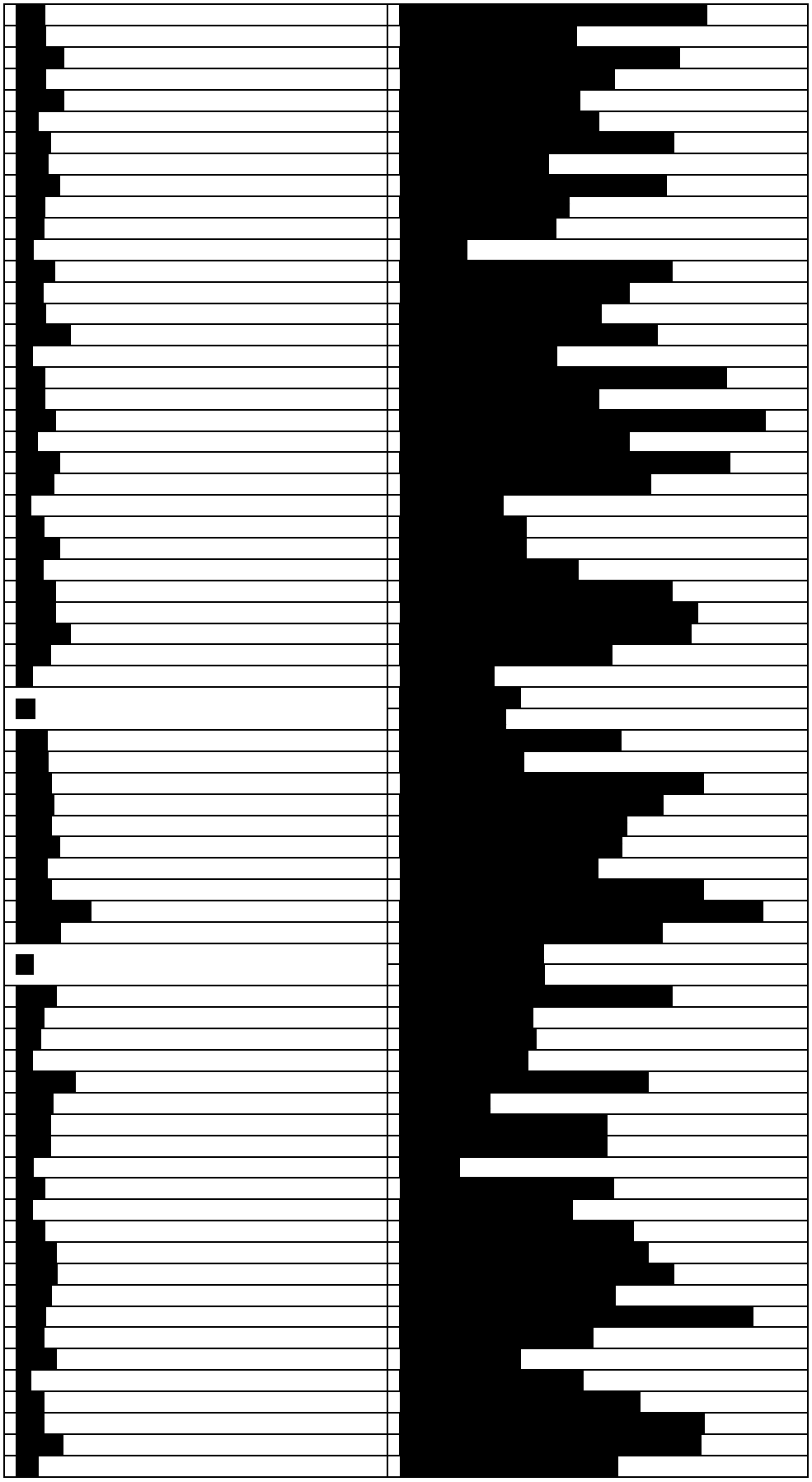

