
Ghana
SPORTS
CENTRE

MINISTRY OF YOUTH AND SPORT
REPUBLIC OF GHANA

Introduction

This document is submitted to the The Chairman of the Ghana 2023 Project Team, Ministry of Youth And Sports by David Walter Limited & Associates in association with SKOL Consult, together with the Boogertman + Partners Professional Consortium in response to the Project Brief for the Development of Sports infrastructure and Services for the 13th African Games 2023.

This document deals specifically with the requirements for the 50 000 seater Athletics stadium and ancillary sports facilities within a sports precinct on the property defined in the briefing document which is included below for easy reference.

The document furthermore investigates the possibilities of a multi-purpose arena and the management of all facilities. In addition a contracting solution is provided by QA Venue Solutions.

The team

The bidding team has previously submitted under separate cover its full credentials to include a full professional team with the requisite previous stadium and sports skills, with local partners under the leadership of Boogertman + Partners Architects, enhanced by the specific skills for stadium, arena and events management and asset commercialisation by QA Venue Solutions, as well as stadium contracting experience by WBHO. With the inclusion of a significant roof partner in Pfeifer Group.

The brief

Cocoa Pod

Its widespread cultivation is attributed to Tetteh Quarshie, a Ghanaian blacksmith of Osu in Accra. He lived and worked in Fernando Po (now Equatorial Guinea) for several years and on his return to Ghana in I879, brought with him the Amelonado Cocoa Pods.

He established a farm at Akwapim Mampong in the Eastern Region, which turned into a nursery for all pioneering Cocoa farmers in Ghana.

Tetteh Quarshie's legacy is the Cocoa Bean that has become the backbone of Ghana's Economy for over I00 years since the Gold Coast. Naming the new 50,000-seater Olympic Stadium for the 13th African Games in 2023 would be more than a fitting memoriam for the role of Cocoa in the Ghana's economy and to the pioneer.

Picture of the COCOA POD to inform design concepts for the proposed 50,000-seater iconic stadium at Borteyman, Tema Metropolitan area.

** Extract from brief*

Inspiration

Tetteh Quarshie is widely considered the “father” of Ghanaian cocoa. He was trained as a blacksmith by the Basel Mission and worked as a migrant labourer on Bioko in Equatorial Guinea for six years. He allegedly smuggled the first cocoa seeds from Bioko to his home town Mampong in 1879 by hiding in them in the bottom of his toolbox. Quarshie subsequently spread these seeds throughout the Gold Coast and from that start the cocoa plant disseminated throughout the whole West African mainland, which offers ideal climate and soil conditions for cocoa cultivation. After the first exports of cocoa in 1891, the Gold Coast became only two decades later, in 1911, the largest cocoa exporter worldwide. Cocoa has remained until today at the heart of the Ghanaian economy and self-image.

Macro

Location

Ghana is a country located along the Gulf of Guinea and Atlantic Ocean, in the subregion of West Africa. Ghana is bordered by the Ivory Coast in the west, Burkina Faso in the north, Togo in the east, and the Gulf of Guinea and Atlantic Ocean in the south.

Micro
ROUTES FROM UNIVERSITY/CITY TO PRECINCT AS ALTERNATIVE TO HIGHWAY
PRECINCT
to TEMA
N4
N1
UNIVERSITY OF GHANA
AIRPORT
to ACCRA
Boundary rd
to train station
Ecowas Rd
Old Rd
Haatso-Atomic Rd
New Rd
Boundary Rd
Jungle Rd
Shiashie Rd
N Airport Rd
Agbleza Manet Road
Achimota Rd
4 km

The climate

Accra is situated 7.9 degrees north of equator and is bordered by the Gulf of Guinea to its south. The temperature is thus very tropical with temperatures varying between 23 and 33 degrees. Temperatures rarely go below 21 degrees.

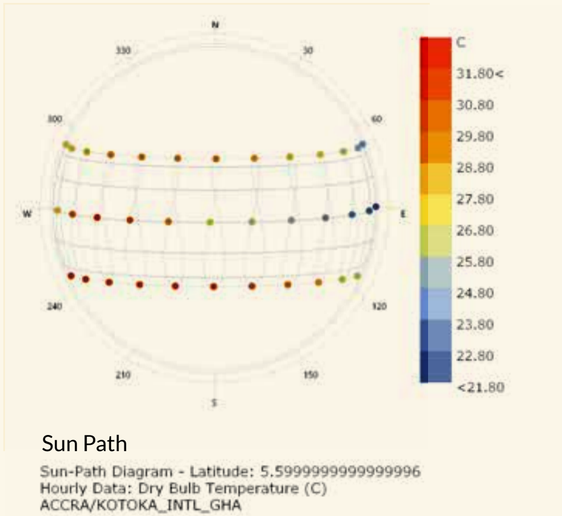
Its tropical location means that it can rain any time of the year and this is a significant consideration for the design of the stadium, with specific reference to the amount of cover that is provided by the proposed roof.

Site analysis

SUN

In Accra, which is on the equator, the average day is about 12 hours long. As a result of the similarity in seasons, the length of day does not vary substantially during the year. The earliest sunrise occurs on 26 May at 05:44, and the latest sunrise occurs on 2 February at 06:17.

Also due to its equatorial location, the solar angles vary throughout the year. Solar angles would lean toward both the northern and southern hemisphere during maximum solstice.

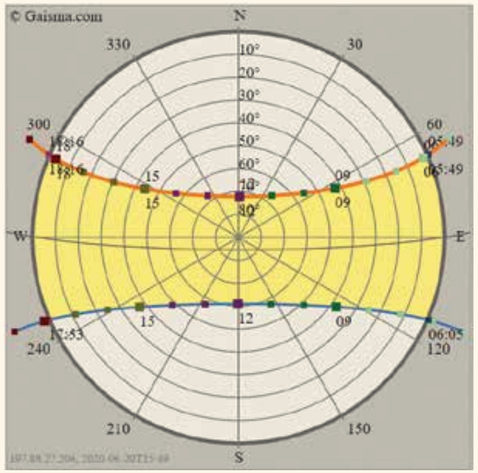


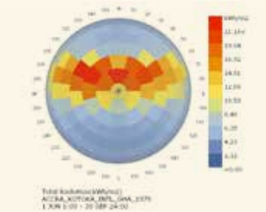
Sun Path

Sun-Path Diagram - Latitude: 5.5999999999999996
Hourly Data: Dry Bulb Temperature (C)
ACCRA/KOTOKA_INTL_GHA

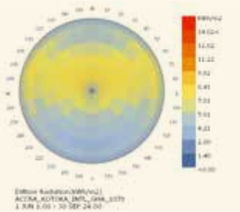
DAILY SOLAR ANGLES

sun path: today june solstice december solstice
annual variation equinox (march/september)
sunrise /sunset: sunrise sunset

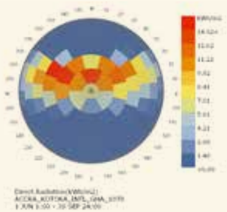




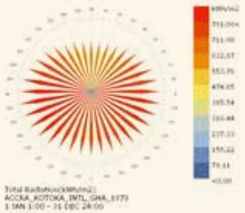
Total Radiation

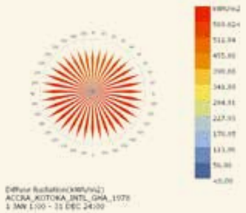


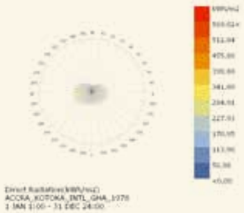
Diffuse Radiation



Direct Radiation

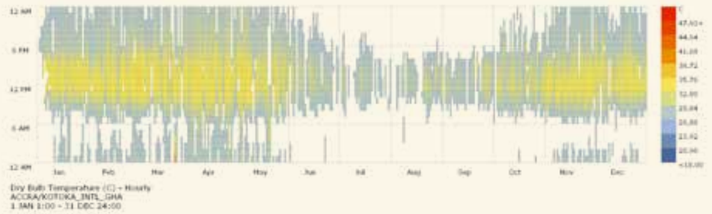




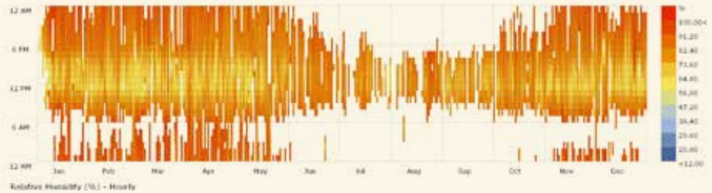


TEMPERATURES

The temperature in Accra generally varies between 23° and 33°. The temperature rarely goes below 21° .Although both seasons in Accra is relatively similar with an average temperature difference of about 30°, the warmer season lasts from 3 March to 25 April, and the colder season occurs from 29 June to 1 September.



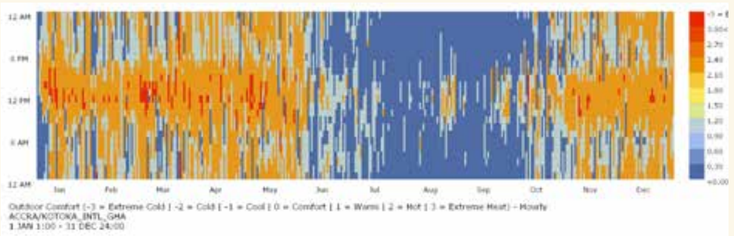
Dry Bulb Temperature (C) - Hourly
ACCRA/KOTOKA_INTL_GHA
1 JAN 1:00 - 31 DEC 24:00



Relative Humidity (%) - Hourly

HUMIDITY

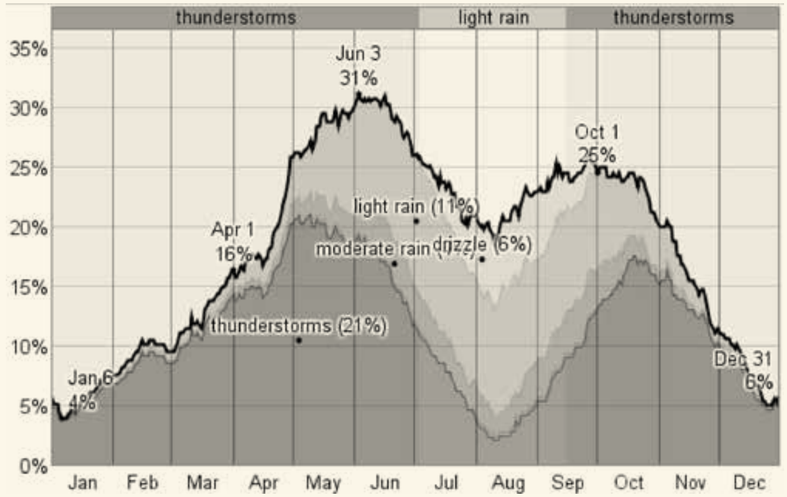
The relative humidity in Accra typically ranges from 48% (comfortable) to 96% (very humid) throughout the course of the year. Humidity would rarely go below 30% and can reach as high as 100%. As a result, there is virtually no opportunity for passive cooling. The building will control fresh air closely in order to save energy. Heat recovery on fresh air will also be utilised to keep energy use low.



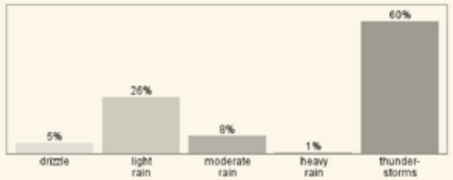
Outdoor Comfort

PRECIPITATION

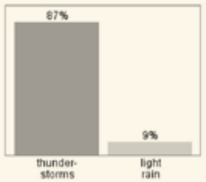
Although precipitation can occur during any time of the year, the probability of rain is greatest on the 3 June which is during the cooler season. Throughout the year, the most common forms of precipitation are thunderstorms and light rain.



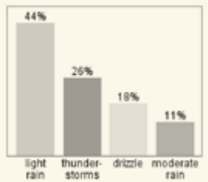
TYPES OF PRECIPITATION THROUGHOUT THE YEAR



WARM SEASON PRECIPITATION

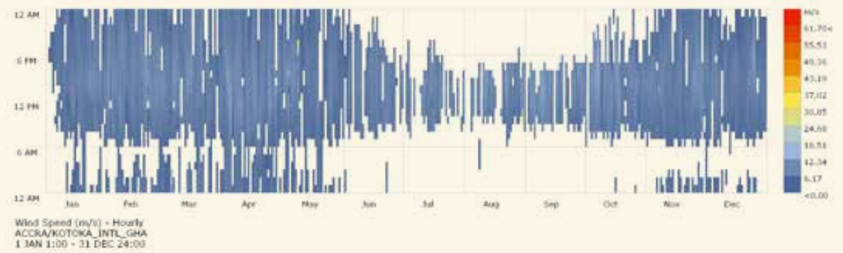


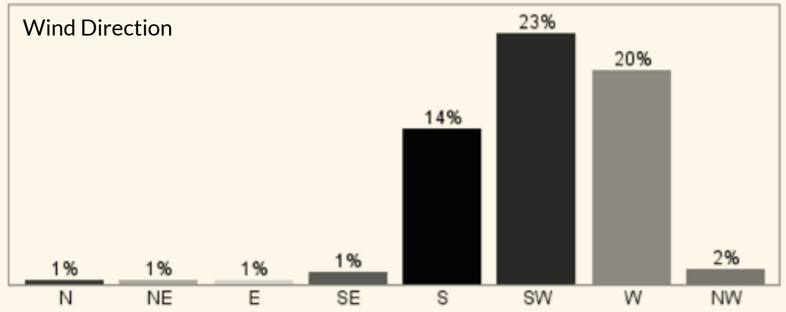
COLD SEASON PRECIPITATION



WIND

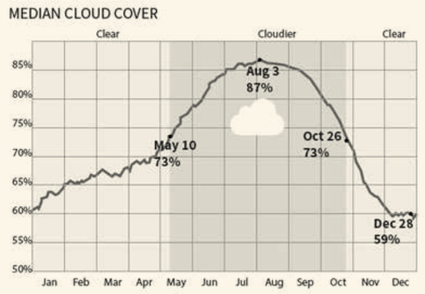
Wind speed ranges from between 1m/s to 8m/s throughout the year. Wind speeds rarely exceed 26 m/s (storm). Generally the wind direction is out of the south west 23% of the time (20% west and 14% south).

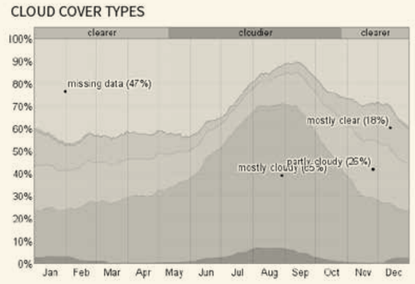




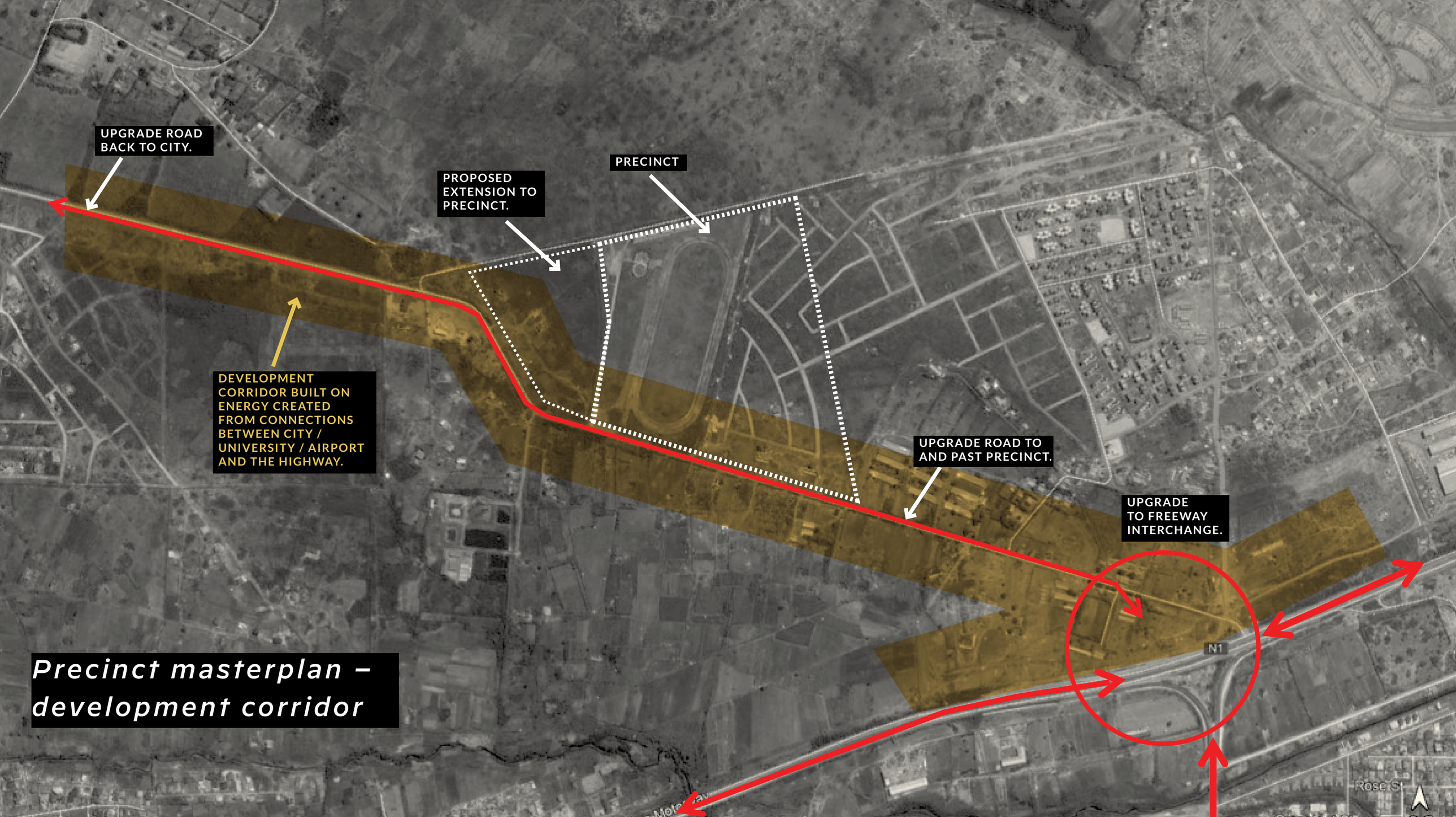
CLOUDS

Median cloud cover ranges from 59% (partly cloudy) to 87% (mostly cloudy)





