ORIGINAL

APPLICATION FORM FOR 700MHz, 800MHz, 2.6GHz AND 3.5GHz SPECTRUM AWARD PROCESS

RAIN NETWORKS (PTY) LTD

Independent Communications Authority of South Africa (ICASA)
Block C,
350 Witch-Hazel Ave, Eco-Park Estate,
Centurion,
0144

28 December 2020

Attention: The Project Manager - Licensing of the IMT Spectrum Council Committee

Contents

(I) APPLICANT DETAILS

1. Name, address, identification number telephone number and Email address of applicant:

Company Details:

Rain Networks (Pty) Ltd

Registration number: 1996/013739/07

Address:

Block D, The Main Straight Office Park,

392 Main Road, Bryanston, 2191, South Africa

(+27) 87 727 6000

Rain.co.za

Contact:

Mlindi Kgamedi

Tel: +27 83 262 1901

+27 87 727 6000

(a) A copy of the Company's registration certificate; Attached as **Annexure B**, and

(b) The name and address of directors and/ or principal executives.

Name of Director	Citizenship	Address
1. Phumlani Moholi	South African	Block D, Main Straight Office Park, 392 Main Road, Bryanston, 2191
2.Conrad Leigh	South African	Block D, Main Straight Office Park, 392 Main Road, Bryanston, 2191
3. Willem Roos	South African	Block D, Main Straight Office Park, 392 Main Road, Bryanston, 2191

2. Annual report of the applicant and its main shareholders from the previous three years (where available)

Shareholders	Local Ownership	% Foreign Ownership	% HDI (Indirect)	% Woman owned (Indirect)
Rain Holdings Proprietary Limited	99,95%	0,05%	34,76%	8,13%

3. Full particulars of the experience and expertise of the applicant, its partners, shareholders, suppliers and contractors in the business contemplated.

Rain Networks (Proprietary) Limited (Rain) is a wholly owned entity by Rain Holdings (Pty) Ltd mobile data operator with a LTE (Long Term Evolution) Advanced (LTE-A) and a Fifth Generation (5G) network which is used for the provision of both mobile and fixed-wireless high-speed data services. Rain holds both individual electronic communications services and electronic communications network services licences as well as radio frequency (RF) spectrum licences to utilise spectrum in the 1800 MHz, 2600 MHz and 3600MHz bands, amongst others.

The 4G LTE layer currently has over 6000 sites across most of South Africa, this network is continuously being expanded and will become national. In 2019 the 5G service launched, it was the first commercial network in Africa and is currently the largest. The 5G service is currently available in Gauteng and Cape Town only and will expand into new regions in 2021.

Rains products are available via the online store, and additional distribution channels include Takealot.com, Mr Delivery and at selected Pargo Pick up points in Clicks. In addition to this Rain will launch the Rainmaker programme a decentralised sales force of agents that can distribute SIMS, RICA and assist with onboarding new customers. Rain is committed to continuously innovating to provide affordable and accessible products to empower South Africans.

Rain uses a number of equipment vendors including but not limited to Huawei and Nokia and utilises the services on local and B-BBEE complete contractors in deploying and rolling out of its infrastructure.

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; Extent of beneficial ownership by the disabled.

Rain has 34,76% historically disadvantaged persons ownership and 8,13% extent of beneficial ownership by women. Rain currently doesn't have beneficial ownership by the youth and persons with disabilities.

(II) DESCRIPTION OF SERVICE

1. Description of service to be provided.

1.1. Rain mobile

Rain business plan has always been to launch a mobile product once we have enough coverage both indoors and outdoors. With acquiring sub 1 Gigahertz spectrum Rain will be able accelerate those plans and launch a full mobile service competitor.

Rain mobile will be a 4G data and voice service. The packages will be targeted at the mid to low end of the market.

As a new entrant Rain can offer innovative and disruptive tariff plans. Rain is currently the only operator offering and unlimited data for phone tariff plan. Rain will introduce a lower entry tariff plan based on the key needs of the market. The new mobile price plan will be offered on a pre-paid and post-paid basis.

The service will be offered and marketed nationally. Rain will utilise its existing channels and add new formal and informal distribution channels.

Rain will launch “Rainmaker” which will be used to assist in distribution of the SIMs using individuals as agents this will help create jobs and decentralise the distribution model.

1.2. Rain 5G

What is 5G?

5G is the next generation of wireless data networks. It will bring three major advances:

1.2.1. A massive increase in speed and capacity compared to 4G networks.

1.2.2. The ability to connect millions of IOT devices.

1.2.3. Ultra-low latency and ultra-high availability of connections between devices, known as critical machine-to-machine communication.

4G v 5G	4G		5G
Bandwidth	200Mbps		>1Gbps
Average speed	25 – 40Mbps		200 – 400Mbps
No. of devices supported	4,000 devices/km2		±1 million device/km2

The first application of Rain's 5G network is broadband at homes and small businesses. As the network coverage grows and more 5G devices become available, 5G will become the standard for mobile and IOT networks.

With Rain getting access to sub 1Gig Rains 5G network will also enable critical machine-to-machine communication and ultra-low latency between devices. This will accelerate a key pillar of the Fourth Industrial Revolution (4IR), enabling application such as:

- smart homes and cities;
- remote education using virtual reality technology;
- augmented reality applications that can create jobs in low cost jurisdictions;
- self-driving cars, drone deliveries and many more.

Rain has launched the African continent's first commercial standalone 5G network and one of the first ten in the world. As mentioned above, it provides for increased speed and capacity and enables many of the applications of the 4IR.

Rain has launched its first 5G lab with WITS University and Huawei to start a 5G Innovation. This exciting space will allow young engineers to the push limits of 5G technology and develop new innovations.

Rain already is deploying a 5G network and the access to sub 1 Gigahertz using DSS will enable Rain to extend to increase its 5G footprint.

Rain will be launching its partner program in 2021 the partner program will enable South African companies to benefit from Rains 5G network as a platform to build applications.

2. Proposed annual coverage, rollout indicating the exact areas and location covered.

Rain will, once awarded a licence in respect of 700M/800MHz band(s), expand its coverage to at least 80% of the population in general across South Africa, including Batch 1 and Batch 2 specifically in areas of our commercial viability.

(III) CONSTRUCTION OF THE NETWORK (RADIO COMPONENT)

1. Availability and experience of planning and project management capabilities required for construction of the network.

Rain has been constructing and operating an extensive network by deploying both 4G and 5G technologies. Since its start in 2015, it has deployed more than 6,995 4G sites through a combination of independent site builds, deep passive network sharing and RAN sharing. Further to this, it has deployed and is operating by a large margin the largest 5G network layer in South Africa. To further support its ambitions, Rain has deployed and is continuously expanding an ultra-high capacity DWDM fibre network.

2. Mechanisms used for the planning of any radio component of the network.

Rain has its own internal planning teams using the best of breed planning software and tools. Rain's radio planning team uses Teoco ASSET with detailed 2.5D and 3D maps covering all South Africa.

It is further supported by its main equipment vendors, Huawei, Nokia and ZTE which has access to a deep pool of expertise from R&D level all the way to physical site build capabilities.