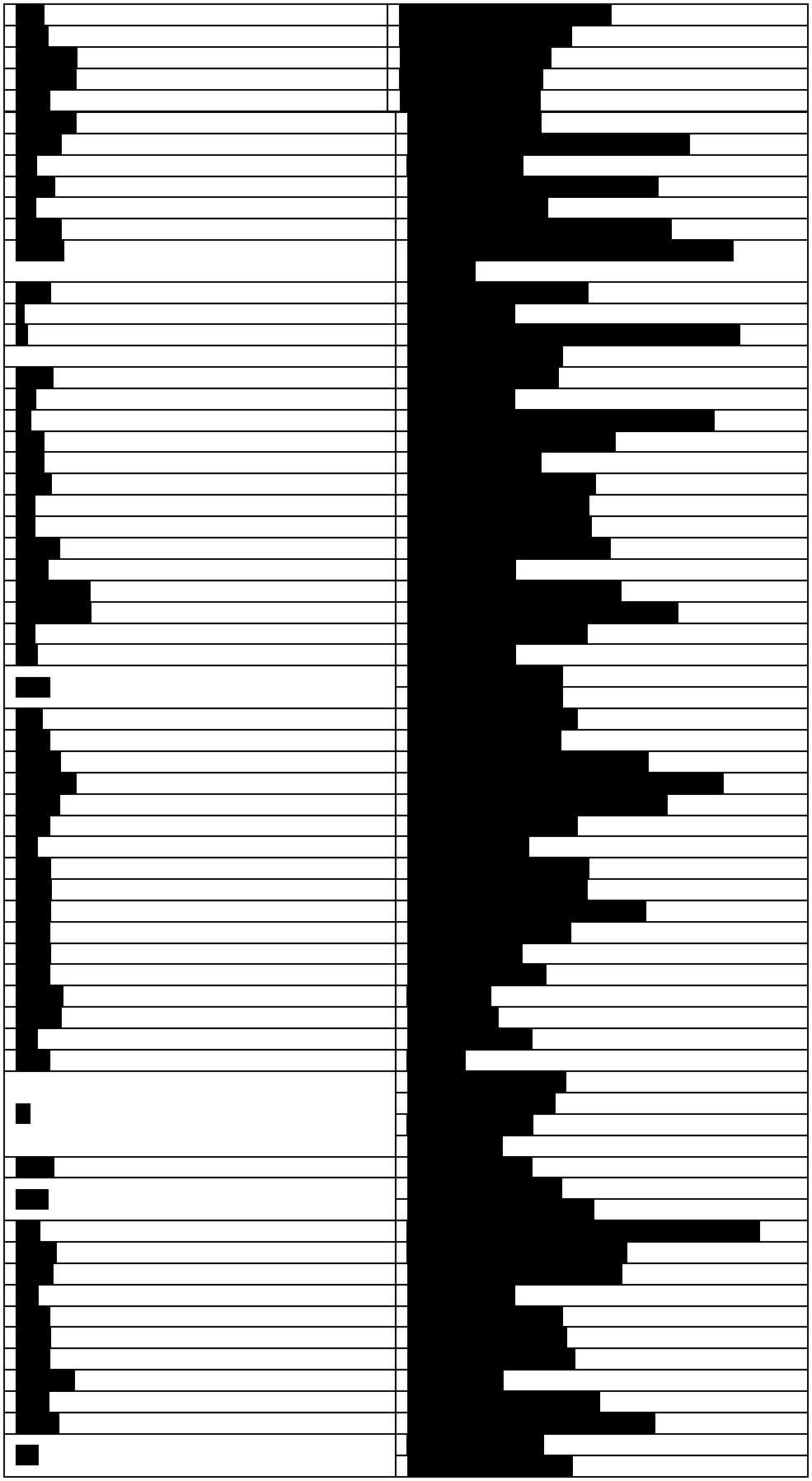

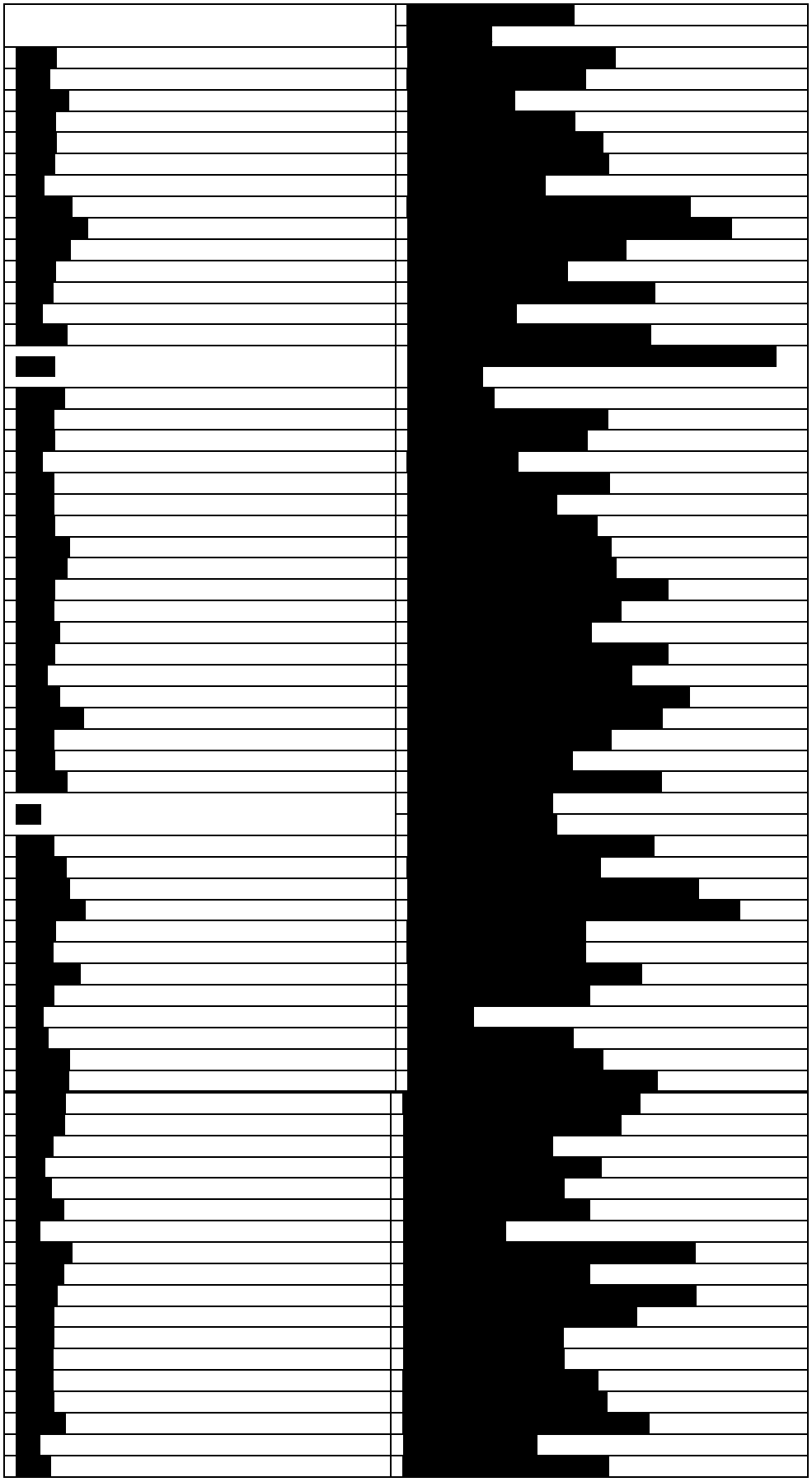