The Master plan

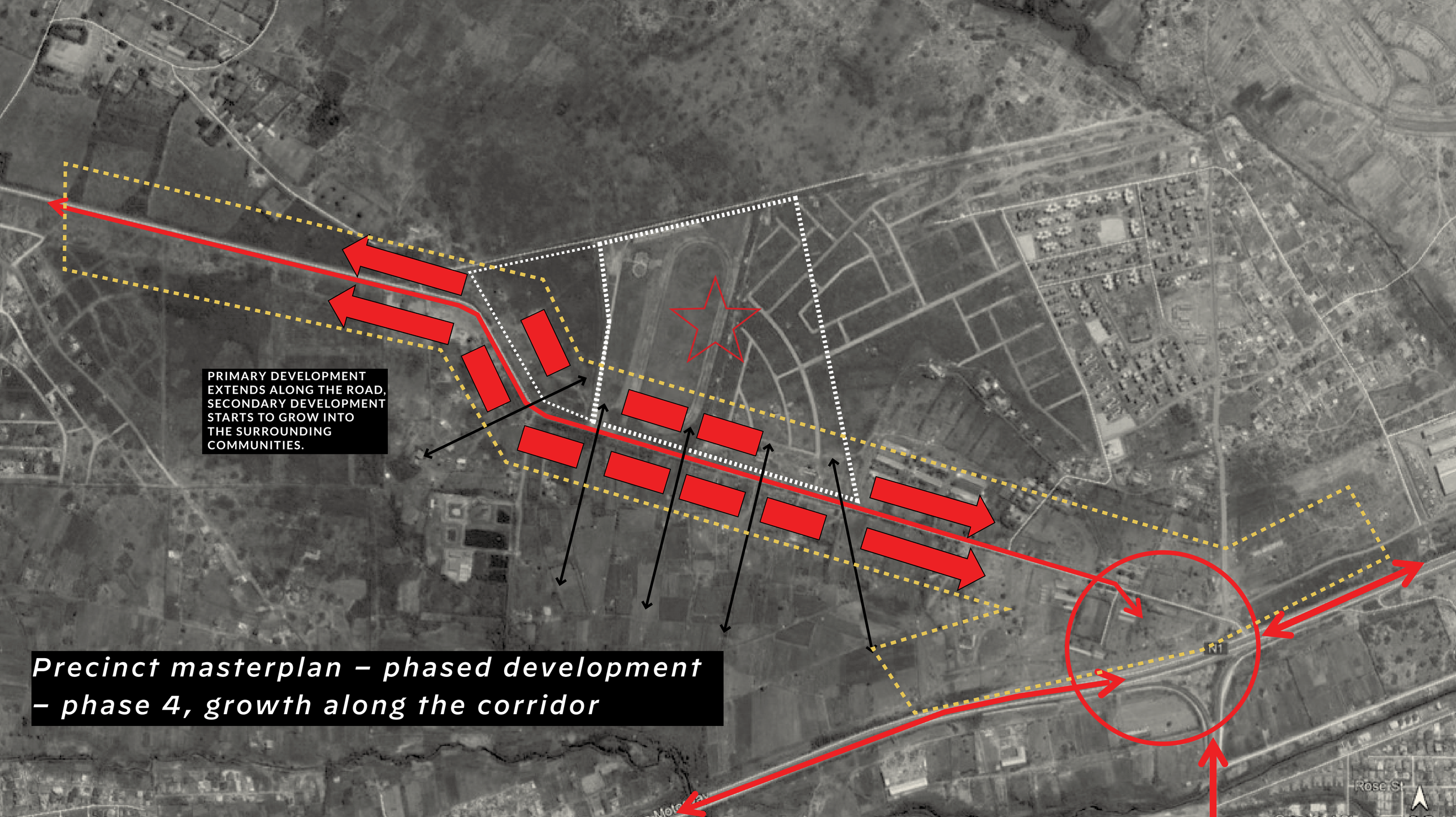


Precinct masterplan – development corridor

Precinct masterplan – phased development – phase 1, the event

Precinct masterplan – phased development – phase 2, post event

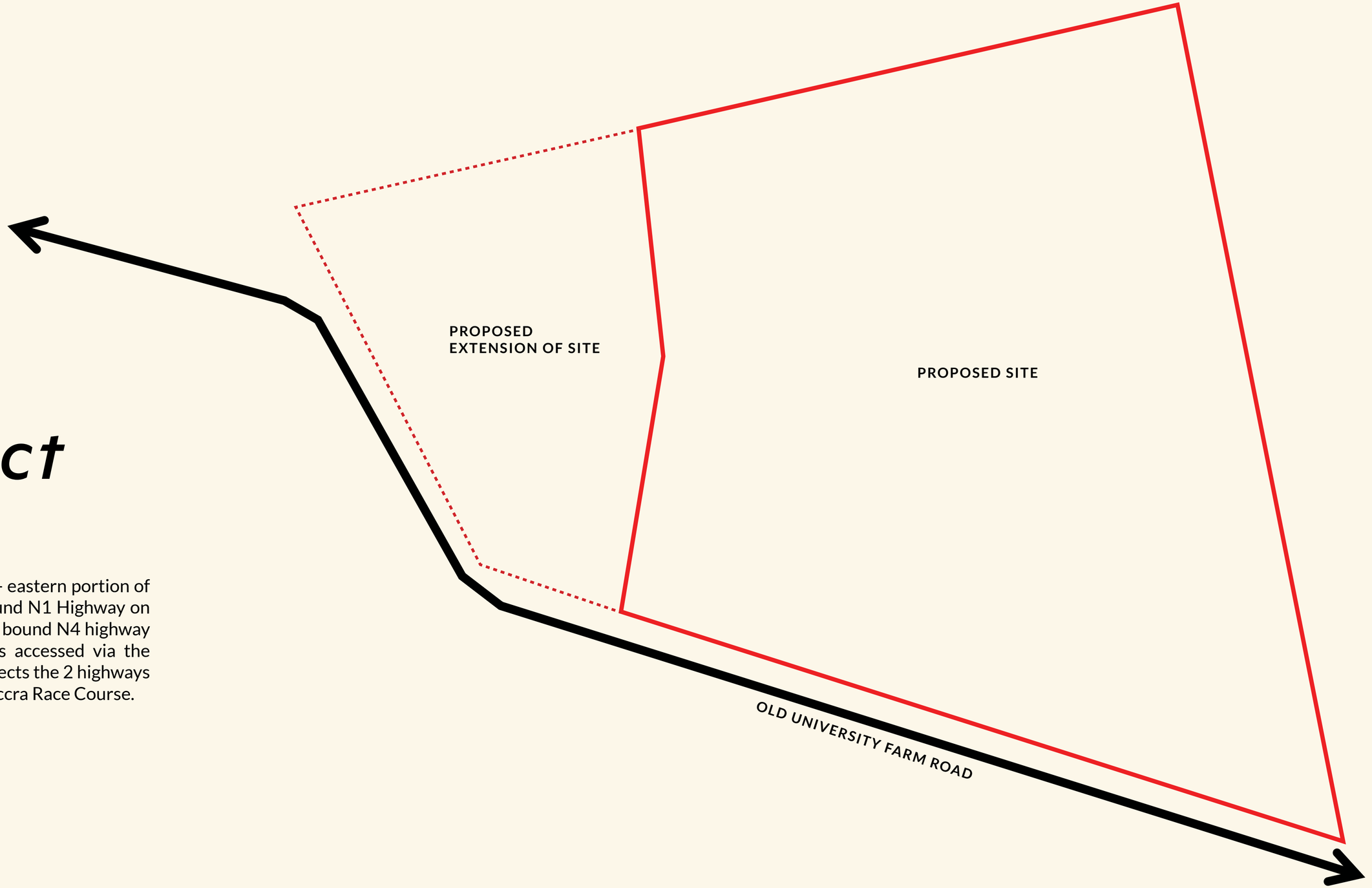
Precinct masterplan – phased development – phase 3, market driven development



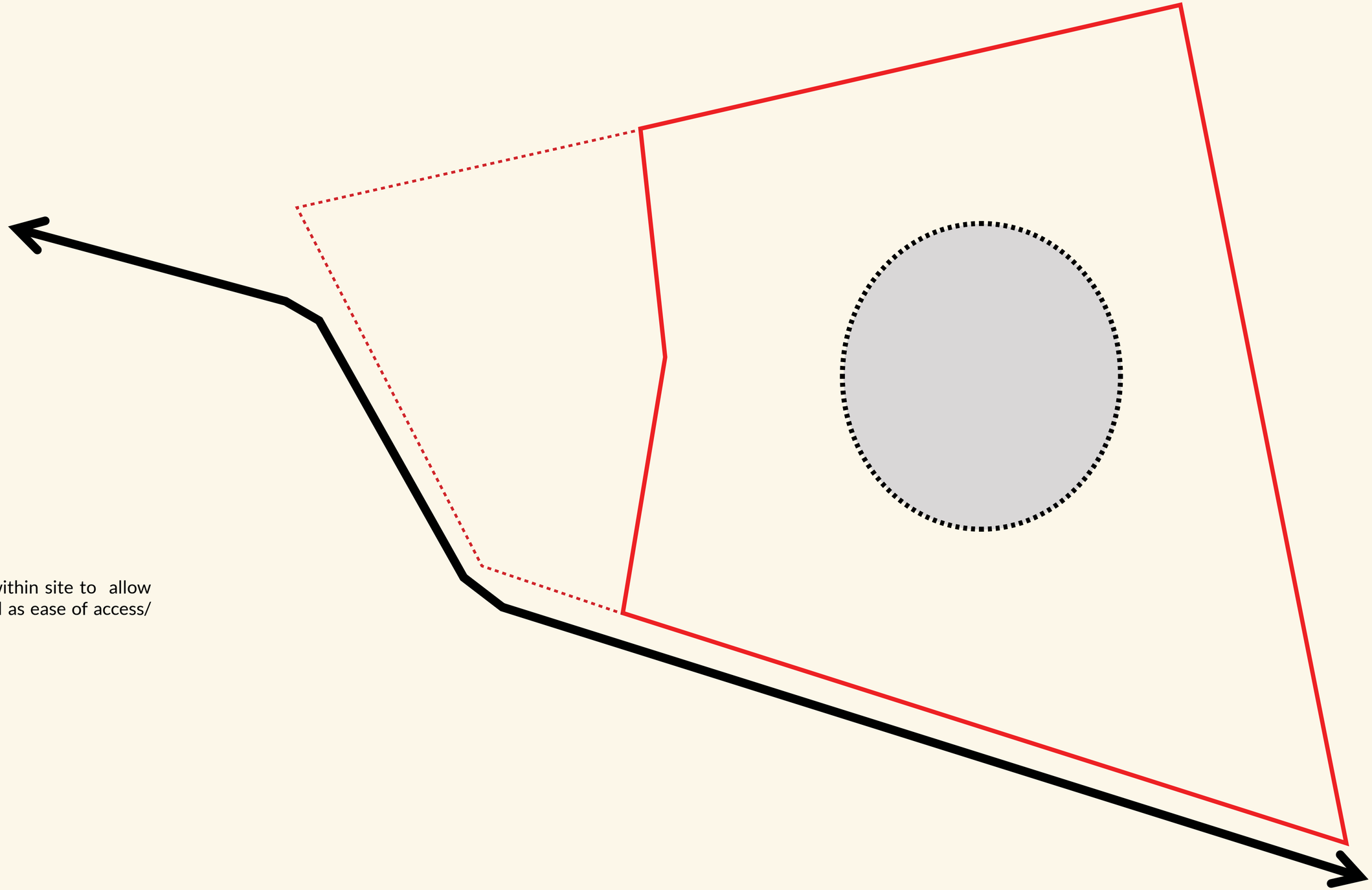
Precinct masterplan – phased development – phase 4, growth along the corridor

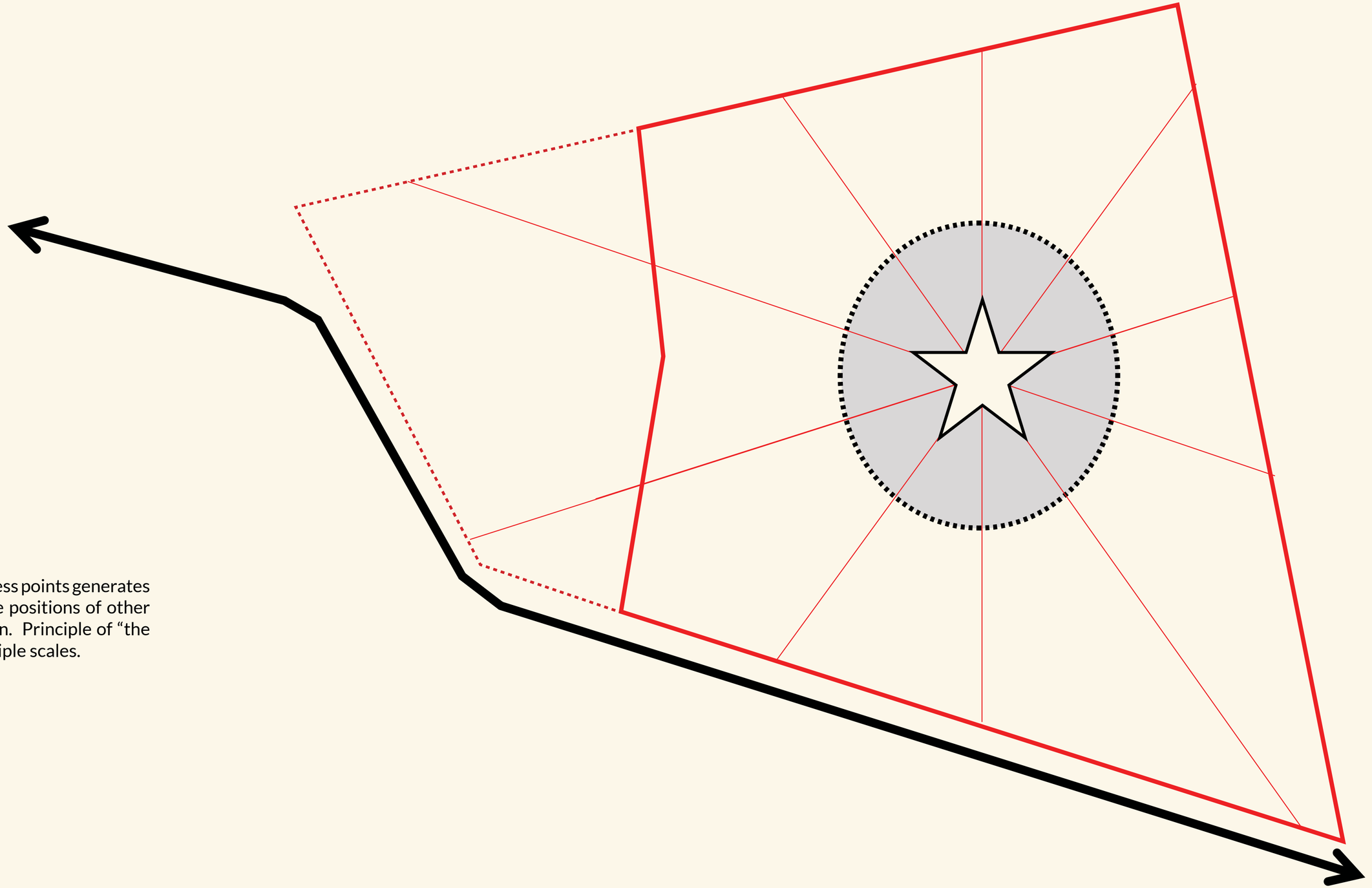
The precinct

The site is located in the north - eastern portion of Accra bordered by the east bound N1 Highway on the way to Tema, and Northern bound N4 highway from central Accra. The site is accessed via the University farm Road that connects the 2 highways and is located at the previous Accra Race Course.