3. **Plans to acquire resources such as access to sites, other property, technology, personnel and capital.**

Rain has its own property and site acquisition teams and all the requisite engineering personnel, access to technology and capital to support the expansion of its existing network with the new spectrum layers. It has proved know how and experience in cooperating with other operators, landlords and tower companies to access the physical infrastructure it requires.

(IV) BUSINESS PLAN - "CONFIDENTIAL"

BUSINESS PLAN – "CONFIDENTIAL"

1. Introduction

Rain, founded in 2015, is a relatively new entrant in the telecommunications landscape in South Africa. Rain builds and operates a 4G and 5G data network throughout the country. It has been providing wholesale roaming services since 2016 and launched a retail offering in 2017. In 2019 Rain launched the first commercial 5G network in South Africa. During 2020 Rain has gained significant traction in the market for providing wireless data products to mobile, home and small business customers. Obtaining sub 1 GHz spectrum will enable Rain to cover a significantly larger geographical area in an economically sustainable fashion.

2. Rain's strategy

A summary of Rain's business model is illustrated below:

Figure 1

above, Rain currently operates in the following markets:

- wholesale roaming service to a large MNO in the South African market;
- best effort 4G data products to consumers and small businesses; and
- best experience 5G data products to consumers and small businesses.

Rain's consumer offerings are focussed on providing unlimited subscription packages (which particularly serves consumers' needs as it pertains to remote working and streaming).

Rain plans to become a more significant player in the mobile data market (as indicated in the shaded blue blocks above). In order to achieve this in a sustainable manner, it needs to gain access to the appropriate sub 1 GHz spectrum. Consequently, revenue from mobile products (either through retail pre-paid channels and/or a MVNO strategy) is included in the financial projections in section 4 below. The above indicate areas that Rain currently does not participate in. These areas are considered future opportunities for the business. However, no detailed strategies and business plans have been developed. It should also be noted that these areas have not been included in the financial projections in section 4 below.

3. Spectrum auction

In order to execute on its long-term strategy, Rain wishes to participate in the upcoming spectrum auction to ensure it has an optimal mix of spectrum licences to provide customers with the requisite coverage and capacity.

Rain currently has the following spectrum licences (suitable for 4G and 5G):

Band	Amount (MHz)	Type	Layer	Technology deployed
1800	2x12Mhz	FDD	Capacity	4G
2600	20MHz	TDD	Capacity	4G
3600	80Mhz	TDD	Capacity	5G

The addition of spectrum below 1 GHz will significantly enhance Rain's capability to expand its coverage in an economically sound manner. As such Rain intends to bid for spectrum in the following bands:

Band	Amount (MHz)	Type	Layer	Technology to be deployed
700	2x10MHz	FDD	Coverage	4G & 5G
2600	30MHz	TDD	Capacity	4G & 5G

The addition of a further 30MHz of spectrum in the 2600 band will give Rain a total of 50MHz. Rain is planning to deploy both 4G/LTE and 5G technology utilising these spectrum bands.

4. Financial projections

4.1. Assumptions

Rain has produced detailed financial projection, for its business as a whole, assuming it is successful in the spectrum auction. The most important assumptions are shown and discussed below:

Rain currently has just over 6 000 sites deployed on the 4G and 5G networks. Over the next 5 year it is planned to significantly expand the network to more than 20 000 sites. This will ensure we have the required capacity to serve clients' needs. It will also ensure we achieve the coverage obligations set out in the spectrum auction.

[redacted]

The network expansion will be achieved by deploying c. R8 billion network capital expenditure. Rain also plans to conclude infrastructure sharing arrangements with other players in the industry to achieve the financial objectives set out in this document.

In line with the spectrum auction obligations, it is assumed that Rain will procure capacity from the proposed wireless open-access network (WOAN). It is assumed that a percentage of revenue derived from the mobile products will be used to purchase WOAN capacity.

[redacted]

4.2. Projected financial statements

Income statement

[redacted]

[redacted]

Balance sheet

[redacted]