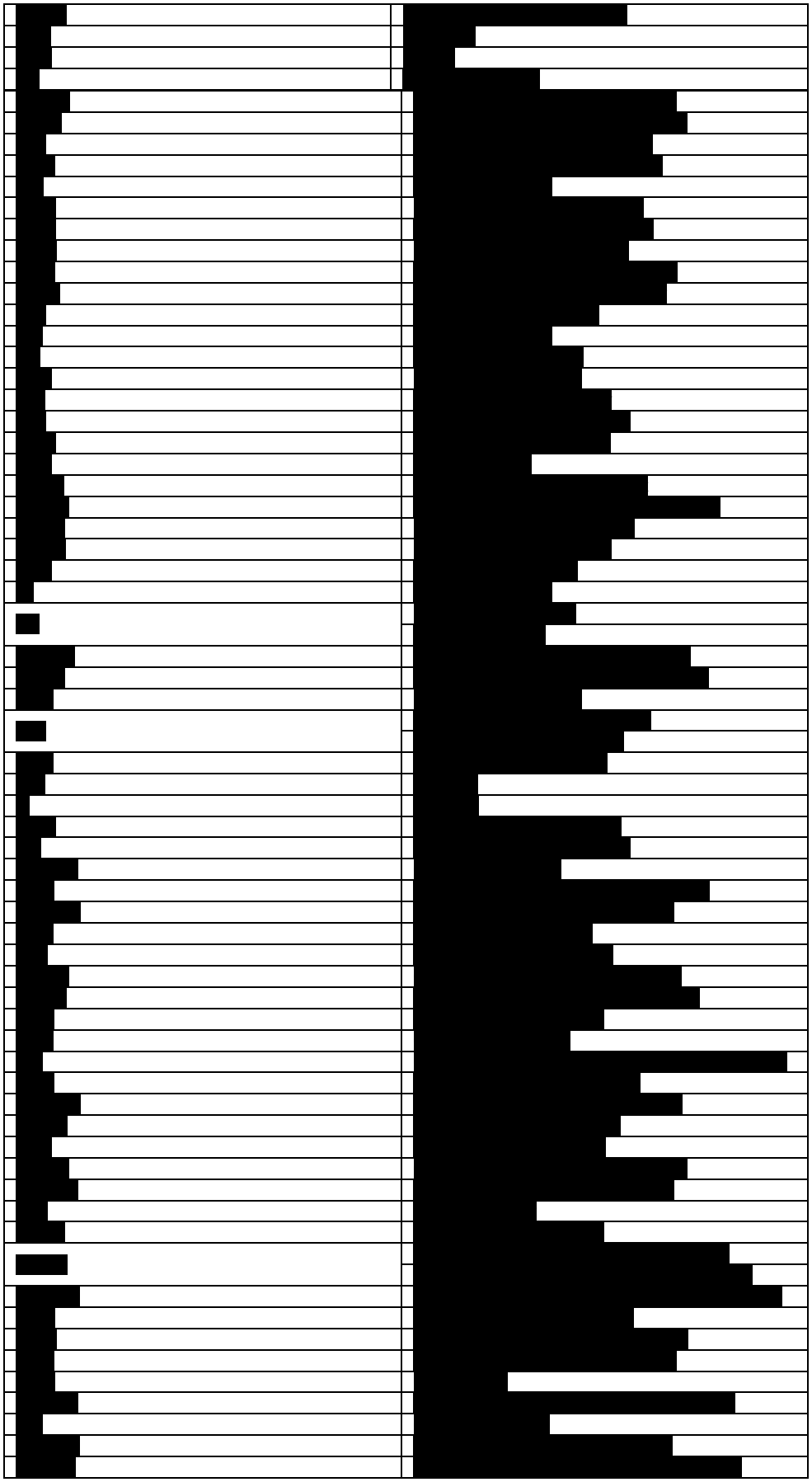