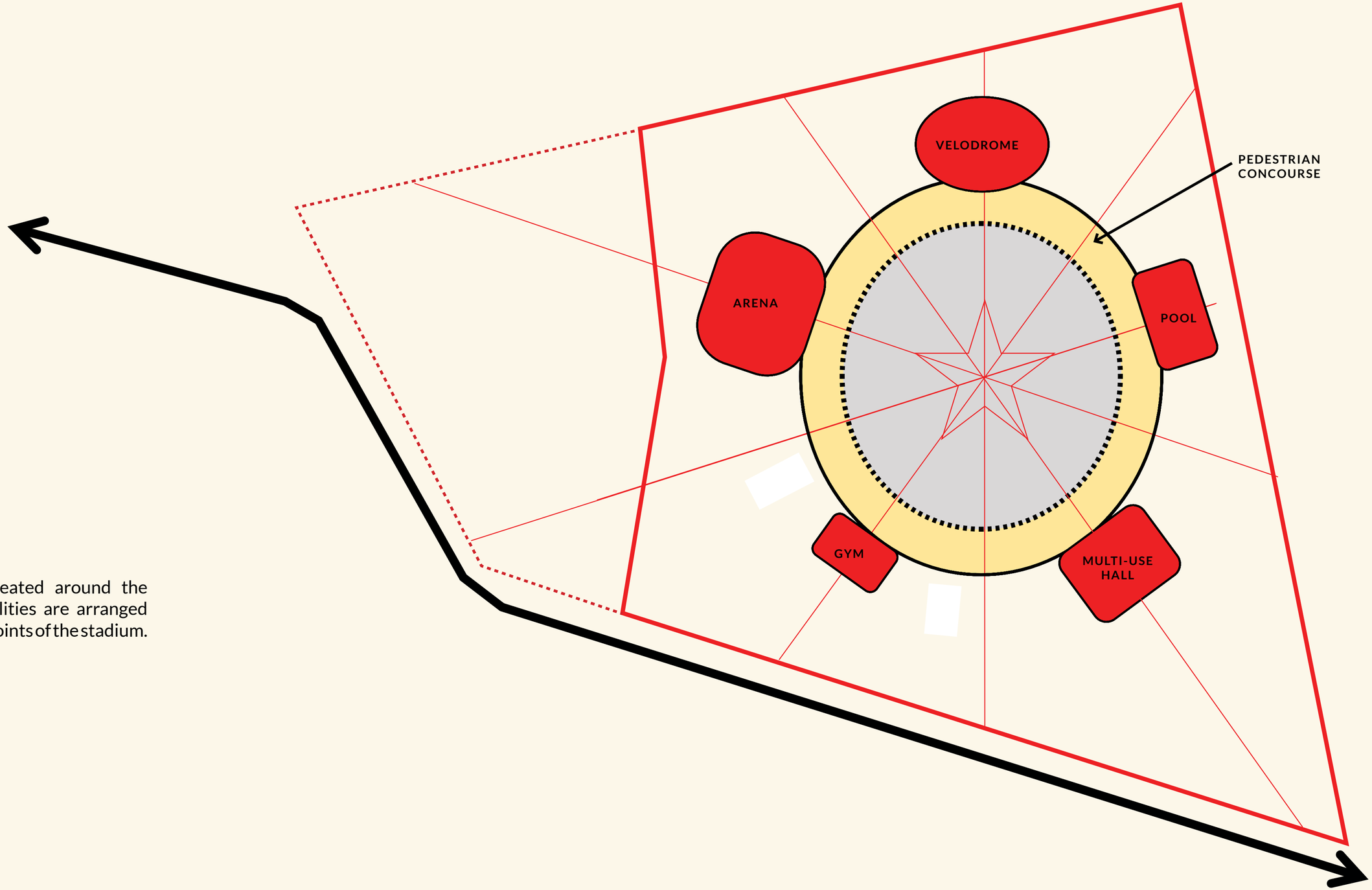


Stadium positioned centrally within site to allow maximum use around it as well as ease of access/ egress from all sides.

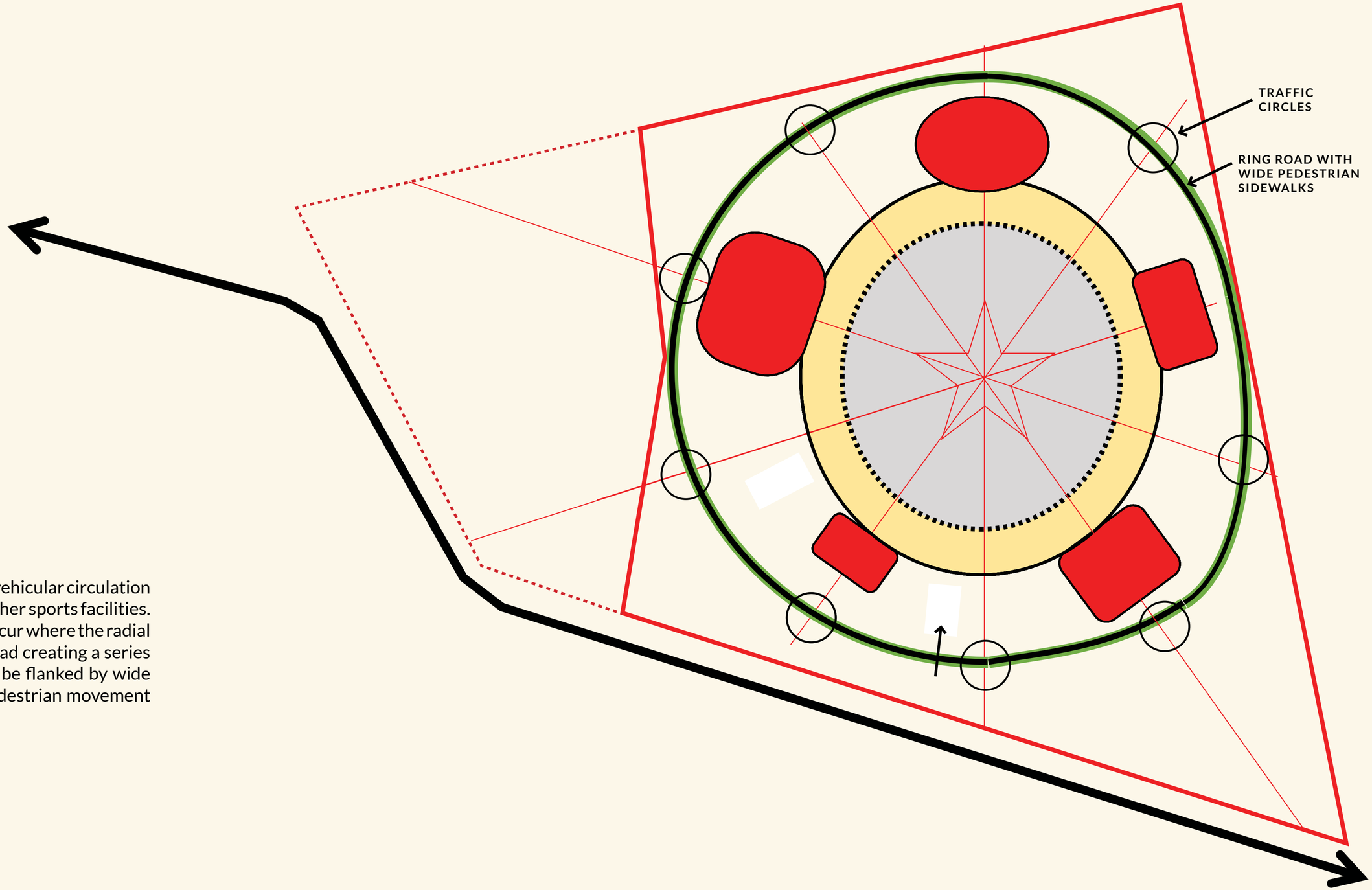




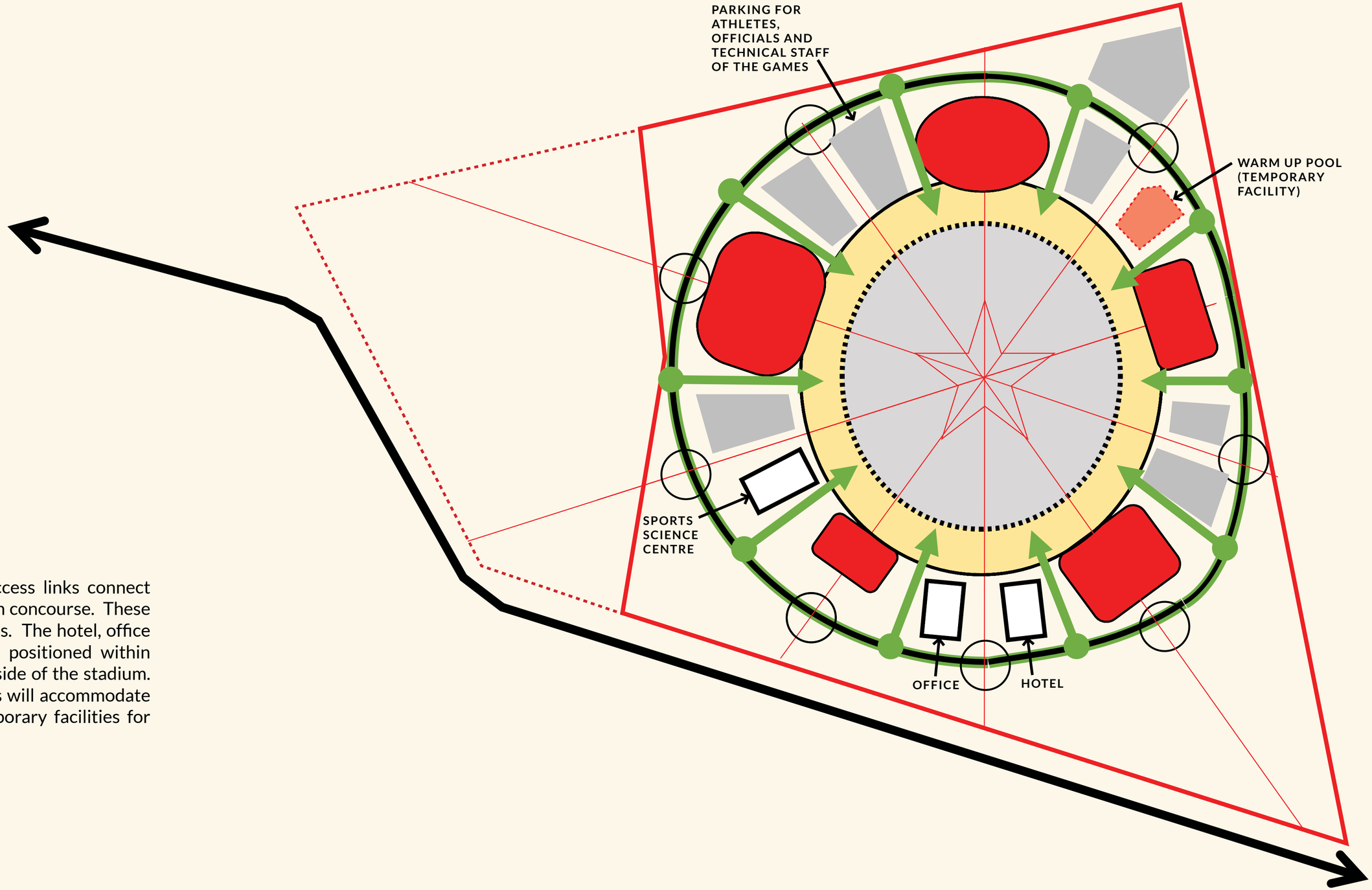
Position of stadium primary access points generates setting out guides to determine positions of other elements within the masterplan. Principle of “the power of 5” applied across multiple scales.



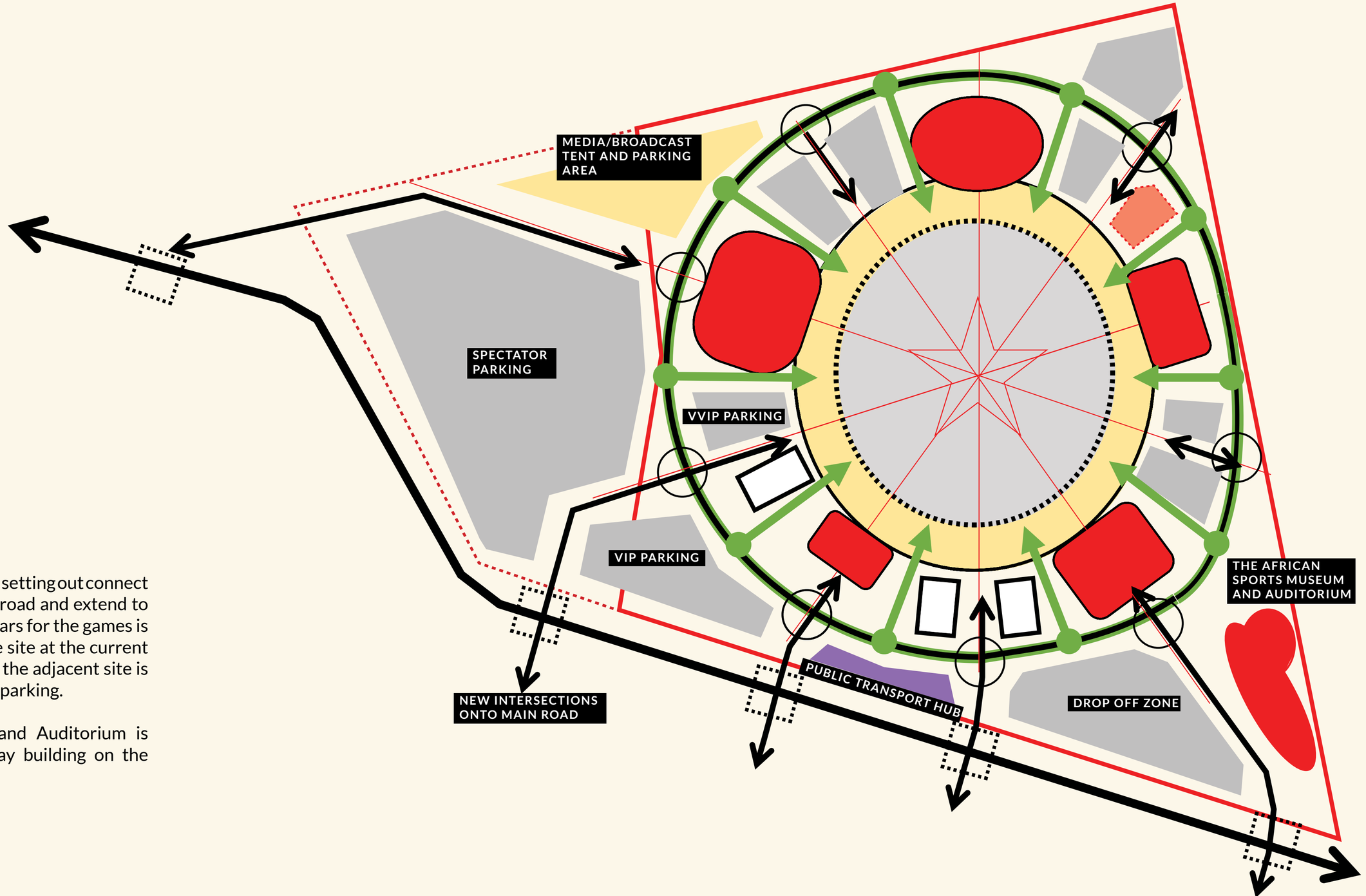
A pedestrian concourse is created around the stadium. The other sports facilities are arranged adjacent to the primary access points of the stadium.



Outer ring road established for vehicular circulation and access to the stadium and other sports facilities. Intersections on the ring road occur where the radial setting line intersect the ring road creating a series of 10 segments. Ring road will be flanked by wide sidewalks to create parallel pedestrian movement system



A series of pedestrian only access links connect ring road back to the pedestrian concourse. These bisect the segments into parcels. The hotel, office and sports science centre are positioned within these parcels on the southern side of the stadium. In other positions these parcels will accommodate parking and/or necessary temporary facilities for the games.



Road links aligned with the radial setting out connect the core of the site to the main road and extend to the adjacent site. The influx of cars for the games is expected to be too much for the site at the current site and it is recommended that the adjacent site is used to accommodate overflow parking.

The African Sports Museum and Auditorium is positioned as an iconic gateway building on the Southern corner of the site.

The Master Plan is set out to take reference from the Black Star of Ghana as well as the internal structure of the Cocoa Pod when cut horizontally.

These geometric patterns provide us with a simple, but strong organising mechanism around which buildings are placed and arranged, as well as access routes for pedestrians, cars and deliveries are planned.
These organising stages are useful in creating an easy way finding strategy to access various parts of the precinct with the main stadium as its centrally located element raised on a podium.

The raised podium allows for easy access for basement parking and deliveries as well as providing a separating element for fans and players or athletes.

The Master Plan is laid out to place its most active edge along the main access road to provide a 24/7 activity spine through which access is gained to the various sports facilities and the main stadium. So, the organising strategy allows for a layered filtering system from the main road up to the podium. The podium is the binding element that connects all buildings and allows for unhindered pedestrian accesses all around the main precinct from where all main entrances are accessed.

The greater urban plan sees the opportunity for development to continue along the main road to connect to the main highways, so the sports precinct is to be seen as an economic generator beyond the boundaries of the precinct.

Velodrome

The proposed Velodrome will be an Olympic qualifier level facility as per the requirements of the All Africa Games. It will be the only such facility on the continent outside of South Africa. As such it places Ghana at the forefront of the sport and positions the Ghana Sport Centre as a truly multisport destination that will attract high level athletes from other countries in Africa.

Swimming Pool

The swimming pool building is envisaged as a temporary facility erected specifically for the games Both the main pool and the warm up pool will be constructed as demountable structures. It is envisaged that these will be moved for use elsewhere after the games, possibly at the University. The land will be repurposed as a spectator park.