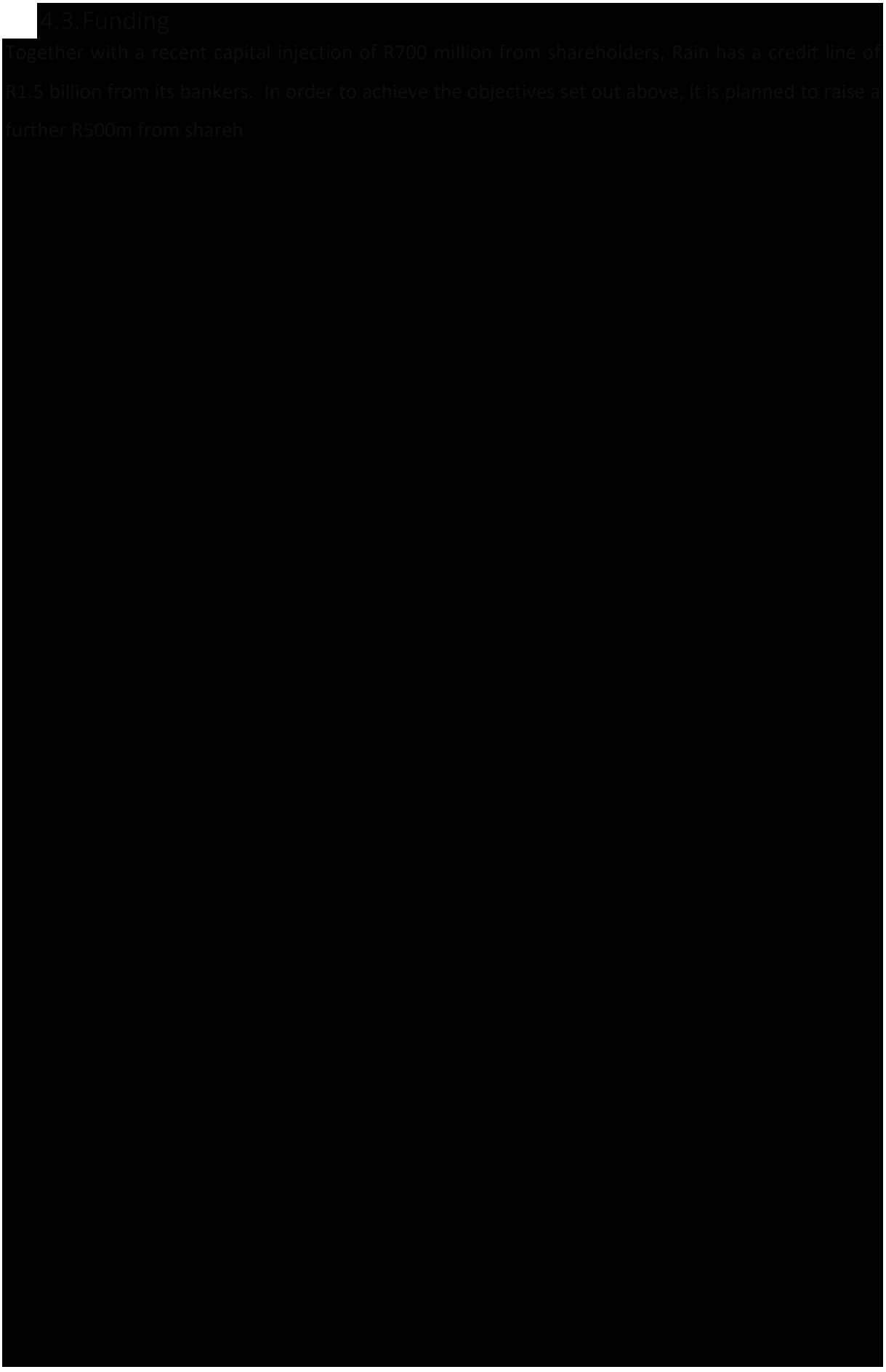
Cash flow

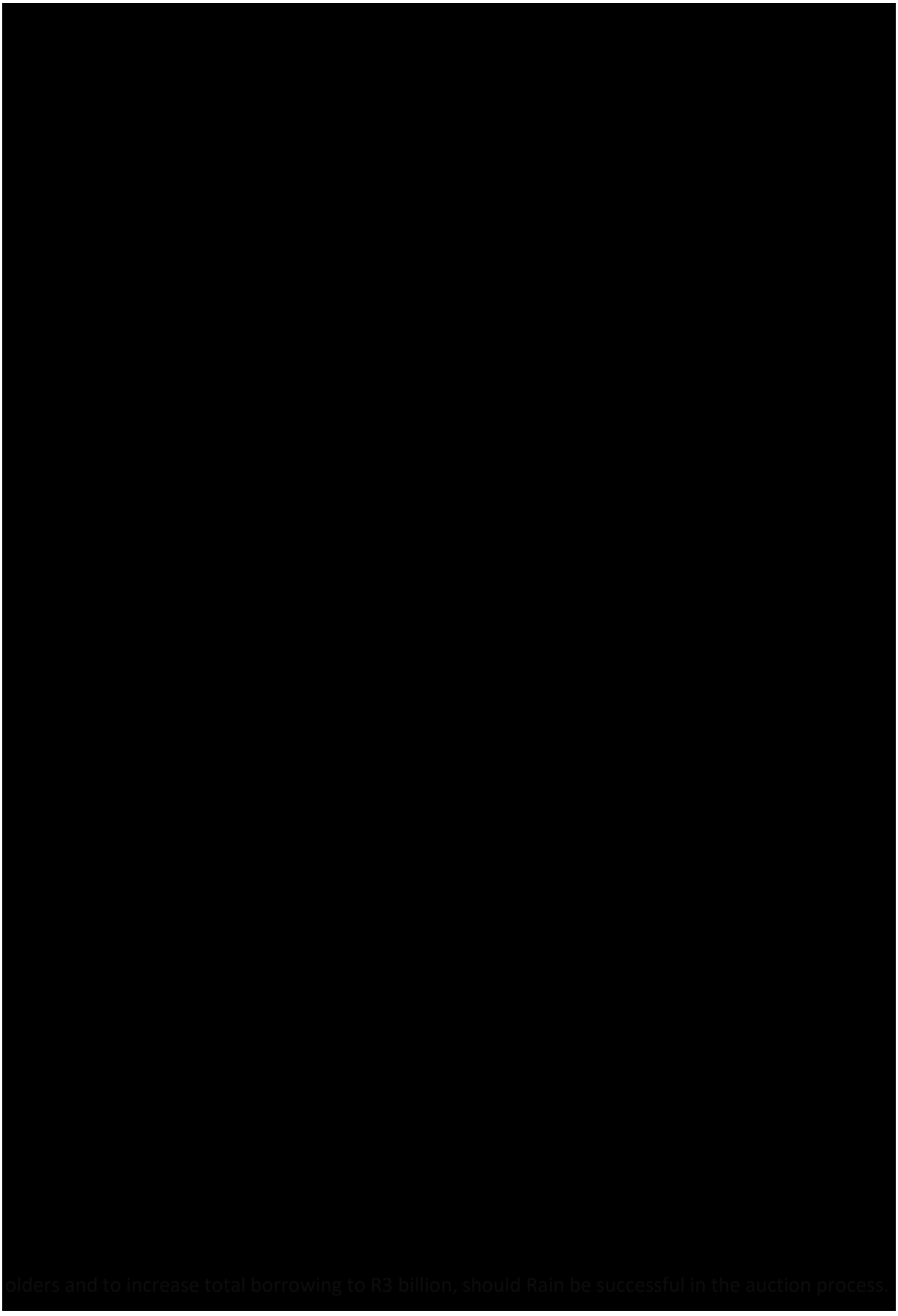
[redacted]

As can be seen from the cash flow projection above, Rain plan to invest close to R8bn in capital expenditure over the next five years.

4.3. Funding

Together with a recent capital injection of R700 million from shareholders, Rain has a credit line of R1.5 billion from its bankers. In order to achieve the objectives set out above, it is planned to raise a further R500m from shareh





olders and to increase total borrowing to R3 billion, should Rain be successful in the auction process.

1. Fundamental assumptions for the business plan with financial forecasts for a minimum period of three years.

Rain will implement 5G NR technology, as described in 3GPP release 15, updated with subsequent 3GPP standards releases. Rain is one of very few 5G operators in the world that has already deployed a full 5G core network and completed the migration from 5G NSA (non-standalone) to SA (standalone) and will deploy this layer in 5G SA mode to fully take advantage of the technological advances offered by 5G.

2. A market analysis of the services contemplated to be offered through the radio frequency spectrum license applied for, including forecast demand.

Low band spectrum, such as 700 or 800MHz is ideally suited to providing coverage to outlying areas and deep indoor coverage in urban environments. The ITA stipulates both coverage and cell edge throughput obligations. The network will be designed to meet these initial coverage and capacity requirements and expanded in future to ensure that the network remains compliant to both the coverage and capacity requirements as stipulated in the license obligations. Rain is comfortable that it will at minimum meet the 80% coverage obligation at 5Mbps cell edge throughput within 5 years but is planning to deploy its network even wider in order to make it a credible national operator.