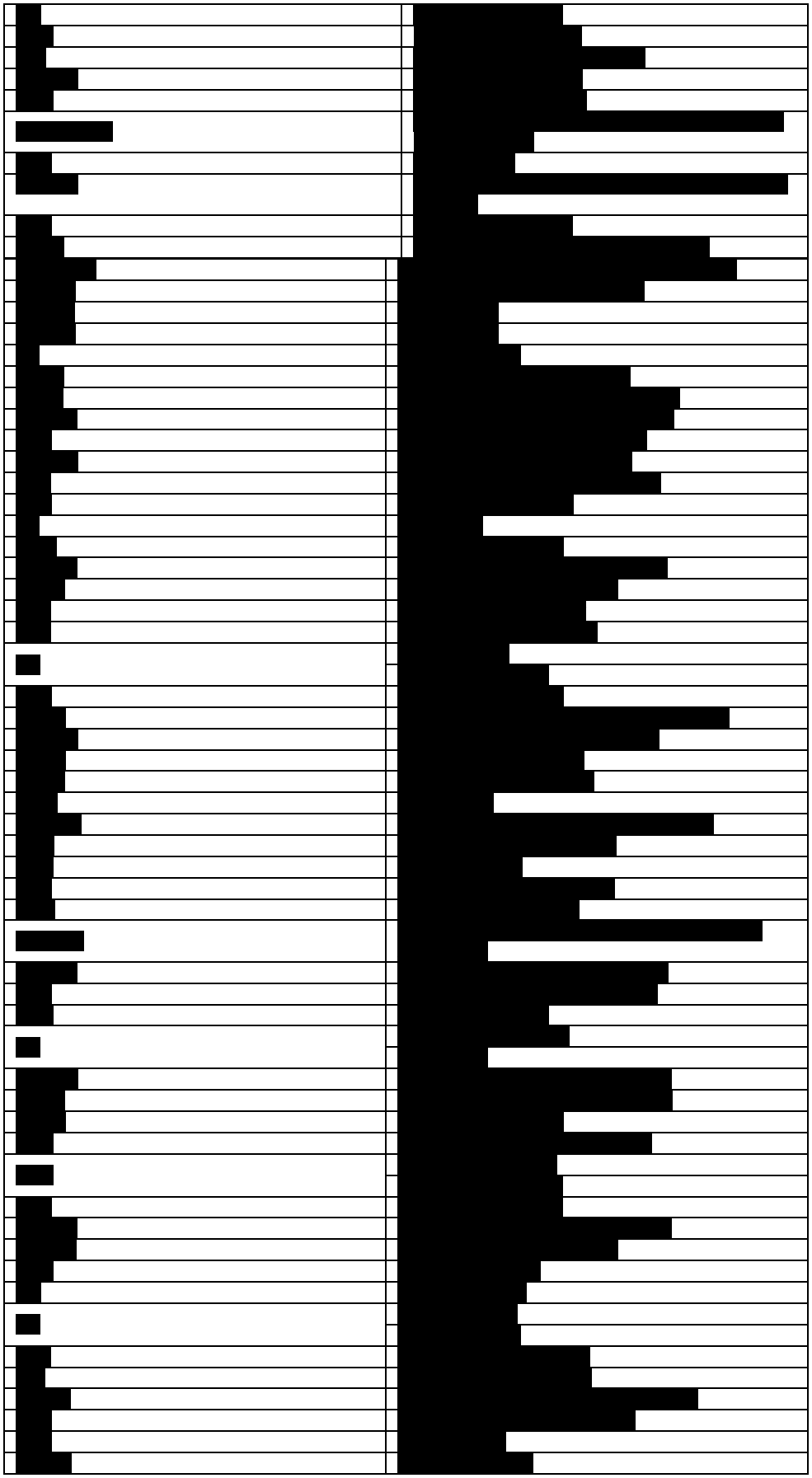

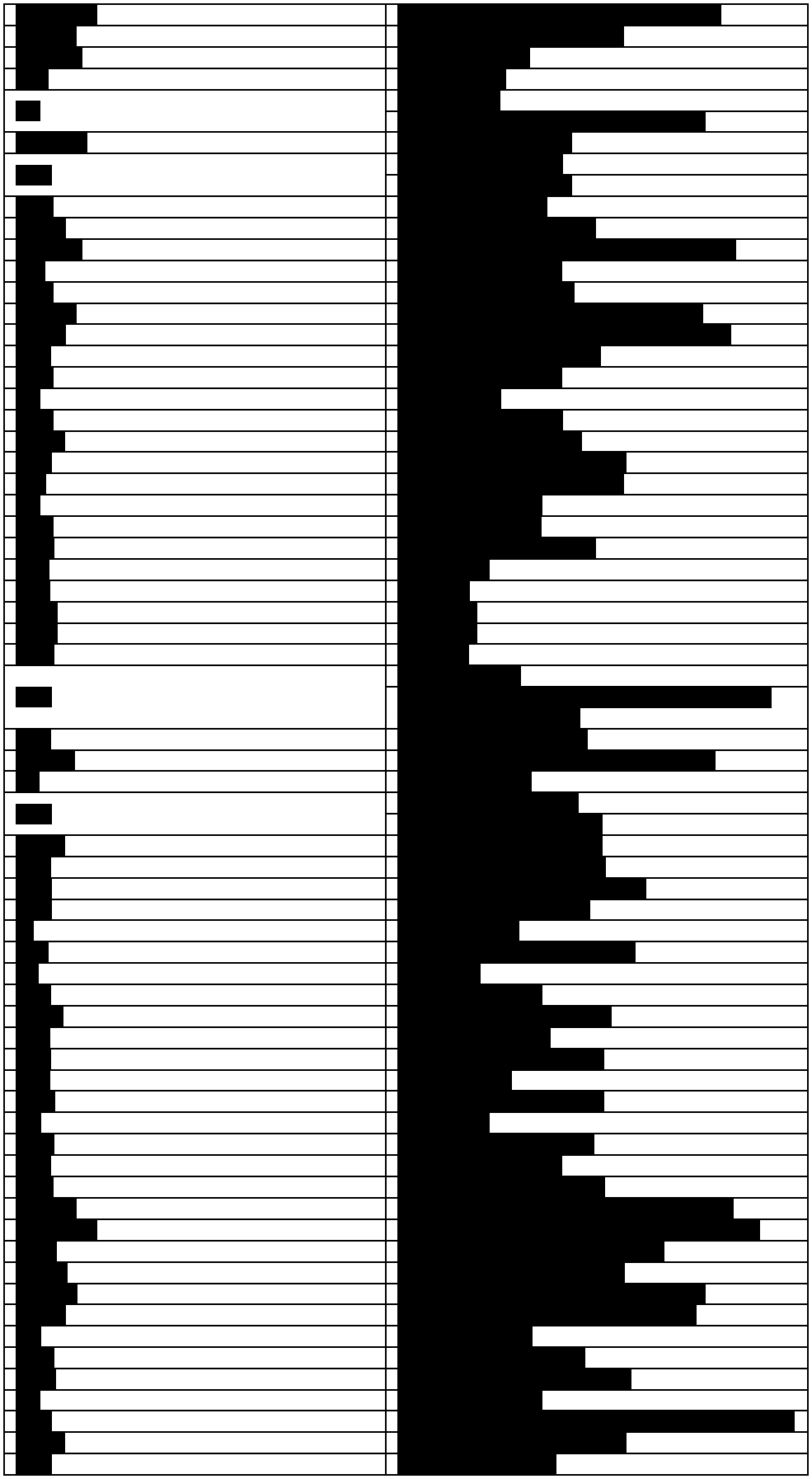