Multi-use Sports hall

The multi-use sports hall has been conceived with legacy use in mind. It will be used through the games for the sports listed, but will be built as a convention centre, able to host a number of events and different types of functions after the games to ensure a long and commercially productive life. The hall has been positioned adjacent to both the hotel and the Museum auditorium to create an event node, the sympathetic function of these buildings supporting one another.
For the games, the building could be completed as a shell with basic amenties and suitable seating for the required sports. After the games the fit out the remaining portions could be completed to allow it to function as both a sports venue and an event venue.

After the games, the large portions of land required for temporary facilities can be broken into development parcels to kickstart the establishment of a dynamic commercial node.

Gymnasium

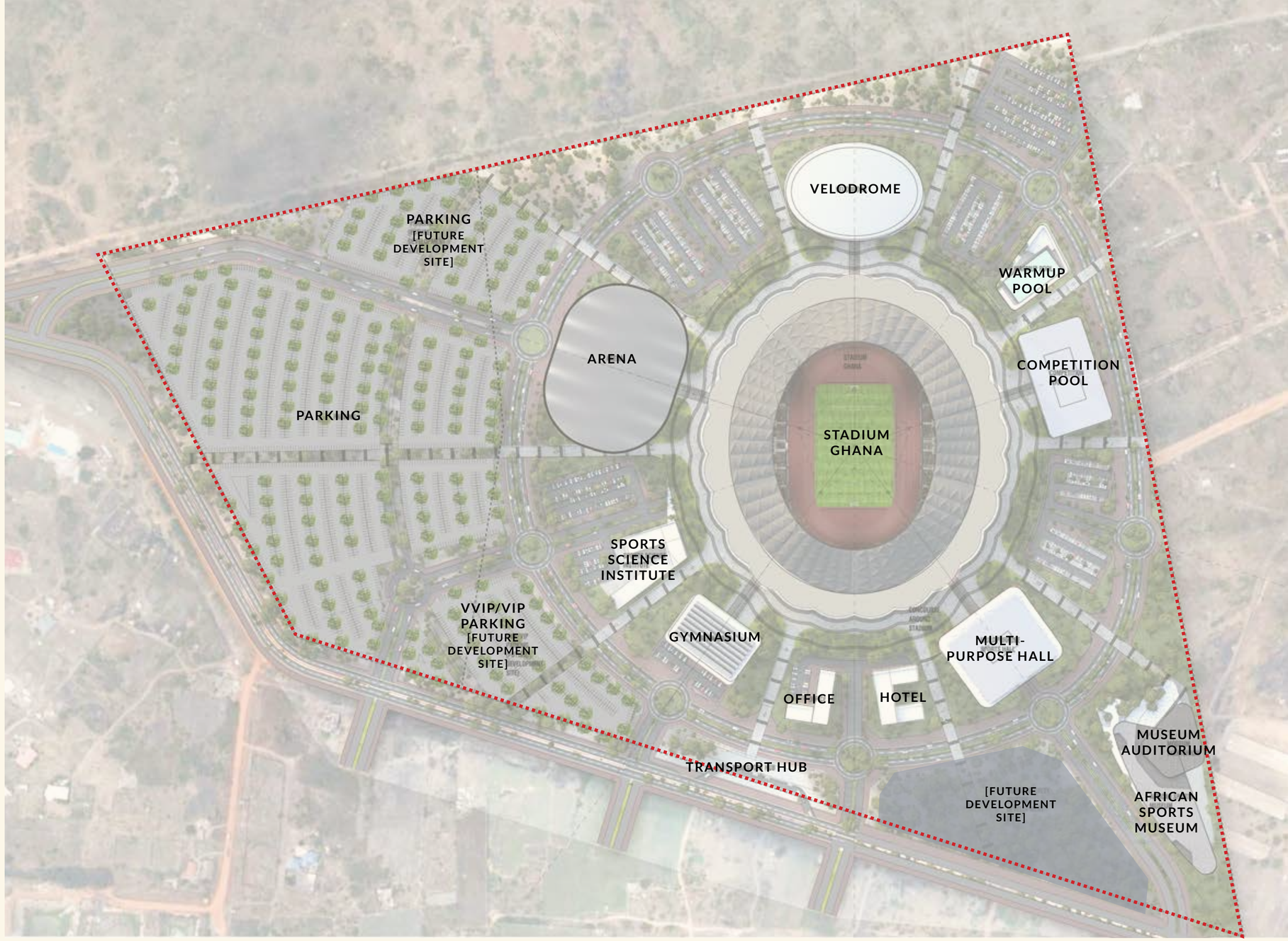
The gymnasium will be built to Olympic competition specification to ensure it's status as a qualification venue. It has been positioned adjacent to the Sports Science Centre.

Sports Science Centre

This will be an institutional education type building, with studios, classes and office space and is seen as a possible extension of the university. It is placed strategically to be close to the multi-sport arena, stadium and the gymnasium to allow ease of access to all of these building throughout the year as necessary for the programmes, initiatives and research that will be run from there. It is further conceived as part of the overall package that will be offered to bring athletes from around the country and the continent the Ghana Sports Centre to further improve their skills in an international grade facility.

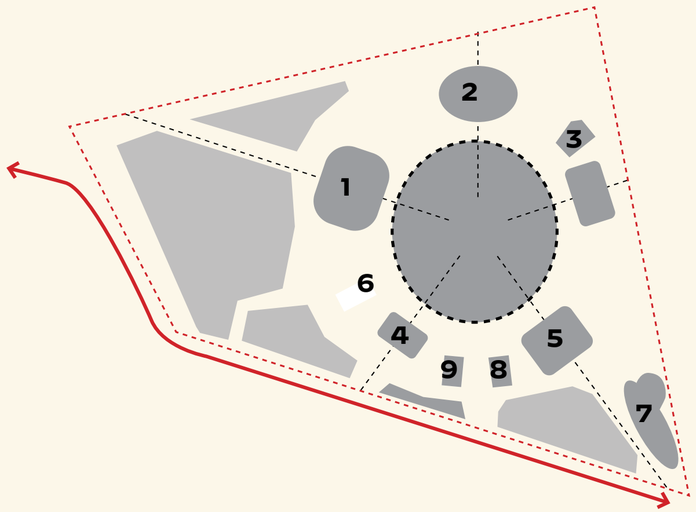
Museum of African Sports

A new world class building celebrating heroes of African sport on the continent and within the diaspora. Attached to a 1500seat auditorium the venue will be both educational and entertaining. The building is a gateway into the Ghana Sports Centre.



Multi-purpose Arena

The new multi-purpose arena is a standalone world class sport and event facility. The ever-increasing popularity of arena sports in Africa, particularly basketball, sparked the realisation that the All Africa Games 2023 provided the perfect opportunity for Ghana to leapfrog other countries in the region as a leader in facilitating this sport. The arena and the stadium compliment each other by ensuring that the precinct as a whole is able to host ANY scale function to an international level. The arena will be suitable for corporate events, large scale church gatherings, extra-large convention events that are too large for the multipurpose hall, as well as a number of popular indoor sports, basketball at the forefront. It provides an intermediate scale of event that will ensure continuous use of the precinct as a whole.



Schedule of accommodation

1. ***Multipurpose Arena*** – 95000sqm (52644sqm top structure, 42356sqm two level parking basement) , holds 18000seats. Sports to be held – basketball, volleyball, handball

2. ***Velodrome*** – 8000sqm, minimum 1500seats

3. ***Swimming pool*** -5600sqm, 2500seats. Warm up pool – 500sqm changeroom

4. ***Gymnasium*** -4500sqm, 1500seats minimum

5. ***Multi-use sports hall*** – 7700sqm, approx. 6000seats at max capacity. Sports to be held – badminton, arm wrestling, table tennis

6. ***Sports Science Centre*** – 2500sqm, institutional building with classes, studios and offices

7. ***Museum of African Sports*** – 6000sqm, with 1500seater auditorium

8. ***Hotel*** – 150keys

9. ***Office*** – 3375sqm, AAA grade office space.

Design inspiration

The

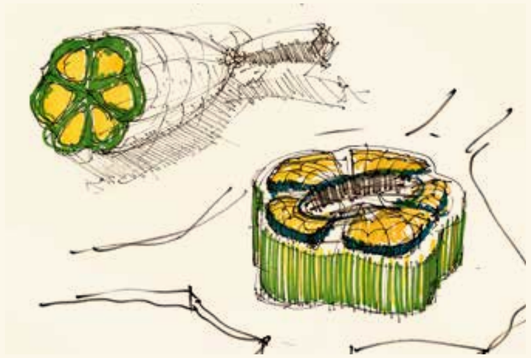
Cocoa Pod

As directed by the brief provided, the Cocoa Pod was to be used as a reference element and design generator for the realisation of the iconic stadium, thereby creating a recognisable object that references the significant impact that the cocoa industry has had on the development of Ghana and projects a technologically forward looking view of the future of Ghana that may be beyond its reputation of being the second largest producer of Cocoa worldwide.

The

Cocoa Pod

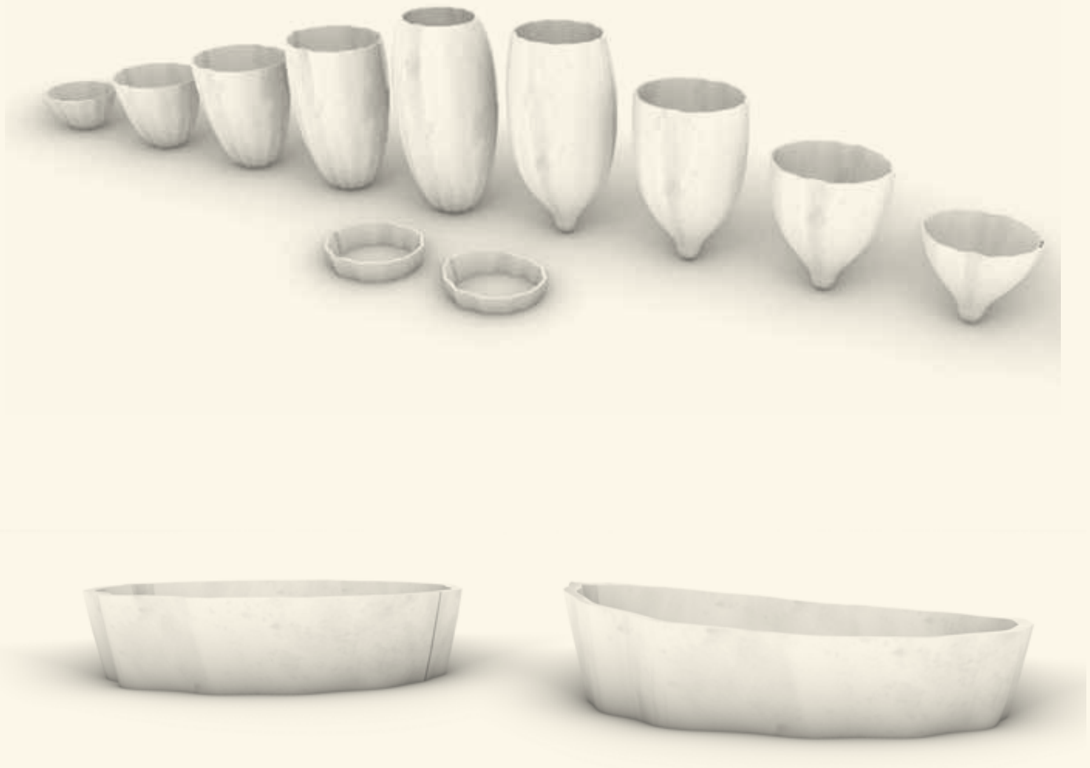
/pod/ vessel
self-contained unit



The pod in nature appears to have some form of geometry that can be expressed vertically along its length by its varying bulges, and when its is typically cut along its length. Furthermore, the pod is known to be cut horizontally exposing the 5-bean structure and its bulges on its skin. It is this avenue that we explored to realise our interpretation of the cocoa pod. Albeit not the obvious interpretation but in many ways the more original way to project a forward-looking stadium.

The slicing of the pod horizontally provides us with 3 options to look at how this may inform the surface of the pod. If cut in the middle, it may presents a vertical façade with a slight curvature. If cut above the centre line it may present us with a façade that is leaning inward to the stadium. If cut below the centre line, it provides us with a façade that may lean outwards. In reviewing each option, the idea of monumentality and how that speaks to national pride and a sense of awe in this national asset is what set this outward leaning façade way above the others. The fortunate added advantage is that an outward leaning façade also provides us with a natural drip line providing some rain cover along the outer perimeter of the podium from where excited fans access the lower concourse and main embankment seating.

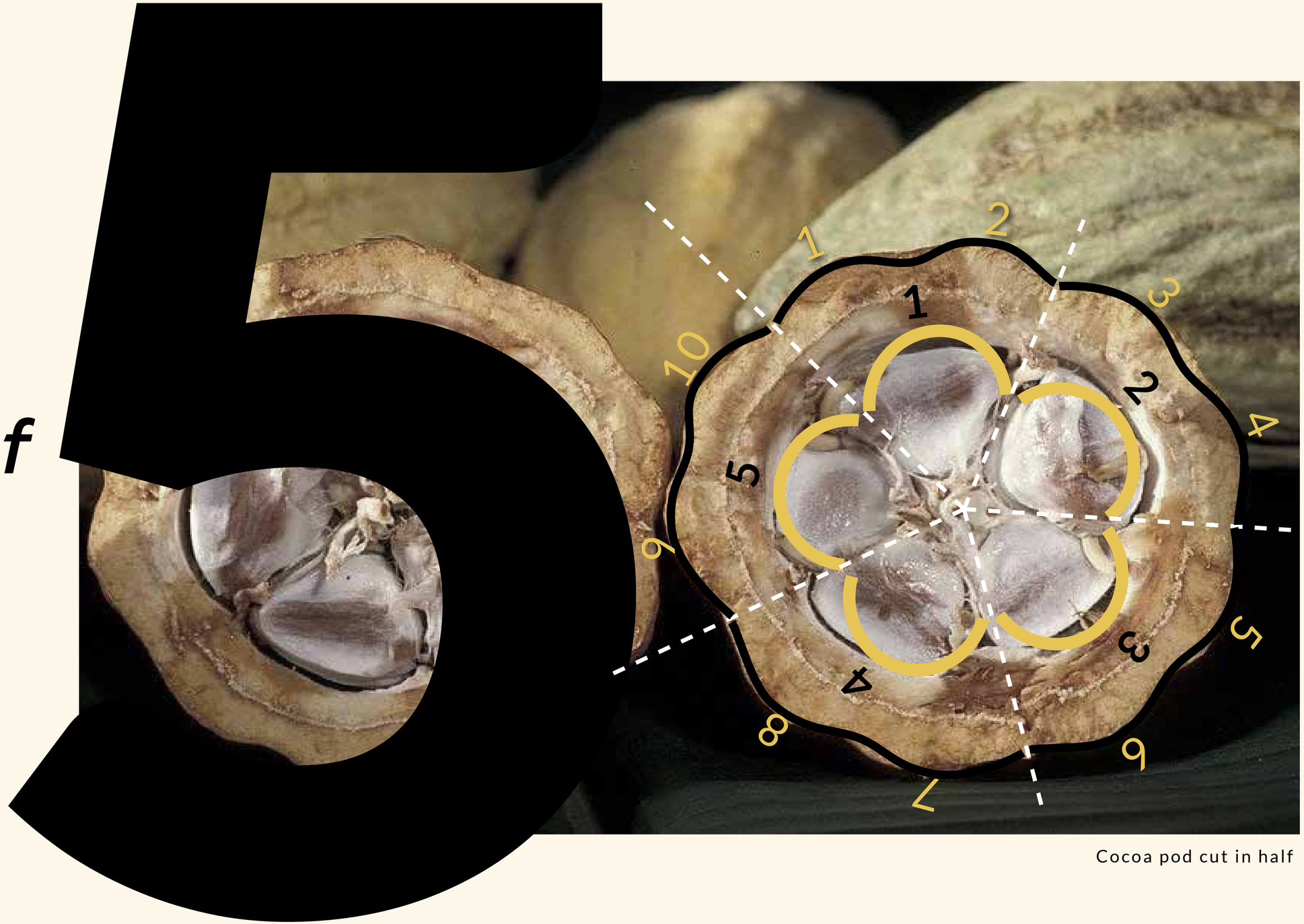
The horizontal cut of the pod also provided, is the inspiration for the formulation of the roof geometry, creating an asymmetrical roof pattern based on the 5 pentads of the pod, and also provided us with the inspiration to consider an undulating roof that would give is a striking roof profile where the roof undulates up and down between low and high points that we believe is unique in stadium architecture.



Cocoa pod study

The

Power of



Cocoa pod cut in half

Colour

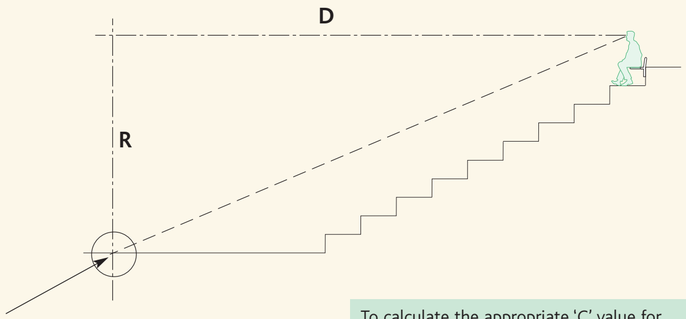
Pod colour reference

The Cocoa pod is found growing on trees and during its maturation process, and dependant on its location and variant, the pod can be seen displaying an abundant array of the most striking colours throughout its life. We find this aspect to be very intriguing as has informed the way the stadium may respond aesthetically.