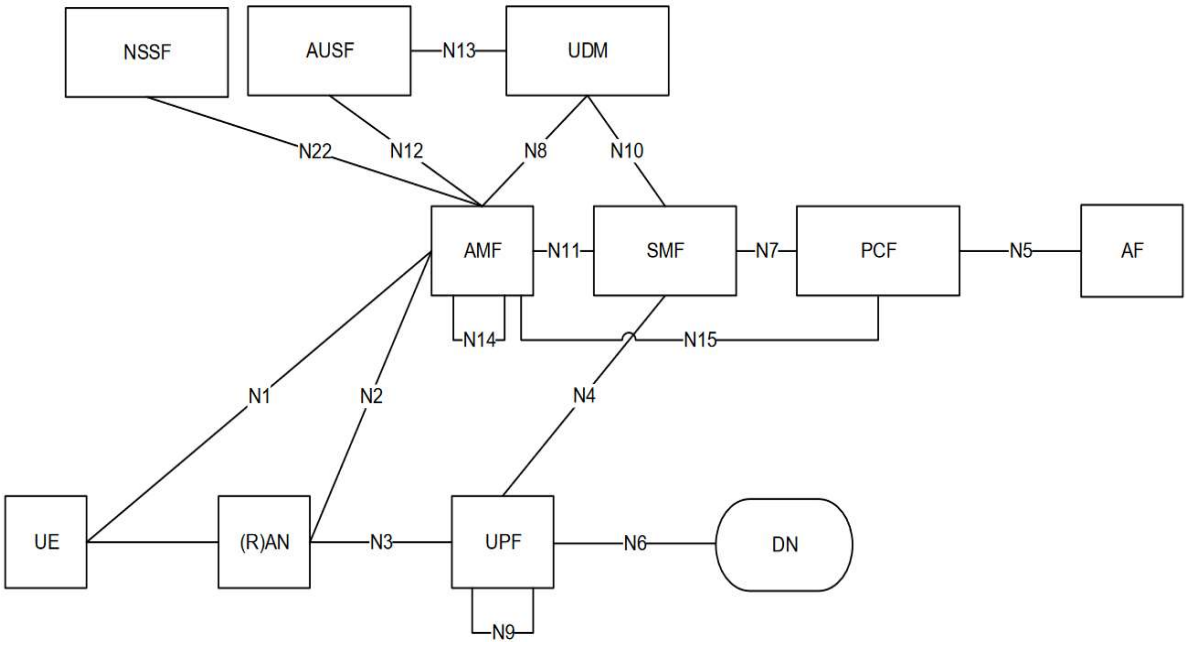
3. Description of products and services to be offered through the radio frequency spectrum license applied for.

3.1. Rain will deploy a 3GPP standards based 5G SA layer.

3.2. This architecture is fully described in 3GPP TS 23.501 and transposed as ETSI TS 123 501 (attached for reference).

3.3. The layer will be deployed through a combination of independent site build and RAN sharing. RAN sharing will be implemented using a MOCN architecture, thus the interfaces will remain standardized with no additional roaming interfaces implemented. Allowance will be made to offer RAN sharing and roaming to the WOAN (if required), also through a MOCN architecture.

Diagram from ETSI TS 123 501 showing all relevant and important interfaces in the network. These are 3GPP standardized interfaces and as such detailed description of these interfaces may be found in ETSI TS 123 501 (attached to this)



4. Description of pricing strategy for products and services to be offered through the radio frequency spectrum license applied for.

Rain will deploy this 5G layer through a combination of independent site builds and RAN sharing. It is Rain's preference to have all transmission links through fibre optic connections, but this is unfortunately not always possible, so it is expected that many of these transmission links will have to rely on microwave connections at least partially. As such there would be requirement to interconnect to other telecommunications networks or services for:

4.1. Backhaul for individual sites to local aggregation nodes

4.2. Backhaul of traffic from aggregation nodes to Rain's core network sites

4.3. Internet breakout

4.4. Voice interconnects

(V) TECHNICAL INFORMATION - 700/800MHz Band(s) (RADIO SYSTEM DESIGN)

5. Rain will deploy the very latest technology in this band and as with the rest of its network will continuously update the technology as it evolves to ensure that its network is always able to leverage the latest advancements in technology.

6. All the equipment and technology deployed complies to 3GPP and its associated ETSI standards.

7. Details of radio planning

7.1 It is envisioned that this spectrum will ultimately be deployed across around 12,000 sites for Rain to meet its coverage obligation and business strategy.

7.2 Rain assigns combine PLMN ID, number, area name and region into a code which makes it easy to reference sites.

7.3 This spectrum will be deployed across thousands of sites, the coordinates of which will be provided to ICASA when these sites are deployed.

7.4 The exact frequency which Rain will deploy depends on the outcome of the spectrum auction and which spectrum is assigned to Rain.

7.5 2x10MHz

7.6 The 5G technology which Rain will deploy uses Orthogonal Frequency Division Multiplexing (OFDM).

7.7 Rain will deploy 4x4 MIMO configuration across all sites. The actual bit rate depends on the user distribution across each cell, but the maximum bit rate of each cell is 195.744Mbps.

7.8 The antennas will be deployed across thousands of sites, most will be installed on towers with the remainder deployed on rooftops.

7.9 Huawei ADU4516R6v06 4-port passive antenna

7.10 Height x Width x Depth: 1999 x 429 x 196mm

7.11 15 dBi

7.12 +45, -45 cross polarized

7.13 400W

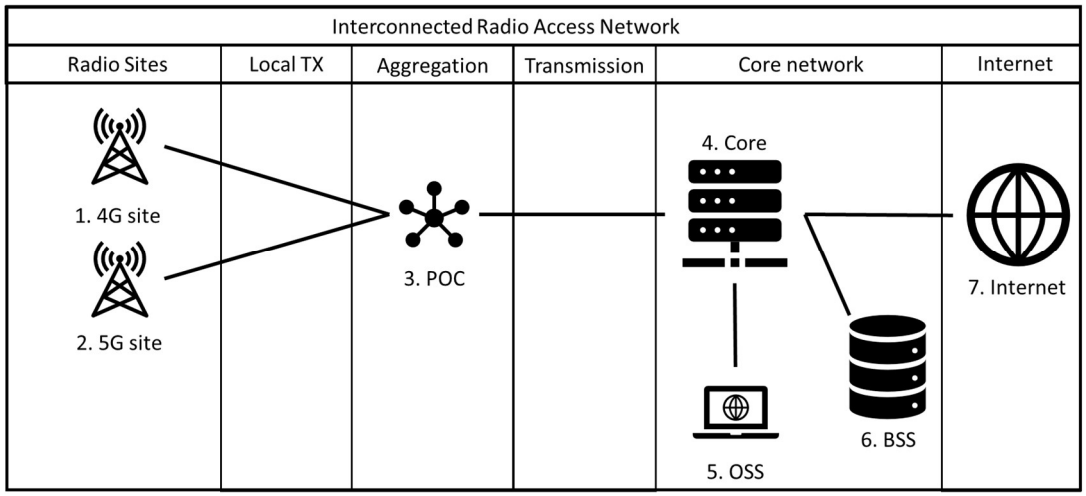
7.14 -111.5dBm

7.15 1.1dB

7.16 A full 5G service will be deployed, including broadband data and voice services.

7.17 The service will be deployed on a national basis.

8.



9. Only equipment type approved by ICASA and consequently certified to comply to all applicable EMC will be deployed.

10. In line with the rollout obligations, Rain forecasts that it will carry around 500PB of traffic a month 5 years from now. Rain balances its traffic across its various network layers to ensure that its customers get the best possible experience. Low band spectrum is used more as a coverage layer with higher frequency bands serving as capacity layers so it is anticipated that this layer will carry around 10% of Rain's total traffic. Rain's network architecture is designed around control and user plane separation (CUPS).