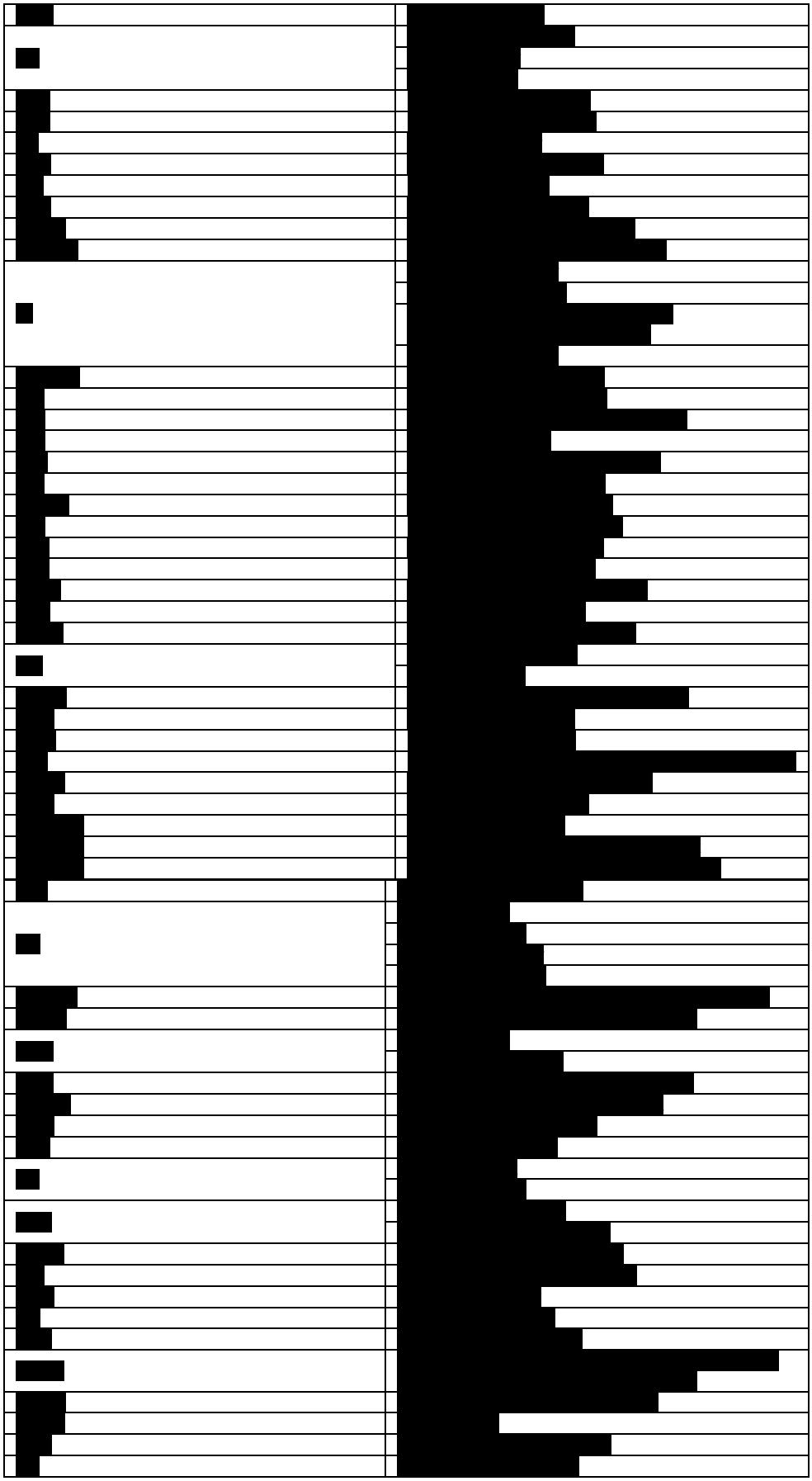