The stadium

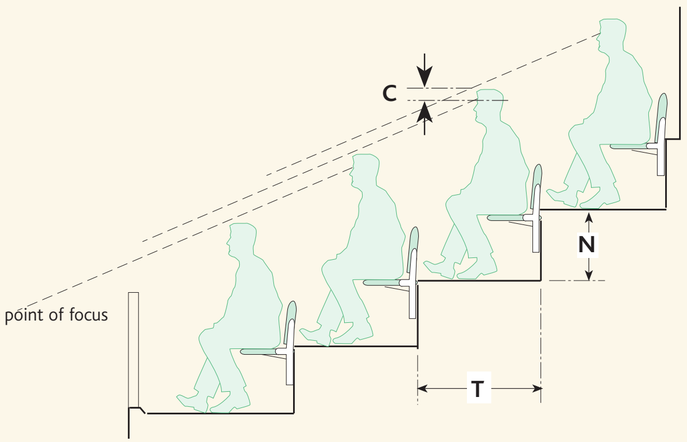
The concept

Understanding the bowl



To calculate the appropriate 'C' value for the sport to be viewed, the following formula applies:

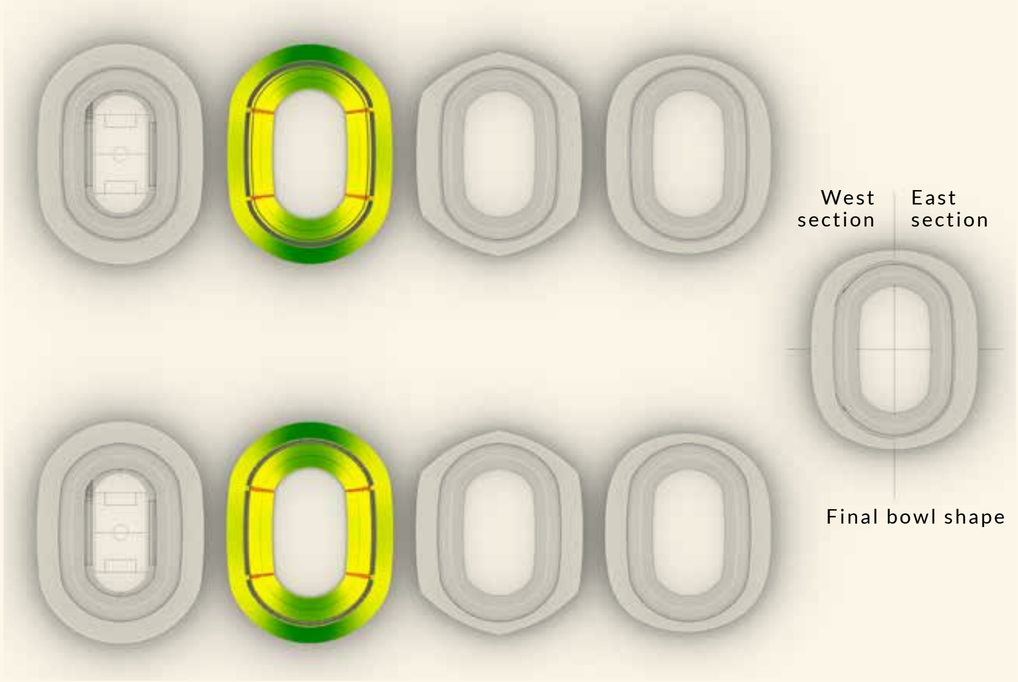
$$C = \frac{D\,(N + R)}{D + T} - R$$



Key to diagram:

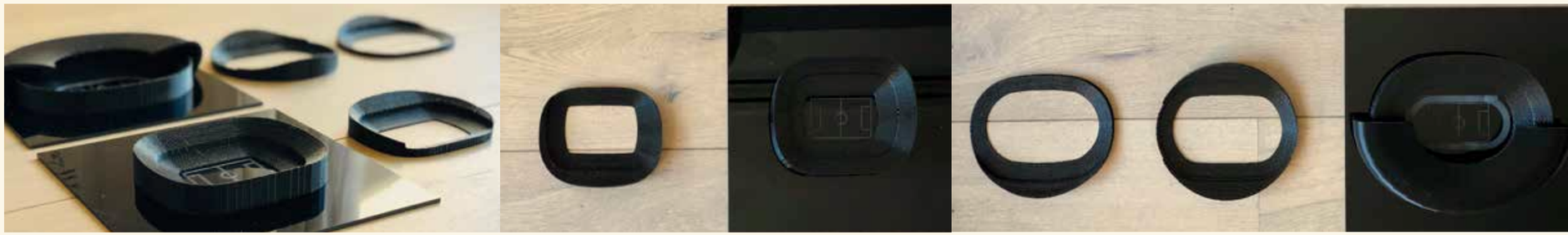
C = the 'C' value
D = the horizontal distance from the eye to the point of focus
N = the riser height
R = the vertical height to the point of focus
T = the seating row depth

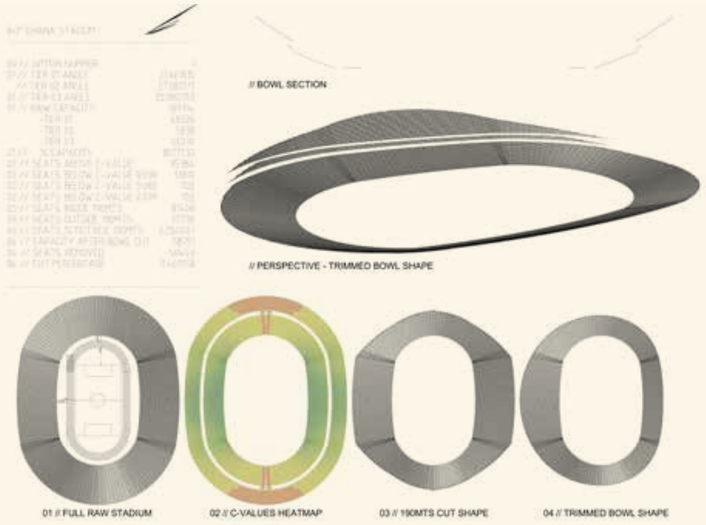
Spectator seating accommodation



Stadium seating bowl design.

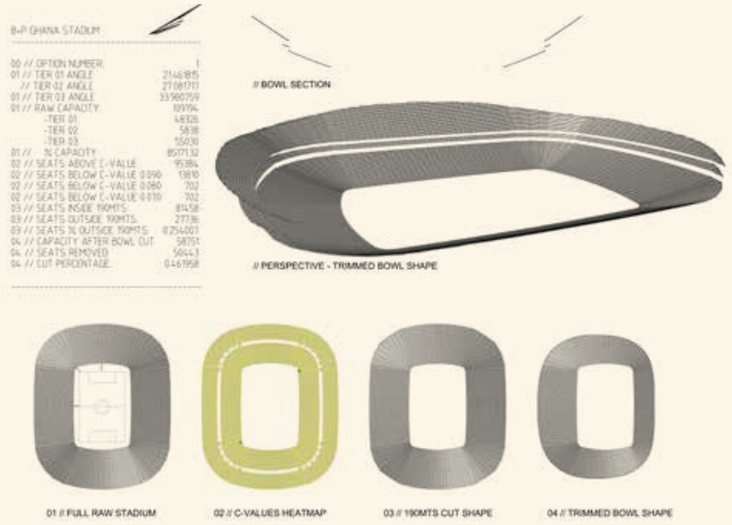
The most crucial functional part of stadium design is to ensure that the stadium seating bowl has been designed to ensure very good view lines for all spectators. This process requires a full understanding of the C Value from each seat which calculates the vertical distance from the view line of every spectator to the point of focus, which is typically the edge of play or the edge of the track, above the head of the person in front of them. This requires us to be considering various bowl profiles and seating arrangements as well as seating widths, row depths, height above the point of focus and distance from the point of focus, whilst also providing varying seating categories for various fan groups. The process requires numerous iterations between athletics and football, whose requirements are quite different from each other. Some of these steps have been included for reference. The output of this process defines the seating bowl geometry from where all other steps are taken. A further output is the heat maps of each seating tier that demonstrate how well or not one has achieved the minimum C Value of 90mm as recommended for large stadia.





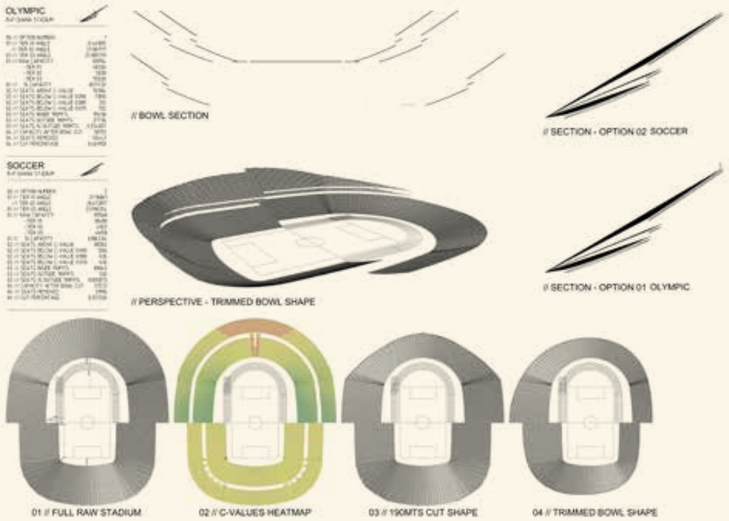
Option 1

Optimised for athletics



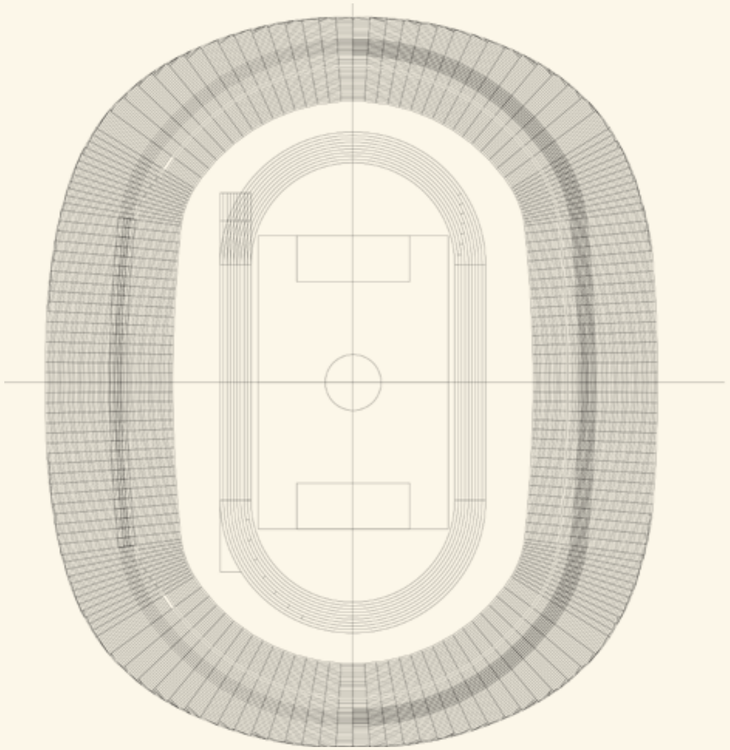
Option 1

Optimised for soccer

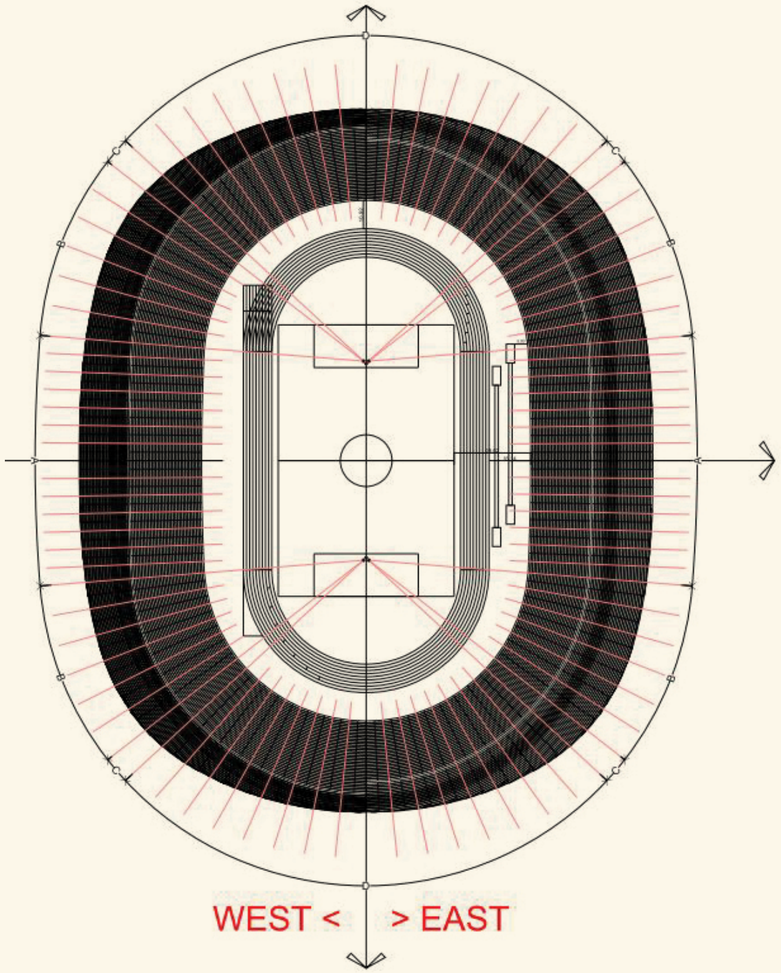


Option 1 and 2

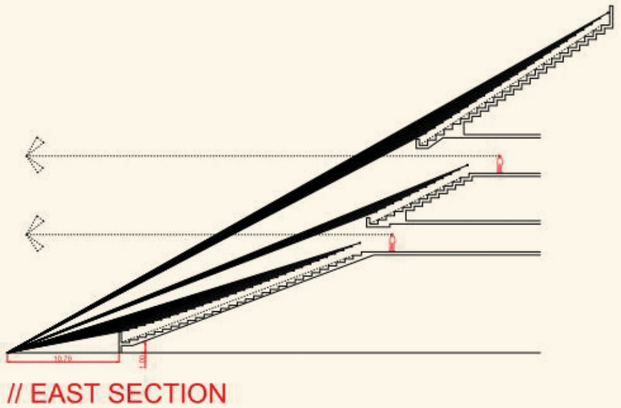
Contrasting the two shows the conflicting geometries, meaning that the tighter requirements of an optimised football stadium are compromised in some areas of the athletics configuration