    Multiple, redundant control plane and user plane nodes are deployed, each with their own transit capacity to connect them to the internet. In the case of a disaster, such as the complete loss of a major datacentre such as Teraco, Rain can route all its traffic to alternate location and has enough transit capacity to continue to offer its service with no interruption or congestion. All major transmission routes are completely redundant with no shared ducts anywhere on the network. For example, between Johannesburg and Cape Town Rain operates two fibre routes, one via Bloemfontein and another via Kimberley so that if there is a cable break along one route the traffic may be routed via the other.

11. The 5G mobile service deployed in this band will use a mobile numbering plan.

12. Rain has deployed a Customer Experience Management platform. This system continuously monitors all customers' experience across all the services which they are accessing. Rain will use this platform to ensure that all its customers receive the best experience possible. Rain sets quality target for individual users based on the packages they opt to subscribe to. Rain targets its sites to have 99.9% availability and less that 0.1% packet loss on its transmission network.

13. A mobile service will be deployed in this band. The sites are in fixed locations, interconnected by a fixed network consisting mostly of fibre optic connections, supplemented by microwave links where necessary. The network will be designed so that all outdoor service areas will receive a minimum signal strength of -105dBm.

14. Rain is planning to deploy a minimum of 7360 x 700/800MHz sites over a period of five years to meet its coverage obligation. It is anticipated that the rollout will be divided into the following three phases.

    Phase 1 (initial): 1049 sites over 18 months

    Phase 2: 2134 sites over 18 months

    Phase 3: 4177 sites over 24 months

    The following table provides a breakdown of the municipalities and the associated number of sites that will be included in Phase 1 and Phase 2 of rollout. This list is not exhaustive, and Rain anticipates that it will deploy in more areas, depending on the business requirements.

Municipality name	***Planned sites***	***Rollout Phase***
cityofcapetown_0	96	Phase 1
cityoftshwane	3	Phase 1
CPT: City of Cape Town Metropolitan Municipality 18	60	Phase 1
EKU: Ekurhuleni Metropolitan Municipality	118	Phase 1
ETH: eThekwini Metropolitan Municipality 9	325	Phase 1
JHB: City of Johannesburg Metropolitan Municipality 14	215	Phase 1
mangaung	59	Phase 1
potchefstroom	27	Phase 1
randfontein	20	Phase 1
TSH: City of Tshwane Metropolitan Municipality 12	126	Phase 1
Ga-Segonyana	11	Phase 2
Buffalo City	61	Phase 2
City of Matlosana	26	Phase 2
delmas	10	Phase 2
drakenstein	36	Phase 2

emfuleni	43	Phase 2
Emnambithi/Ladysmith	47	Phase 2
GT483 Westonaria	6	Phase 2
hibiscuscoast	87	Phase 2
lesedi	33	Phase 2
LIM341 Musina	1	Phase 2
LIM367 Mogalakwena	26	Phase 2
localmunicipalityofmadibeng	1	Phase 2
Madibeng	58	Phase 2
mbombela	38	Phase 2
metsimaholo	42	Phase 2
midvaal	54	Phase 2
nelsonmandelabay	61	Phase 2
NW383 Mafikeng	8	Phase 2
NW405 Merafong	10	Phase 2
oudtshoorn	9	Phase 2
Polokwane	95	Phase 2
solplaatjie	30	Phase 2
stellenbosch	57	Phase 2
themsunduzi	62	Phase 2
umdoni	30	Phase 2
umhlathuze	48	Phase 2
Siyancuma Local Municipality	4	Phase 2
Ba-Phalaborwa	27	Phase 2
beaufortwest	11	Phase 2
Bela-Bela Local Municipality	3	Phase 2
bergrivier	2	Phase 2
bitou	22	Phase 2
breedevalley	27	Phase 2
camdeboo	10	Phase 2
capeagulhas	21	Phase 2
cederberg	5	Phase 2
dihlabeng	13	Phase 2
Dipaleseng	4	Phase 2
EC104 Makana	3	Phase 2
ECDMA10 Cacadu	8	Phase 2
Emadlangeni	7	Phase 2
emakhazeni	9	Phase 2
emalahleni	19	Phase 2
Emthanjeni	8	Phase 2
Endumeni Local Municipality	5	Phase 2
ethekwini	30	Phase 2
FS162 Kopanong	9	Phase 2
FS173 Mantsopa	3	Phase 2
FS184 Matjhabeng	13	Phase 2
FS191 Setsoto	4	Phase 2

FS201 Moqhaka	6	Phase 2
FS205 Mafube	3	Phase 2
gamagara	15	Phase 2
george	39	Phase 2
govanmbeki	36	Phase 2
Greater Kokstad Local Municipality	2	Phase 2
Hantam	2	Phase 2
hessequa	33	Phase 2
Inxuba Yethemba	17	Phase 2
Kannaland	1	Phase 2
kgatelopele	9	Phase 2
kharahais	8	Phase 2
knysna	24	Phase 2
kouga	27	Phase 2
Kwa Sani Local Municipality	4	Phase 2
kwadukuza	61	Phase 2
KZN262 UPhongolo	12	Phase 2
Laingsburg	3	Phase 2
Langeberg	13	Phase 2
lekwa	8	Phase 2
Lephalale	15	Phase 2
LIM344 Makhado	50	Phase 2
Maletswai	10	Phase 2
matzikama	3	Phase 2
Modimolle	6	Phase 2
mookgopong	4	Phase 2
mosselbay	33	Phase 2
MP303 Mkhondo	8	Phase 2
MP324 Nkomazi	22	Phase 2
Mpofana	7	Phase 2
msukaligwa	13	Phase 2
Mtubatuba	4	Phase 2
Naledi	11	Phase 2
NC071 Ubuntu	2	Phase 2
NC072 Umsobomvu	3	Phase 2
NCDMA07 Pixley ka Seme	6	Phase 2
Ndlambe	17	Phase 2
Newcastle	44	Phase 2
Ngwathe	13	Phase 2
NW373 Rustenburg	33	Phase 2
NW374 Kgetlengrivier	3	Phase 2
NW384 Ditsobotla	5	Phase 2
overstrand_0	21	Phase 2
Pholcwane Local Municipality	6	Phase 2
Phumelela	10	Phase 2
richtersveld	3	Phase 2

saldanhabay_0	36	Phase 2
stevetshwete	18	Phase 2
swartland_0	27	Phase 2
swellendam	5	Phase 2
Thaba Chweu	16	Phase 2
thabazimbi	4	Phase 2
Theewaterskloof	22	Phase 2
Thembelihle Local Municipality	2	Phase 2
Thembisile Local Municipality	19	Phase 2
Tsantsabane	5	Phase 2
Umjindi	6	Phase 2
umtshezi	19	Phase 2
WCDMA05 Central	3	Phase 2
Witzenberg	20	Phase 2

A list of provisionally planned 700MHz sites and locations for Phase 1 and Phase 2 of rollout is included in Appendix E - Provisionally planned 700MHz sites.

Anticipated radio coverage for 16 municipalities included in Appendix E.

15. Rain has deployed U2020 and Netact, the operational support platforms of its vendors, Huawei and Nokia, and a cross vendor platform to tie everything together, a customer experience management system and its own toolset, Gemini. Rain invests heavily in network monitoring tools and has a dedicated team of software developers to continuously update and improve it.