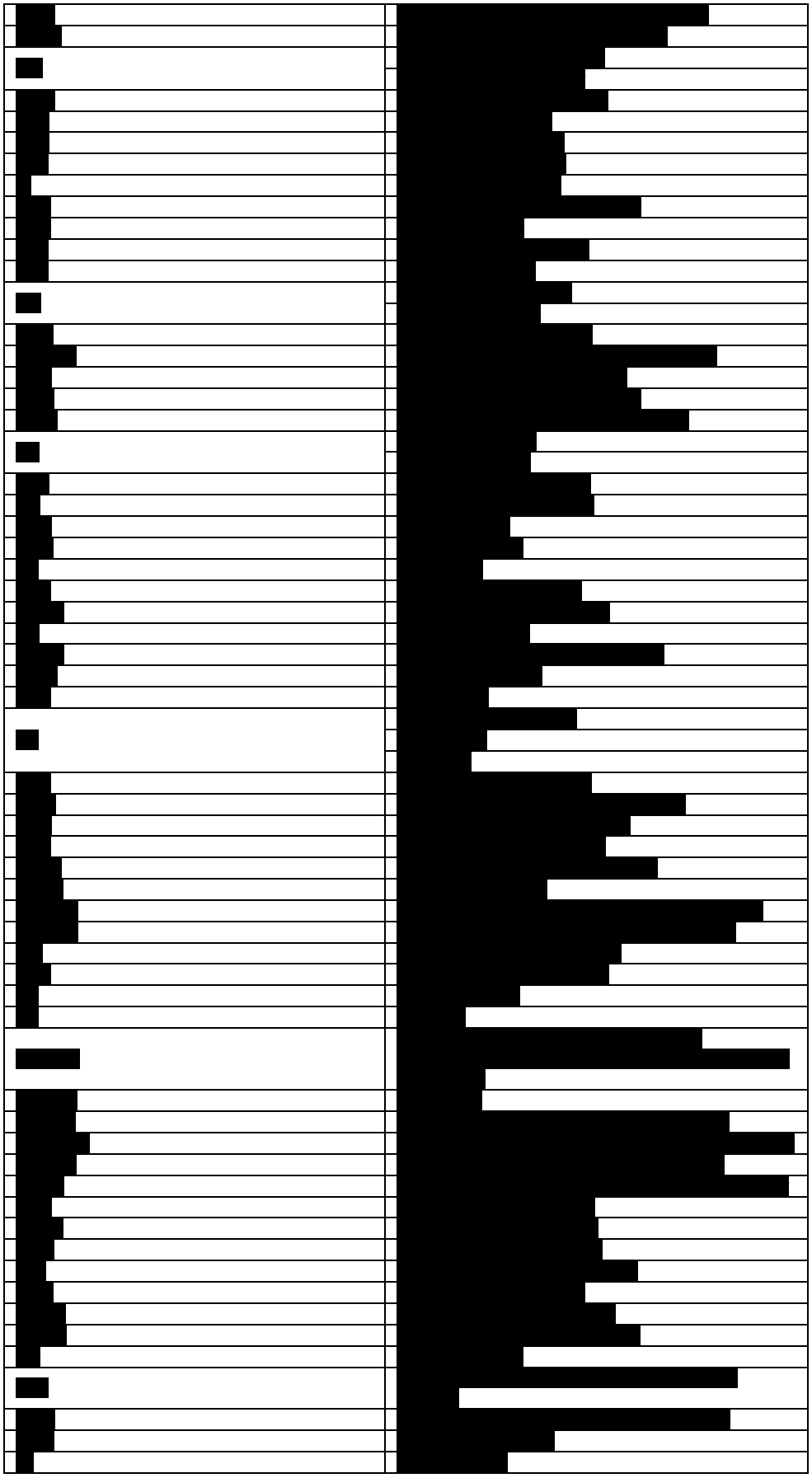

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