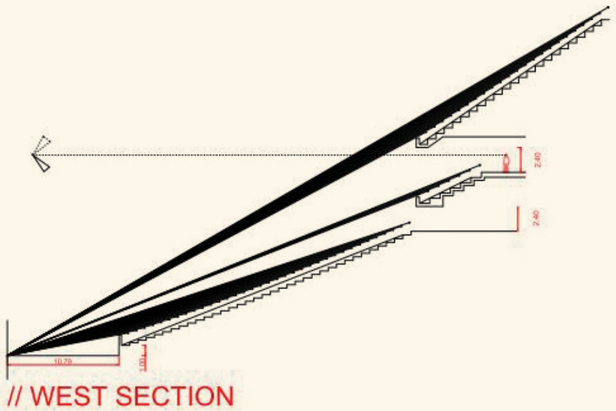


Athletics configuration optimised for soccer



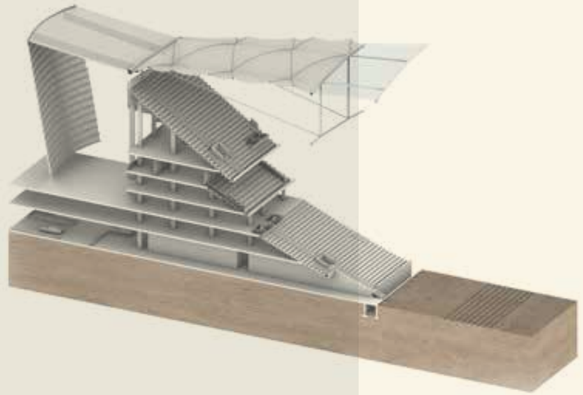
Final bowl





Option 1

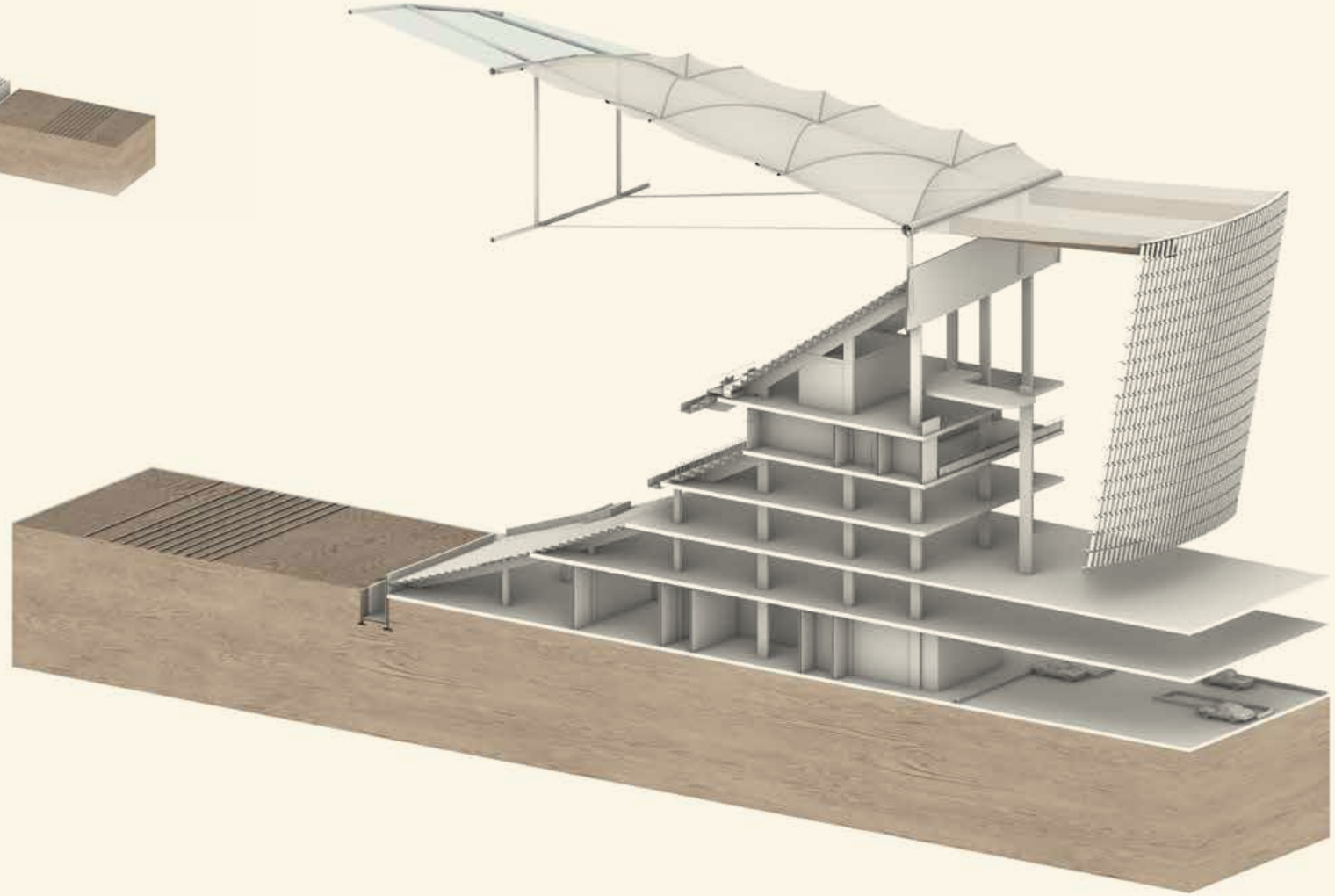
The façade



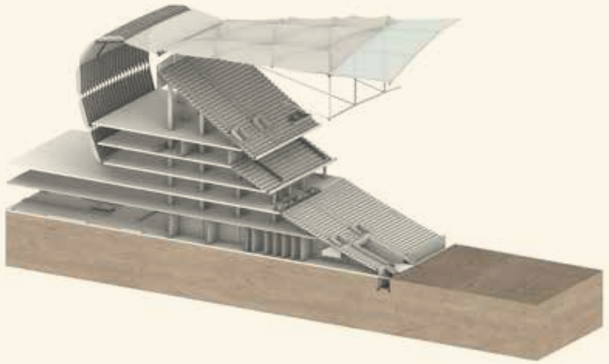
The façade of the stadium has been inspired by the skin of the pods. By that we mean its shapes, the variety of colours, and its textures.

Given that we elected to follow the outward leaning façade and the natural drip line it provides us, we were able to consider that the façade may not need to be whether tight, in fact it could be mostly porous and provide natural ventilation to the concourses behind it.

With this understanding, it was clear that we did not need to provide a full façade, so we devised a solution that would rely on a vertical extrusion of some sort placed with gaps in between, that would provide solidity when viewed obliquely as well as transparency when viewed straight on. The profile we chose was similar to the horizontal cut of the pod, which we then enlarged to approx. 250mm in diameter and extruded to create objects that are approximately 1500mm long. We envisaged that the ideal solution would be for this to be extruded in porcelain to receive a beautifully variegated gloss coating that would reflect light in various ways. The alternative to this ideal is that it may be done in extruded aluminium also powder coated in various colours. The beauty of this extrusion would be that this would be fully visible from all the adjacent concourses, thus allowing fans to get quite close to them visually without being able to damage them.



Option 2

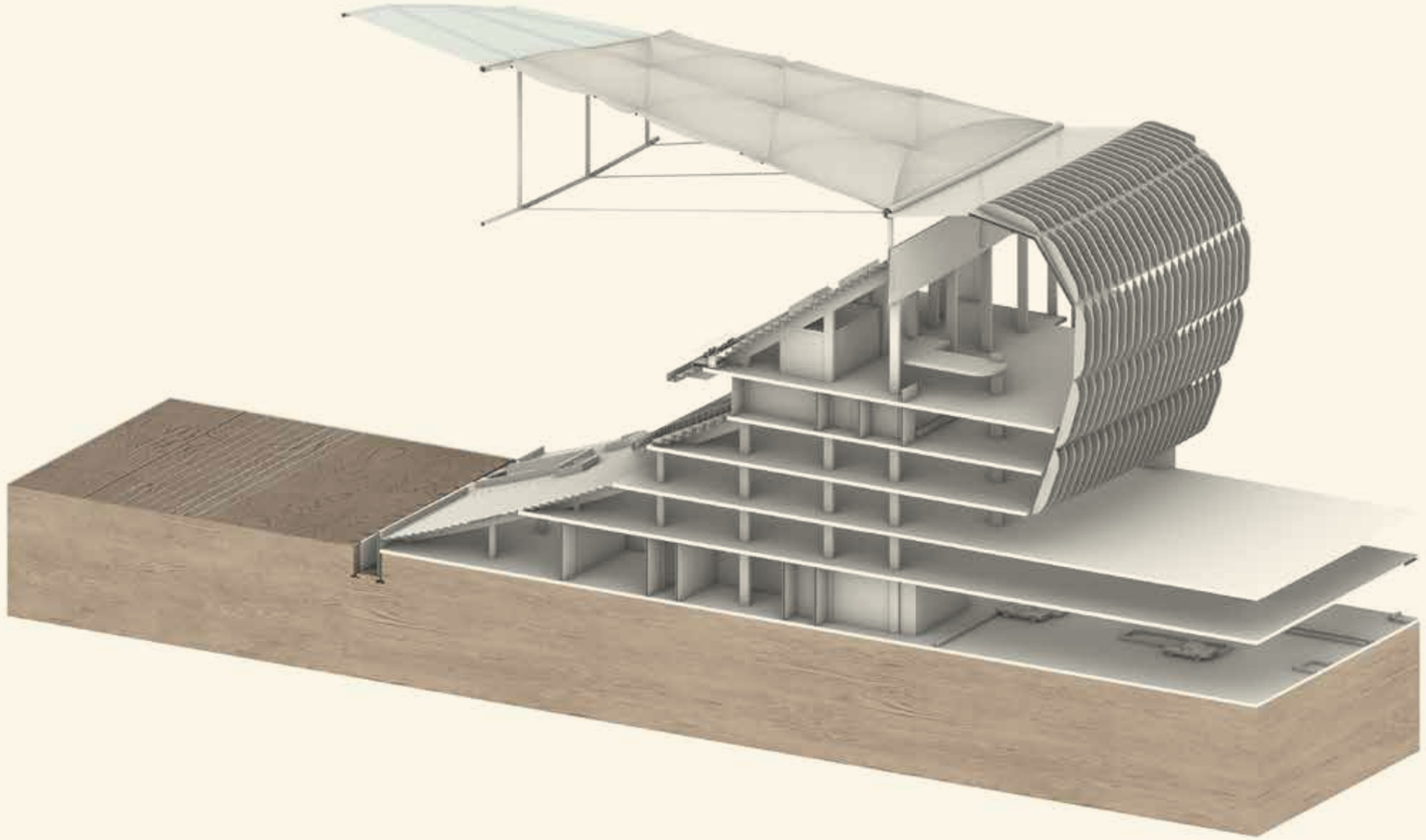


In a bid to reference the cocoa pod in a different way we considered slicing the pod vertically as is the common. Additionally, we investigated the possibility of reducing the roof and façade areas being cognisant that there may be a more affordable way to resemble the cocoa pod and to achieve the aesthetic appeal as well as give us the very call cover want for the concourses.

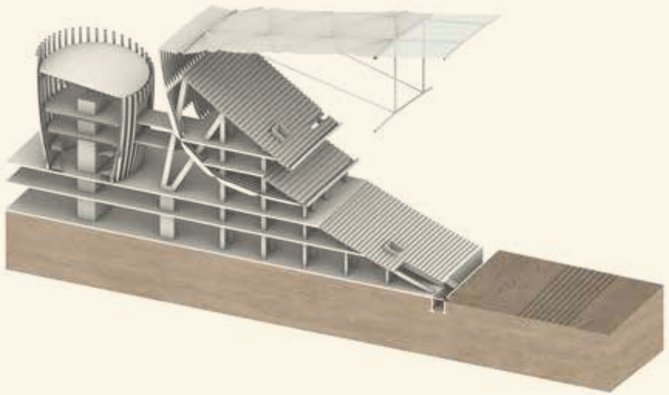
In section we looked at still creating the 5 bulges of the pod that would be at their largest on the west and east facades and reducing as one gets closer to the north and south sides of the stadium, given that the upper seating reduces and thus the roof height also reduces accordingly.

The façade is then realised with a vertical fin spaced at approximately 1200mm centres given us transparency into the concourses behind. The upper 3 bulges would require a secondary polycarbonate layer to give us the weather line. It is clear that this option significantly reduces the upper polycarbonate roof area, and marginally reduces the façade area.

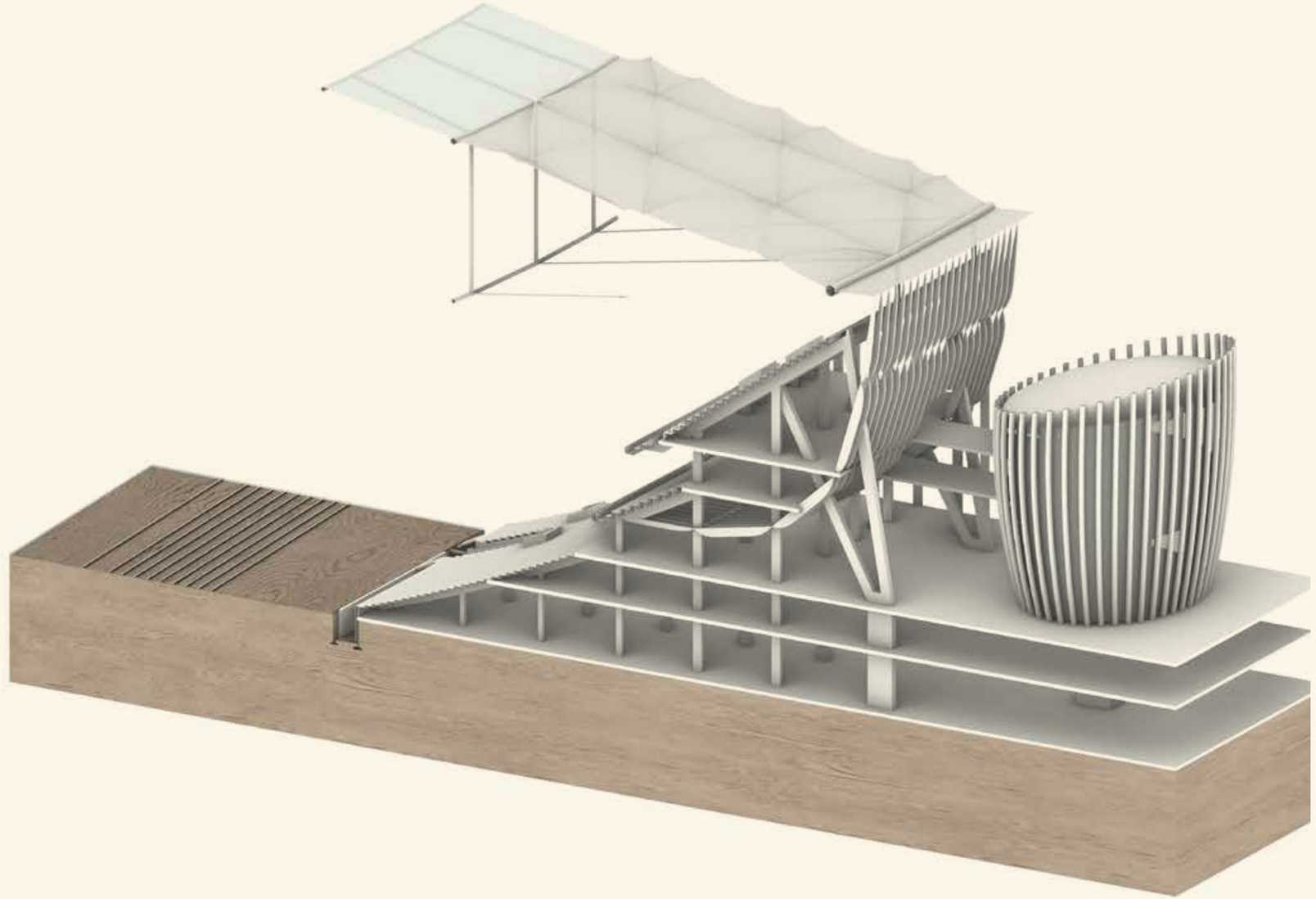
The colouring of the fins would follow a similar strategy as per option 1 where the varied colours are used in randomised densities



Option 3



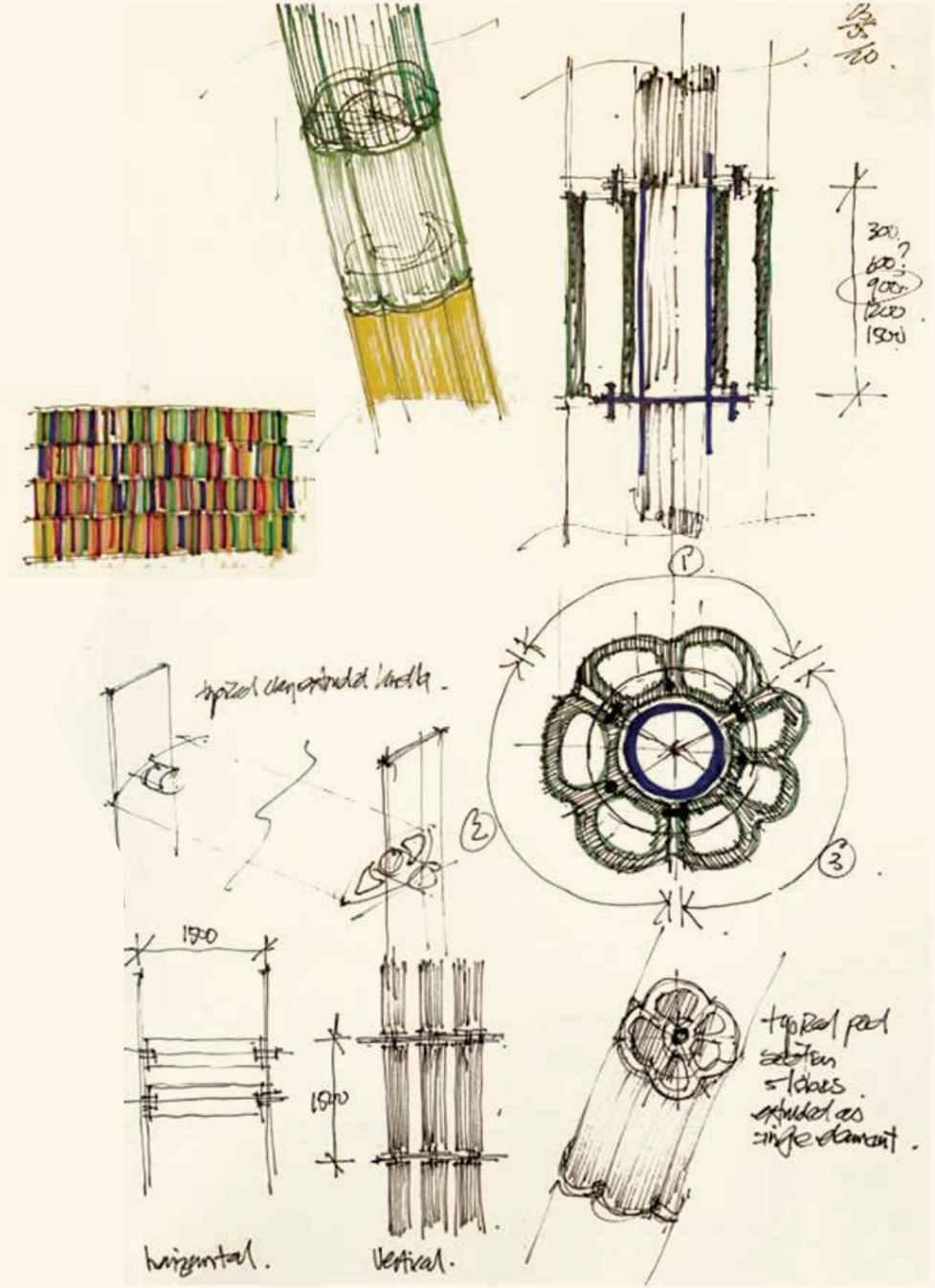
Option takes the thinking of option 2 further by trying to tuck the façade in under the concourses and thus use the façade as the ceiling in the lower concourses as well. By bringing the façade in tightly against the concourse, we opted to take all vertical circulation out of the concursus and dislocated them as objects that sit on the podium. These objects would then house lifts and stairs. We anticipate that we would need 5 large and 5 smaller circulation cores. These cores would then link to the narrower inner concourse by means of bridges that over sail the podium below. The tops and bottom of these cores could accommodate concession stands as well. We imagine these cores having slatted facades in timber to represent the cocoa beans. The 5 large cores may be offset with coloured fins to link back the colour strategy of the facades.