16. Rain will deploy Huawei RRU5519et radios. There are new radios and consequently have not yet been type approved but will be by the time that the spectrum auction is concluded, and the spectrum is ready for use.

17. Rain has a dedicated regulatory team to ensure that it complies to all regulations and all laws appliable to it. It is in good standing with ICASA with no issues before the CCC.

18. Rain has proven and demonstrated network deployment and management expertise, as evidenced by its > 6,995 4G and > 600 5G sites. It employs and tRains an ever-growing team of engineers and technicians. It also leverages the deep technical experience of its vendors and because of Rain's early adoption of 5G, has direct access to the vendors' R&D resources.

19. Rain has a 24/7/365 network operations centre (NOC) staffed with skilled engineers to address any day to day operational issues. This NOC is further supported by tier 2 NOCs in Nigeria and India to deal with more complex issues. These tier 2 NOCs are further supported by tier 3 R&D centres in China.

(VI) TECHNICAL INFORMATION - 2600MHz Band (RADIO SYSTEM DESIGN)

1. Fundamental assumptions for the business plan with financial forecasts for a minimum period of three years.

Rain will implement 5G NR technology, as described in 3GPP release 15, updated with subsequent 3GPP standards releases. Rain is one of very few 5G operators in the world that has already deployed a full 5G core network and completed the migration from 5G NSA (non-standalone) to SA (standalone) and will deploy this layer in 5G SA mode to fully take advantage of the technological advances offered by 5G.

2. A market analysis of the services contemplated to be offered through the radio frequency spectrum license applied for, including forecast demand.

Low band spectrum, such as 700 or 800MHz is ideally suited to providing coverage to outlying areas and deep indoor coverage in urban environments. The ITA stipulates both coverage and cell edge throughput obligations. The network will be designed to meet these initial coverage and capacity requirements and expanded in future to ensure that the network remains compliant to both the coverage and capacity requirements as stipulated in the license obligations. Rain is comfortable that it will at minimum meet the 80% coverage obligation at 5Mbps cell edge throughput within 5 years but is planning to deploy its network even wider to make it a credible national operator.

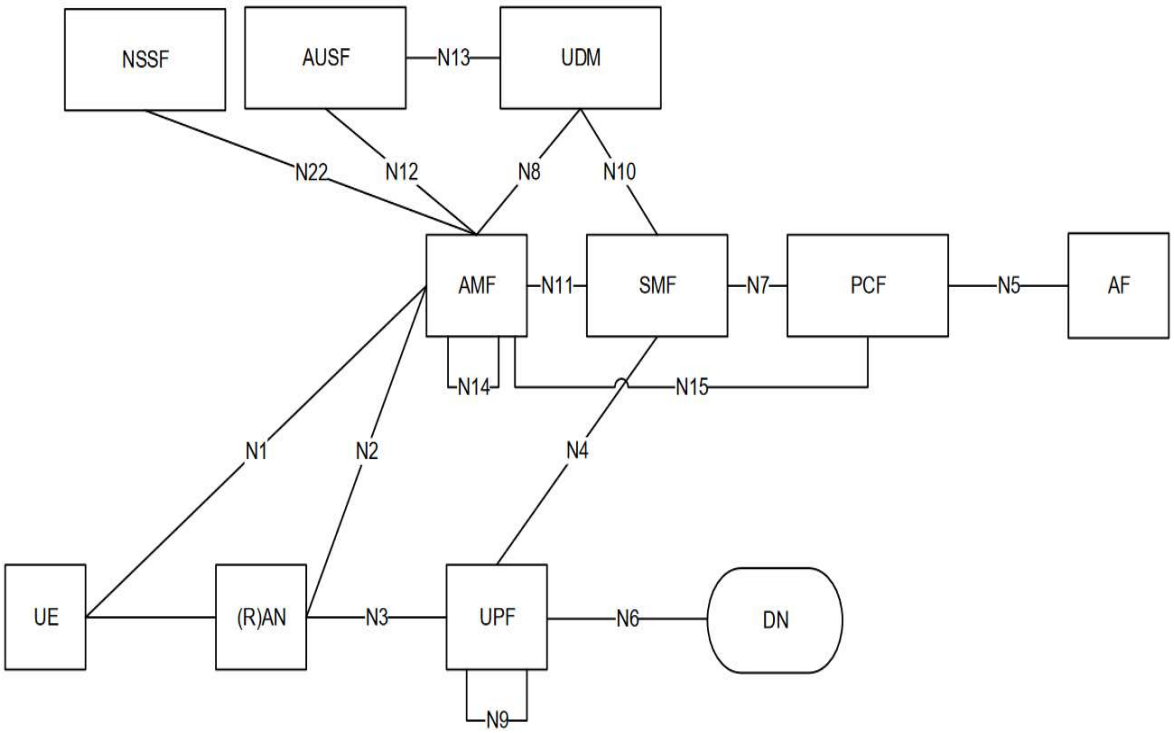
3. Description of products and services to be offered through the radio frequency spectrum license applied for.

Rain will deploy a 3GPP standards based 5G SA layer.

3.1. This architecture is fully described in 3GPP TS 23.501 and transposed as ETSI TS 123 501 (attached for reference).

3.2. The layer will be deployed through a combination of independent site build and RAN sharing. RAN sharing will be implemented using a MOCN architecture, thus the interfaces will remain standardized with no additional roaming interfaces implemented. Allowance will be made to offer RAN sharing and roaming to the WOAN (if required), also through a MOCN architecture.

3.3. Diagram from ETSI TS 123 501 showing all relevant and important interfaces in the network. These are 3GPP standardized interfaces and as such detailed description of these interfaces may be found in ETSI TS 123 501.



4. Rain will deploy this 5G layer through a combination of independent site builds and RAN sharing. It is Rain's preference to have all transmission links through fibre optic connections, but this is unfortunately not always possible, so it is expected that many of these transmission links will have to rely on microwave connections at least partially. As such there would be requirement to interconnect to other telecommunications networks or services for:

    4.1 Backhaul for individual sites to local aggregation nodes

    4.2 Backhaul of traffic from aggregation nodes to Rain's core network sites

    4.3 Internet breakout

    4.4 Voice interconnects

5. Rain will deploy the very latest technology in this band and as with the rest of its network will continuously update the technology as it evolves to ensure that its network is always able to leverage the latest advancements in technology.
6. All the equipment and technology deployed complies to 3GPP and its associated ETSI standards.
7. **Details of radio planning**

7.1 It is envisioned that this spectrum will ultimately be deployed across around 9,000 sites for Rain to meet its coverage obligation and business strategy.

7.2 Rain assigns combine PLMN ID, number, area name and region into a code which makes it easy to reference sites.

7.3 This spectrum will be deployed across thousands of sites, the coordinates of which will be provided to ICASA when these sites are deployed.

7.4 The exact frequency which Rain will deploy depends on the outcome of the spectrum auction and which spectrum is assigned to Rain.