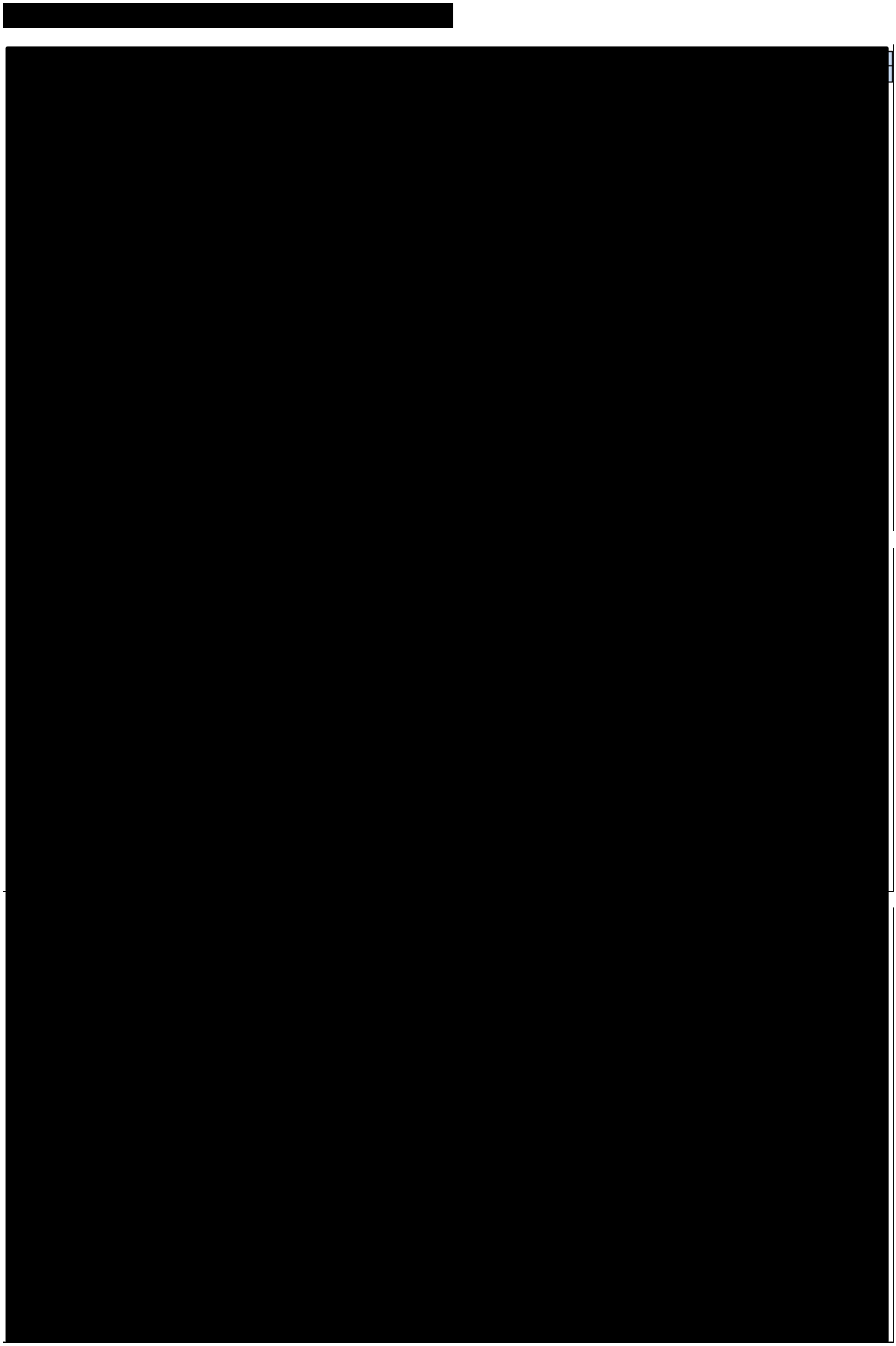

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