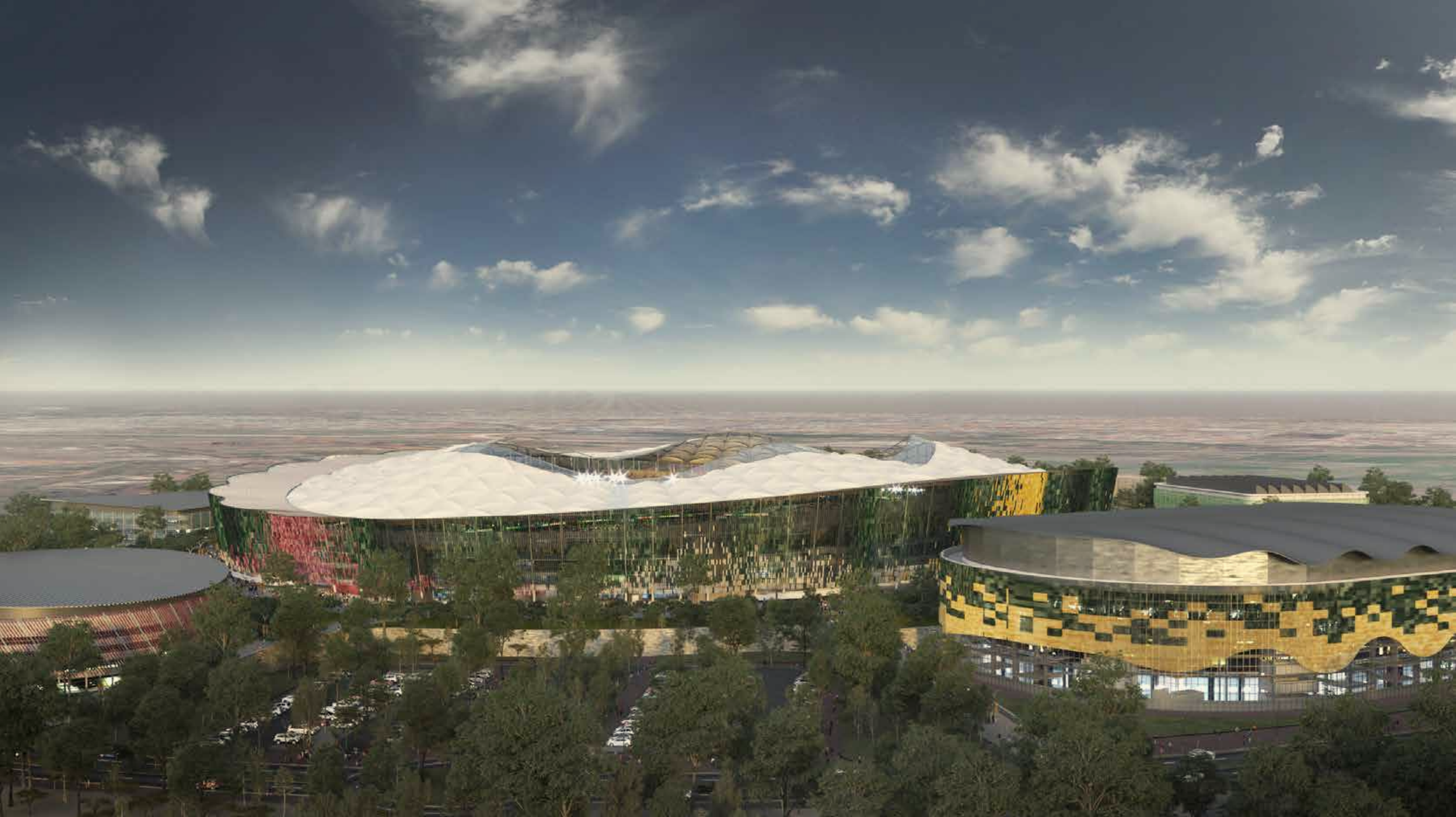
Façade material

The amazing colours that can be seen naturally in cocoa pods provides us with clues as to how we may acknowledge all of them. the façade shape which acknowledges the natural bulges of the pod creates a sensuous wave line with ridges and valleys. Imagine the valleys are darker and the ridges are lighter and the background colour is realized by using say 5 tones of green that are randomly placed and then interspersed with 5 main colours and that align with the main entrances to the stadium. These main entrance colours are then used to inform the colours of the various other sports facilities whose entrances are placed opposite the main stadium entrances to enhance the way finding of the stadium precinct.

Fluid Glazed



Concept
Materialisation

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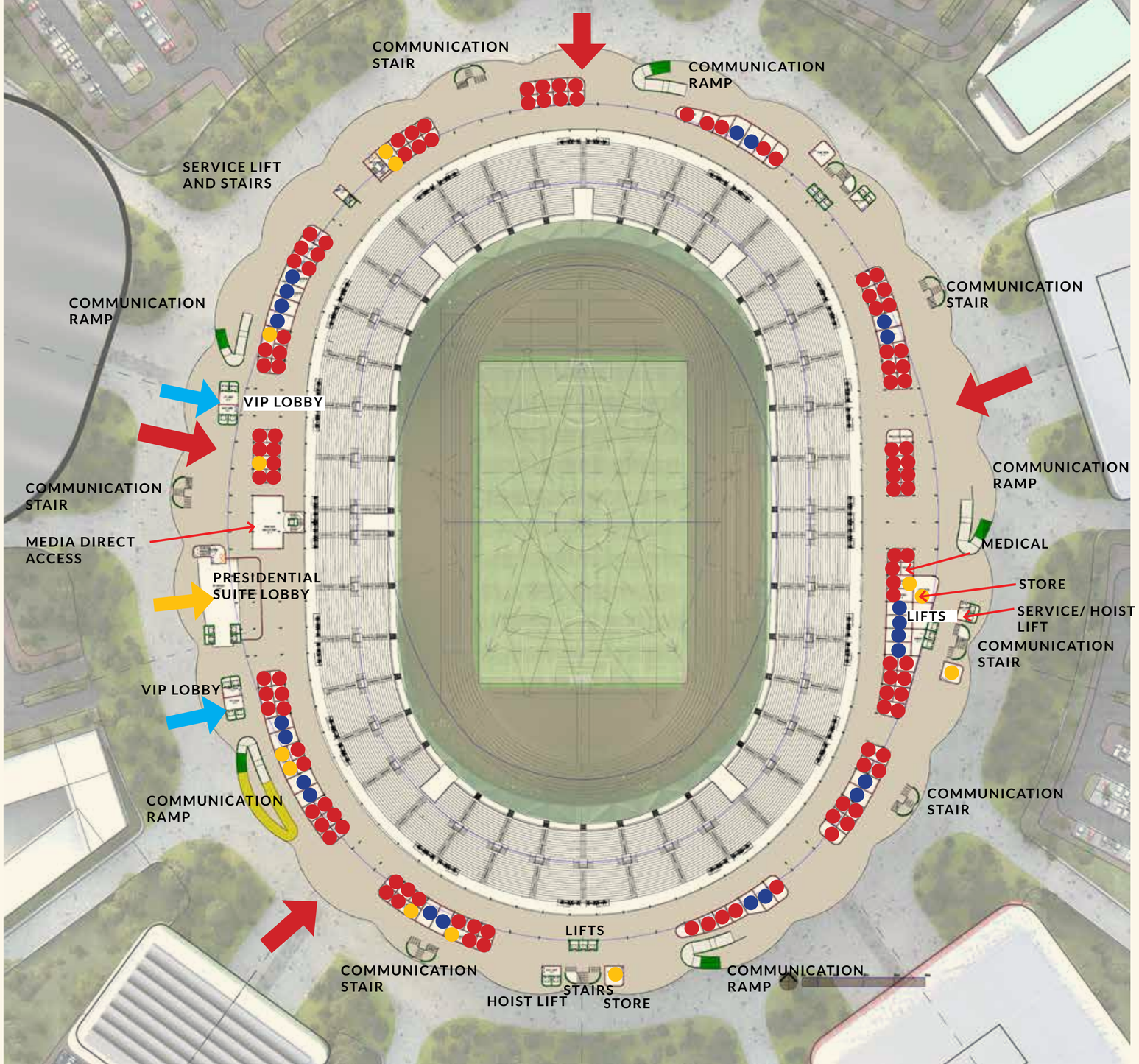
GHANA

Podium

Access & egress routes

It is not surprising when dealing with 50 000 spectators that the issue of access routes and egress routes are key to spectators' safety. It is the view of our practice that the fan experience is part of determining the best mechanisms to use to ensure safe arrival and departure of spectators. We are thus always keen to explore the principal of extending the podium walking experience up to the seating tiers by using generous ramps that provide a continuous walkway all the way up and all the way down. These ramps are located within the perimeter of the façade and are supplemented by generous stair and lifts for the smaller entrances, providing access to all levels for mobility impaired spectators.

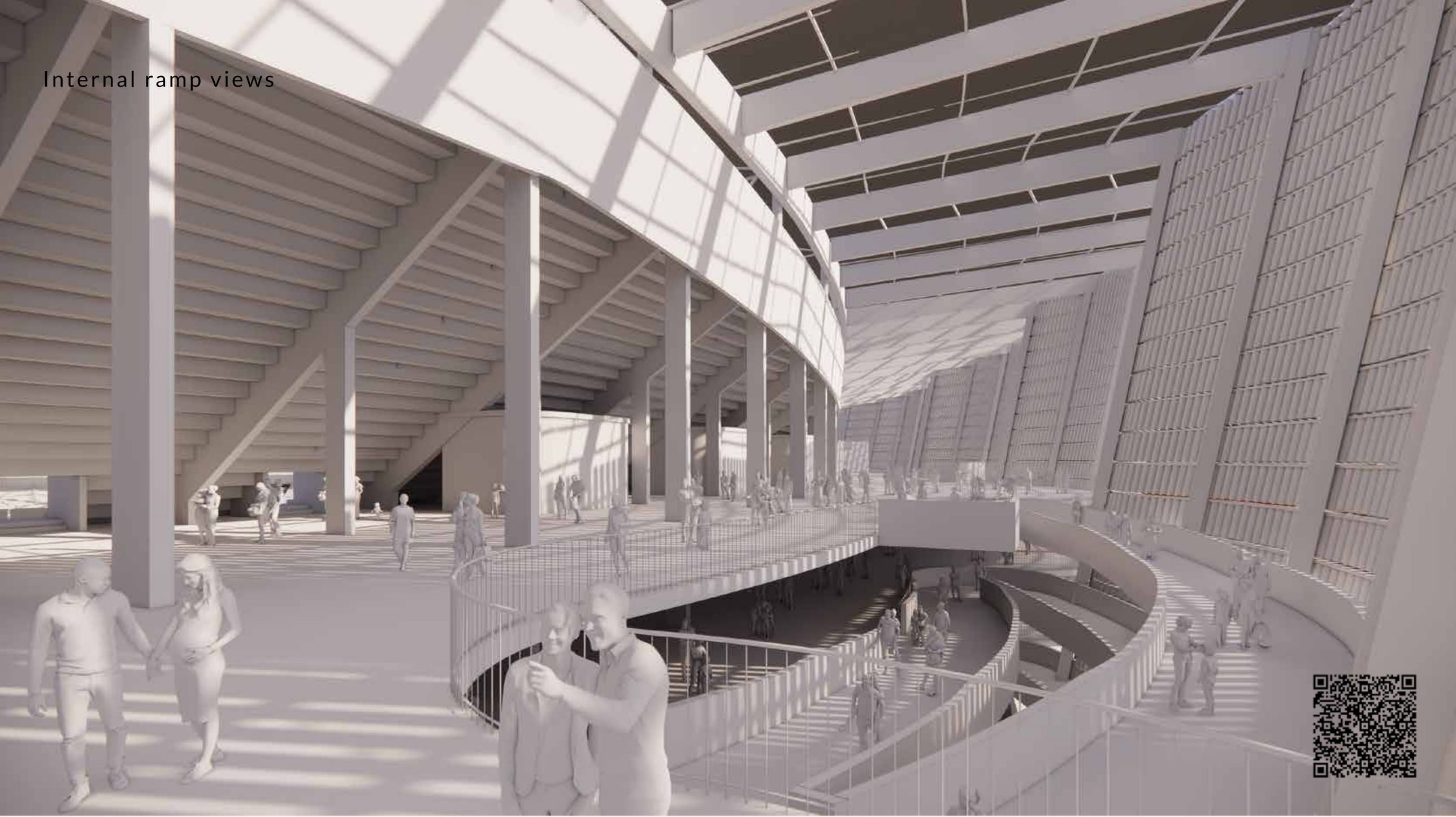
The podium allows for uninterrupted circulation around the entire stadium and this we feel is a key element for fans to enjoy their dwell time at the stadium before and after events.

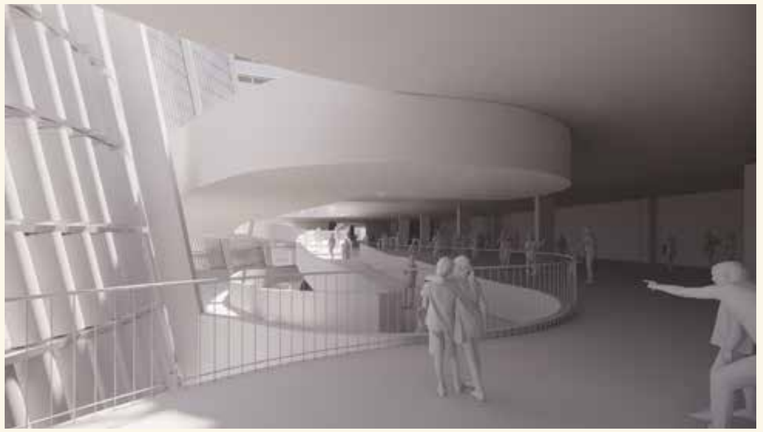
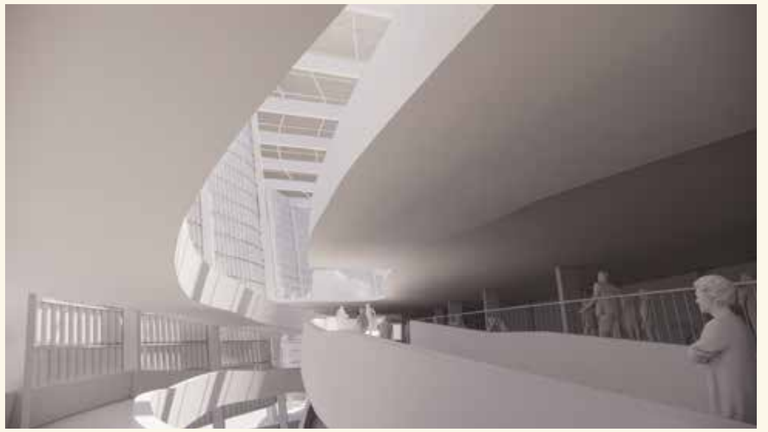
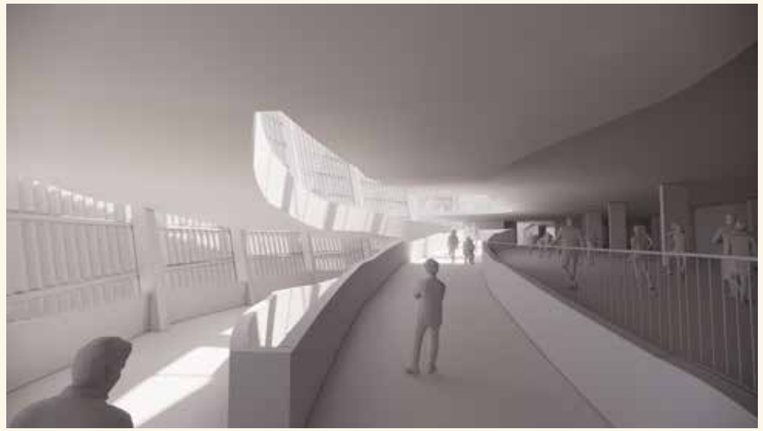
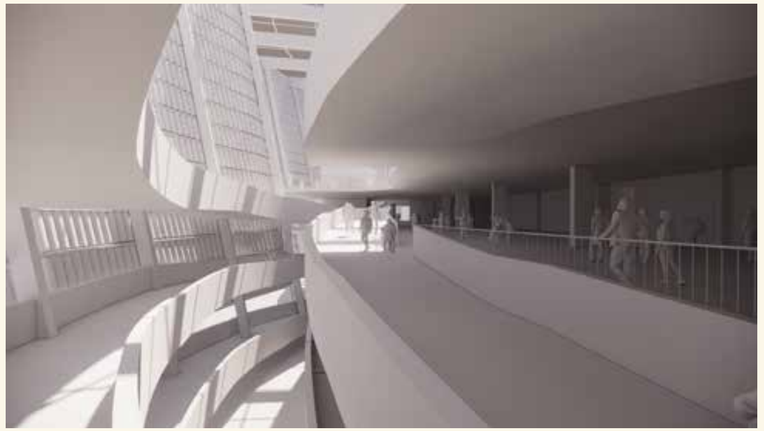
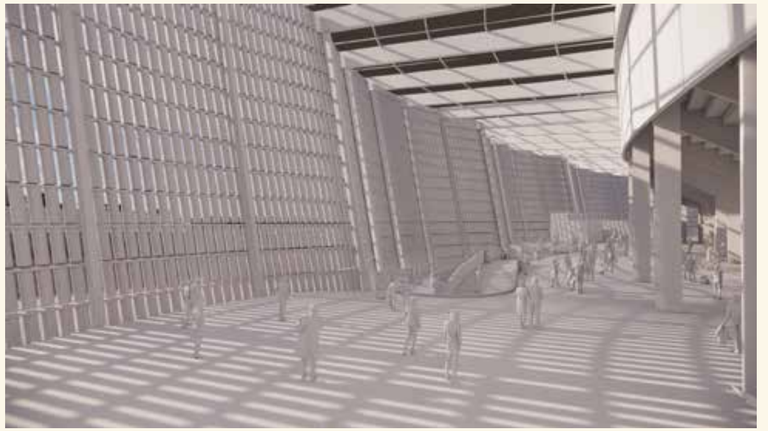