7.5 50MHz

7.6 The 5G technology which Rain will deploy uses Orthogonal Frequency Division Multiplexing (OFDM).

7.7 Rain will deploy 64x64 MIMO configuration across all sites. The actual bit rate depends on the user distribution across each cell, but the spectrum efficiency for Massive MIMO systems is up to 110 bit/s/Hz, so around 5.5Gbps per cell.

7.8 The antennas will be deployed across thousands of sites, most will be installed on towers with the remainder deployed on rooftops.

7.9 Huawei AAU5639w 64T64R Active Antenna Unit (AAU)

7.10 Height x Width x Depth: 730 x 395 x 160mm

7.11 24.8 dBi

7.12 +25, -25 cross polarized

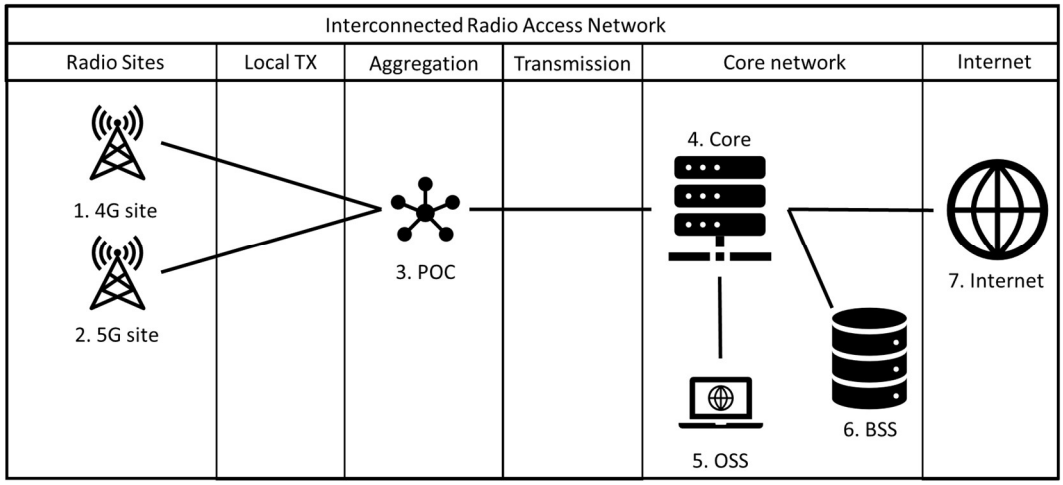
7.13 240W

7.14 -99dBm

7.15 0dB

7.16 A full 5G service will be deployed, including broadband data and voice services.

7.17 The service will be deployed on a national basis.

8. 

9. Only equipment type approved by ICASA and consequently certified to comply to all applicable EMC will be deployed.

10. In line with the rollout obligations, Rain forecasts that it will carry around 500PB of traffic a month 5 years from now. Rain balances its traffic across its various network layers to ensure that its customers get the best possible experience. Low band spectrum is used more as a coverage layer with higher frequency bands serving as capacity layers so it is anticipated that this layer will carry around 10% of Rain's total traffic. Rain's network architecture is designed around control and user plane separation (CUPS). Multiple, redundant control plane and user plane nodes are deployed, each with their own transit capacity to connect them to the internet. In the case of a disaster, such as the complete loss of a major datacentre such as Teraco, Rain can route all its traffic to alternate location and has enough transit capacity to continue to offer its service with no interruption or congestion. All major transmission routes are completely redundant with no shared ducts anywhere on the network. For example, between Johannesburg and Cape Town Rain operates two fibre routes, one via Bloemfontein and another via Kimberley so that if there is a cable break along one route the traffic may be routed via the other.

11. The 5G mobile service deployed in this band will use a mobile numbering plan.

12. Rain has deployed a Customer Experience Management platform. This system continuously monitors all customers' experience across all the services which they are accessing. Rain will use this platform to ensure that all its customers receive the best experience possible. Rain

sets quality target for individual users based on the packages they opt to subscribe to. Rain targets its sites to have 99.9% availability and less that 0.1% packet loss on its transmission network.

13. A mobile service will be deployed in this band. The sites are in fixed locations, interconnected by a fixed network consisting mostly of fibre optic connections, supplemented by microwave links where necessary. The network will be designed so that all outdoor service areas will receive a minimum signal strength of -105dBm.

14. Rain in is planning to deploy a minimum of 9363 x 2600MHz sites over a period of five years to meet its coverage obligation. It is anticipated that the rollout will be divided into the following three phases.

    Phase 1 (initial): 1474 sites over 18 months

    Phase 2: 2562 sites over 18 months

    Phase 3: 9363 sites over 24 months

    The following table provides a breakdown of the municipalities and the associated number of sites that will be included in Phase 1 and Phase 2 of rollout. This list is not exhaustive, and Rain anticipates that it will deploy in more areas, depending on the business requirements.

Municipality name	***Planned sites***	***Rollout Phase***
cityofcapetown_0	96	Phase 1
cityoftshwane	15	Phase 1
CPT: City of Cape Town Metropolitan Municipality 18	89	Phase 1
EKU: Ekurhuleni Metropolitan Municipality	181	Phase 1
ETH: eThekwini Metropolitan Municipality 9	456	Phase 1
JHB: City of Johannesburg Metropolitan Municipality 14	289	Phase 1
mangaung	66	Phase 1
potchefstroom	84	Phase 1
randfontein	20	Phase 1
TSH: City of Tshwane Metropolitan Municipality 12	178	Phase 1
Ga-Segonyana	11	Phase 2
Siyancuma Local Municipality	6	Phase 2
Ba-Phalaborwa	27	Phase 2
beaufortwest	11	Phase 2
Bela-Bela Local Municipality	3	Phase 2
bergrivier	2	Phase 2
bitou	22	Phase 2
breedevalley	27	Phase 2
Buffalo City	67	Phase 2

camdeboo	10	Phase 2
capeagulhas	21	Phase 2
cederberg	5	Phase 2
City of Matlosana	26	Phase 2
delmas	10	Phase 2
dihlabeng	13	Phase 2
Dipaleseng	4	Phase 2
drakenstein	36	Phase 2
EC104 Makana	3	Phase 2
ECDMA10 Cacadu	8	Phase 2
Emadlangeni	7	Phase 2
emakhazeni	9	Phase 2
emalahleni	19	Phase 2
emfuleni	47	Phase 2
Emnambithi/Ladysmith	51	Phase 2
Emthanjeni	8	Phase 2
Endumeni Local Municipality	6	Phase 2
ethekwini	72	Phase 2
FS162 Kopanong	9	Phase 2
FS173 Mantsopa	3	Phase 2
FS184 Matjhabeng	17	Phase 2
FS191 Setsoto	4	Phase 2
FS201 Moqhaka	8	Phase 2
FS205 Mafube	5	Phase 2
gamagara	24	Phase 2
george	39	Phase 2
govanmbeki	132	Phase 2
Greater Kokstad Local Municipality	2	Phase 2
GT483 Westonaria	6	Phase 2
Hantam	2	Phase 2
hessequa	33	Phase 2
hibiscuscoast	92	Phase 2
Inxuba Yethemba	17	Phase 2
Kannaland	1	Phase 2
kgatelopele	9	Phase 2
kharahais	8	Phase 2
knysna	24	Phase 2
kouga	33	Phase 2
Kwa Sani Local Municipality	4	Phase 2
kwadukuza	61	Phase 2
KZN262 UPhongolo	16	Phase 2
Laingsburg	3	Phase 2
Langeberg	13	Phase 2
lekwa	8	Phase 2
Lephalale	15	Phase 2
lesedi	54	Phase 2

LIM341 Musina	1	Phase 2
LIM344 Makhado	58	Phase 2
LIM367 Mogalakwena	31	Phase 2
localmunicipalityofmadibeng	1	Phase 2
Madibeng	62	Phase 2
Maletswai	10	Phase 2
matzikama	3	Phase 2
mbombela	38	Phase 2
metsimaholo	75	Phase 2
midvaal	90	Phase 2
Modimolle	6	Phase 2
mookgopong	4	Phase 2
mosselbay	33	Phase 2
MP303 Mkhondo	8	Phase 2
MP324 Nkomazi	25	Phase 2
Mpofana	7	Phase 2
msukaligwa	13	Phase 2
Mtubatuba	4	Phase 2
Naledi	11	Phase 2
NC071 Ubuntu	2	Phase 2
NC072 Umsobomvu	3	Phase 2
NCDMA07 Pixley ka Seme	6	Phase 2
Ndlambe	17	Phase 2
nelsonmandelabay	71	Phase 2
Newcastle	48	Phase 2
Ngwathe	13	Phase 2
NW373 Rustenburg	37	Phase 2
NW374 Kgetlengrivier	3	Phase 2
NW383 Mafikeng	12	Phase 2
NW384 Ditsobotla	7	Phase 2
NW405 Merafong	13	Phase 2
oudtshoorn	9	Phase 2
overstrand_0	21	Phase 2
Pholcwane Local Municipality	7	Phase 2
Phumelela	10	Phase 2
polokwane	104	Phase 2
richtersveld	3	Phase 2
saldanhabay_0	36	Phase 2
solplaatjie	78	Phase 2
stellenbosch	72	Phase 2
stevetshwete	33	Phase 2
swartland_0	27	Phase 2
swellendam	5	Phase 2
Thaba Chweu	16	Phase 2
thabazimbi	4	Phase 2
Theewaterskloof	22	Phase 2

Thembelihle Local Municipality	2	Phase 2
Thembisile Local Municipality	30	Phase 2
themsunduzi	67	Phase 2
Tsantsabane	5	Phase 2
umdoni	30	Phase 2
umhlathuze	48	Phase 2
Umjindi	6	Phase 2
umtshezi	19	Phase 2
WCDMA05 Central	3	Phase 2
Witzenberg	20	Phase 2

A list of provisionally planned 2600MHz sites and locations for Phase 1 and Phase 2 of rollout is included in Appendix F - list of provisionally planned 2600MHz.

Anticipated radio coverage for 16 municipalities included in Appendix F.

A comprehensive list of all the 700/800MHz and 2600MHz site of provisionally planned are included in a soft copy file for the Authority.

15. Rain has deployed U2020 and Netact, the operational support platforms of its vendors, Huawei and Nokia, and a cross vendor platform to tie everything together, a customer experience management system and its own toolset, Gemini. Rain invests heavily in network monitoring tools and has a dedicated team of software developers to continuously update and improve it.

16. Rain will deploy Huawei AAU5639w radios. These radios have been type approved by ICASA ref 18194.

17. Rain has a dedicated regulatory team to ensure that it complies to all regulations and all laws appliable to it. It is in good standing with ICASA with no issues before the CCC.

18. Rain has proven and demonstrated network deployment and management expertise, as evidenced by its > 6,995 4G and > 600 5G sites. It employs and tRains an ever-growing team of engineers and technicians. It also leverages the deep technical experience of its vendors and because of Rain's early adoption of 5G, has direct access to the vendors' R&D resources.

19. Rain has a 24/7/365 network operations centre (NOC) staffed with skilled engineers to address any day to day operational issues. This NOC is further supported by tier 2 NOCs in Nigeria and India to deal with more complex issues. These tier 2 NOCs are further supported by tier 3 R&D centres in China.

Authorised Representative 1:

Signature: _____ Printed name: PHUMLANI MOKOLI

Authorised Representative 2:

Signature: _____ Printed name: Brandon Leigh

Authorised Representative 3:

Signature: _____ Printed name: Willem Roos

Members of the Applicant's board of management and board of directors		
Name:	**Position:**	**Personal address:**
Willem Roos	Chief Executive Office	21 Rowan Road, Mostertsdrift Stellenbosch, 7600
Brandon Leigh	Chief Executive Office	11 The Cheviots Camps Bay Cape Town 8005
Phumlani Moholi	Chairperson - Rain Networks	105 Hanovarian Avenue, Waterfall, Equestrian Estate, Midrand, 1685
Conrad Leigh	CEO – Rain Networks	147 Blue Crane Drive Westlake Country and Safari Estate Skeerpoort 024
Francois du Plooy	Chief Financial Officer	4 Hamlin Manor, 28 Glenluce Drive, Douglasdale, 2165
Gustav Schoeman	Chief Technical Officer	20 Finchley Road, Camps Bay, 8005

Authorised Representative 1:

Signature: _____ Printed name: PHUMLANI MOHOLI

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Authorised Representative 3:

Signature: _____ Printed name: Willem Roos

Authorised Representatives		
Name:	Position:	Signature:
Brandon Leigh	Chief Executive Office	
Willem Roos	Chief Executive Office	
Phumlani Moholi	Chairperson - Rain Networks	

Auction Representatives		
Name:	Position:	Signature:
Brandon Leigh	Chief Executive Office	
Gustav Schoeman	Chief Technical Officer	
Conrad Leigh	CEO – Rain Networks	

Authorised Representative 1:

Signature: _____ Printed name: Phumlani Moholi

Authorised Representative 2:

Signature: _____ Printed name: Brandon Leigh

Authorised Representative 3:

Signature: _____ Printed name: Willem Roos

Lot number(s)	Lot category	Lot size	Number of lots available	Reserve price per lot
1-4	700 MHz	2 x 5 MHz	4	R526 615 392.49
5-8	800 MHz	2 x 5 MHz	4	R752 307 703.55
9	800 MHz	2 x 10 MHz	1	R1 155 174 976.66
10-24	2600 MHz	1 x 10 MHz	14	R97 843 320.52
25	3500 MHz	1 x 2 MHz	1	R9 818 987.30
26–33	3500 MHz	1 x 10 MHz	8	R75 606 202.22
34	3500 MHz	1 x 4 MHz	1	R19 637 974.60

Lot Categories Applicant wishes to qualify to bid on in Auction Stage						
1-4 ✓	5- 8 ✓	9	10-24 ✓	25	26 – 33 ✓	34

Authorised Representative 1:

Signature: _____ Printed name: Phumlani Mokoli

Authorised Representative 2:

Signature: _____ Printed name: Brandon Leigh

Authorised Representative 3:

Signature: _____ Printed name: Willem Ross