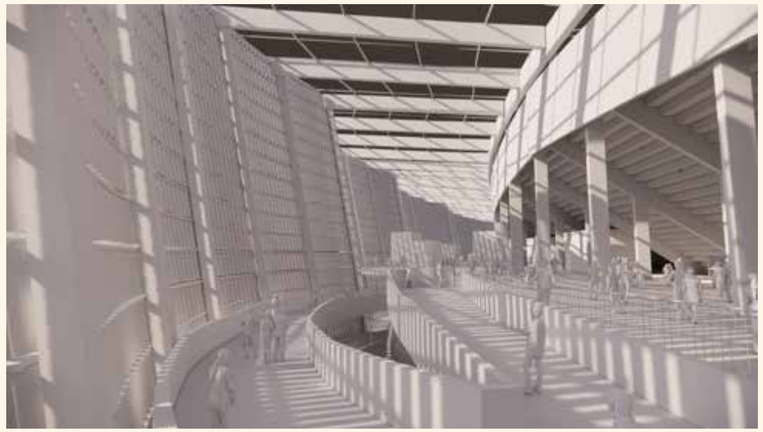
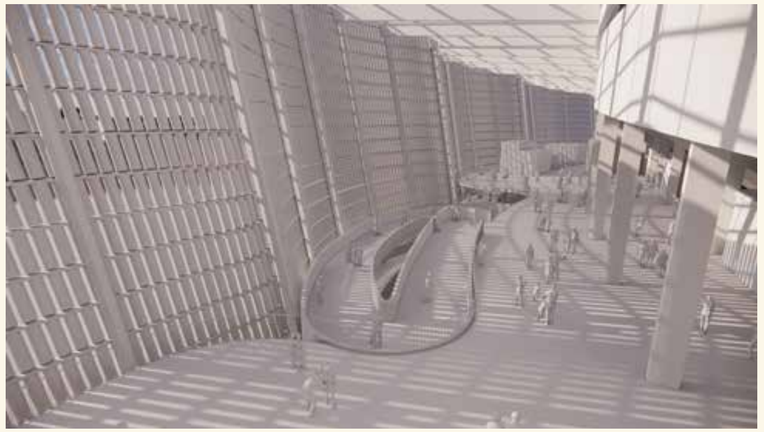
- Concession
- Security/medical/admin
- Ablutions

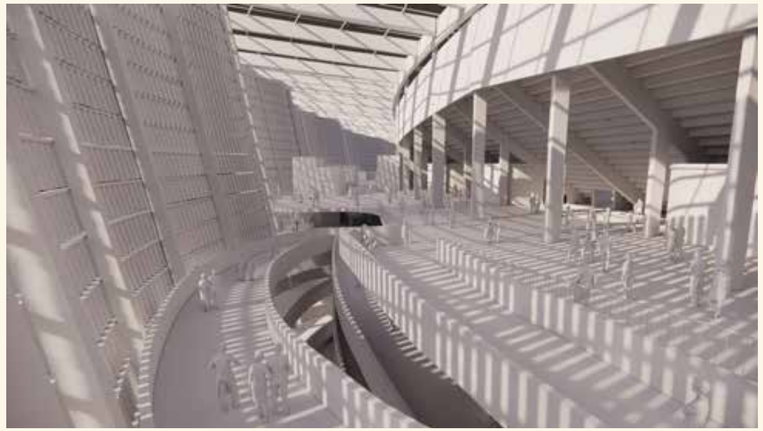
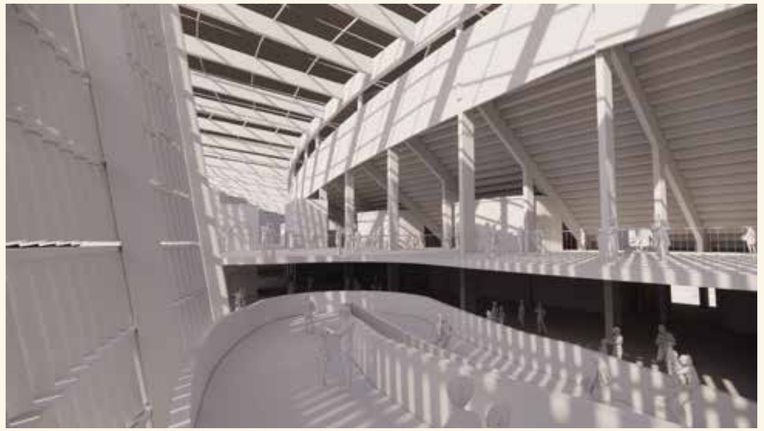
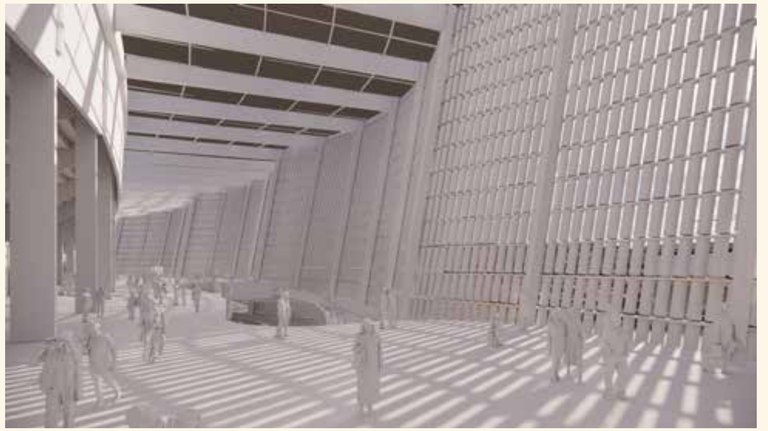
- General access
- VVIP/presidential access
- VIP suite access

Internal ramp views



The roof

The undulating roof references the 5 pentads or beans of the pod in plan and also in section allowing for a sensually undulating roof profile that rises and dips a full 14m. The roof solution is the most lightweight to provide 100% cover to all spectators in the stadium. This is key to ensure that during event days in the tropical climate of Ghana that all spectators are located within the dip line of the leading edge of the roof. The solution thus is based on the use of a fabric roof that is stretched over a rafter and cable system with flying columns that connect to a inner tension ring and outer compression ring at the back of the roof. Each segment has its own 3-dimensional structure to allow the fabric to be properly tensioned and provide a durable cover. The roof is extended by a polycarbonate edge that cantilevers off the roof to provide light penetration onto the playing field.

Geometry

In this option, the main focus are the 5 “seeds” of the cocoa fruit. An ondulating surface is created with low points at the 5 main axes. This is achieved by varying the lengths of the flying columns, while the compression and lower tension rings remain affine. The upper radial beams form the basis of the curved upper surface. Care is taken to guarantee sufficient slope at the low points. To further highlight the 5 main axes, “twin” axes are introduced at the low points. These could host the radial catwalks (fig. 11 and 12).

Cladding

The outer roof cladding consists steel arches placed diagonally in alternate distribution, creating a light system which also provides clear drainage paths (fig 13).

Façade

The compression ring serves as the main perimeter gutter line. The outer concourses and other architectural services require a waterproof roof on top as well as a façade covering the whole perimeter (fig 14). For this option, the outer sloped roof consists of radial rakers tilted toward the compression ring to allow for drainage. At their outer ends, the rakers are pinned to the vertically inclined columns, supporting the façade cladding.

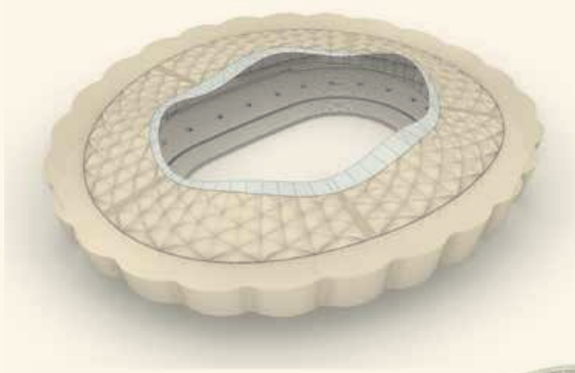


Fig 11. Roof option 1. Roof structure with inner and outer roof cladding, showing also the 5 “twin” axes

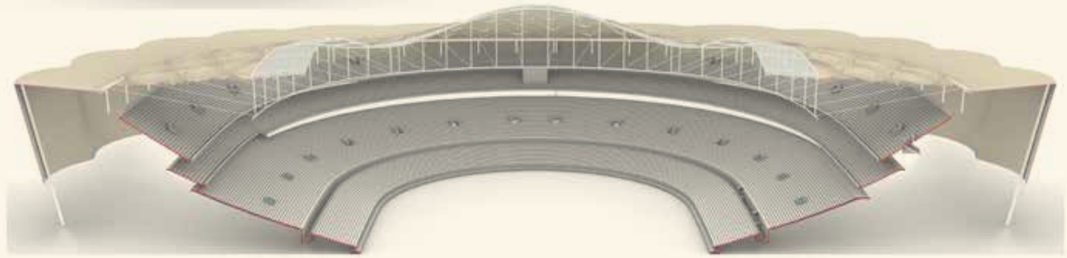


Fig 12. Cross-section along East West axes showing the roof structure and geometry

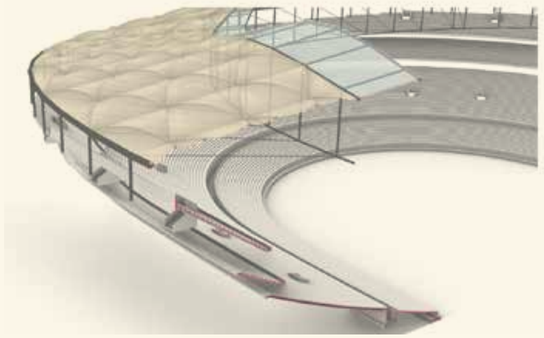


Fig 13. Diagonally laid arches break the radial pattern and highlight the overall curvature of the roof surface.

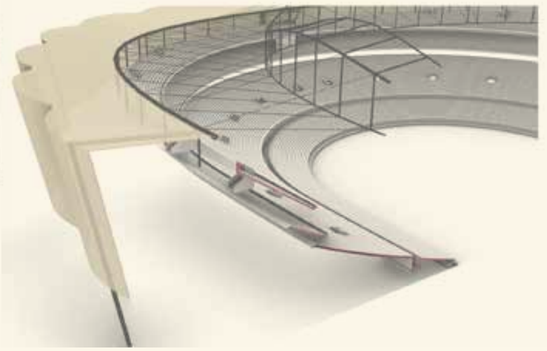
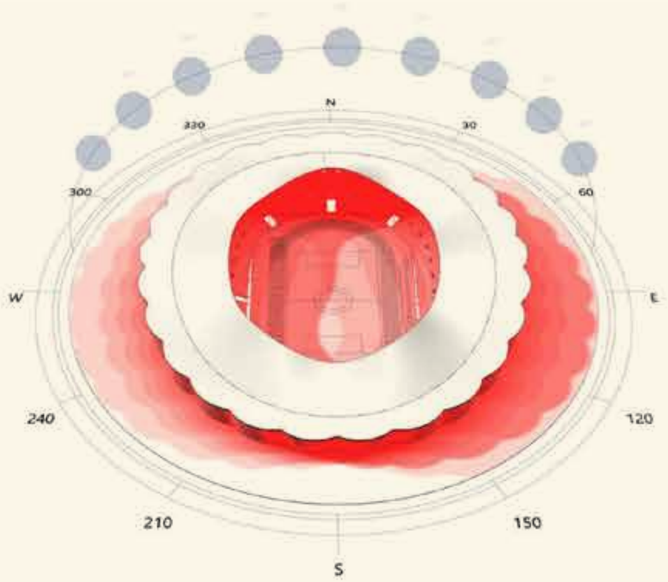
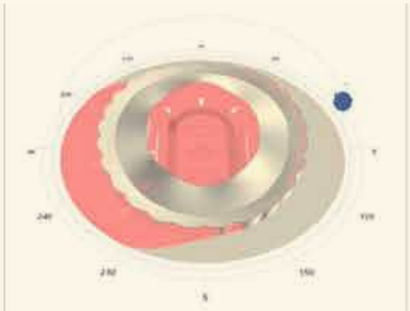


Fig 14. The Façade consists of 2 main parts: the outer sloped roof and the vertically inclined outer façade.



Sun study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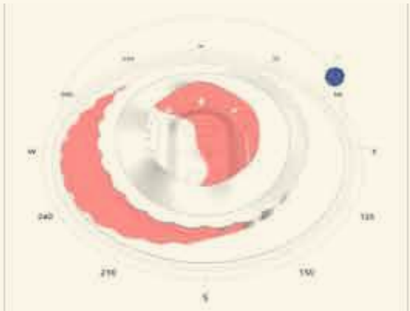
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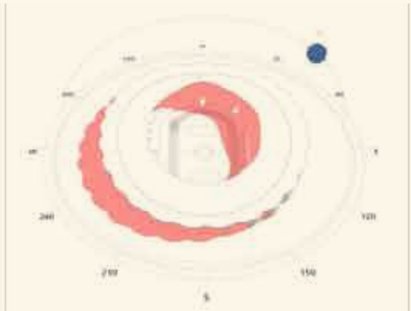
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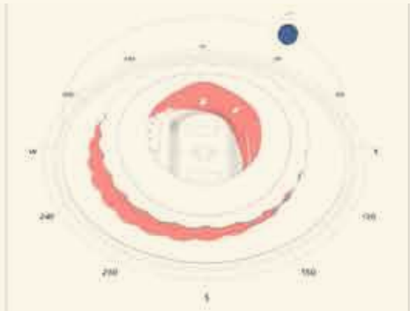
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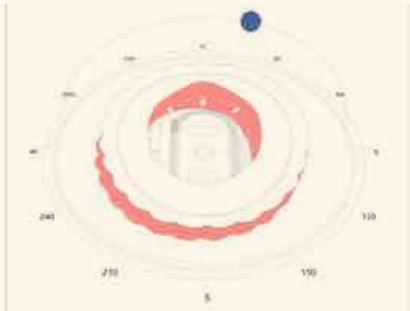
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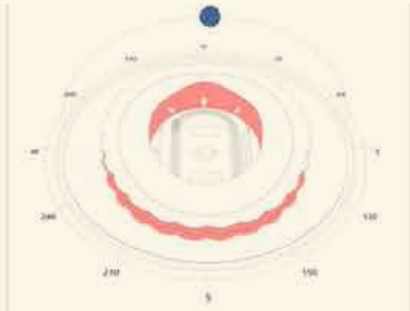
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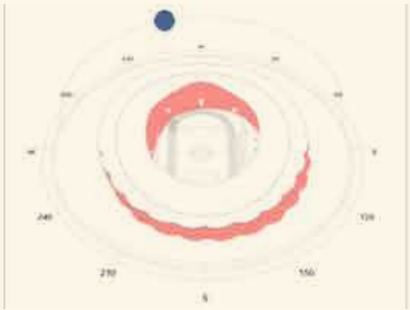
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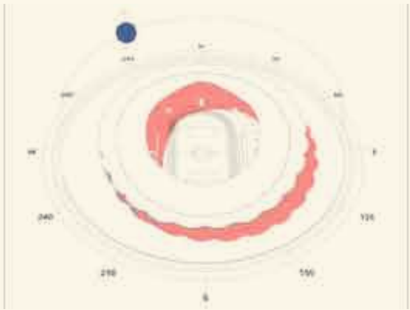
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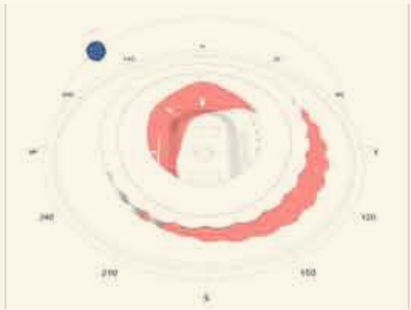
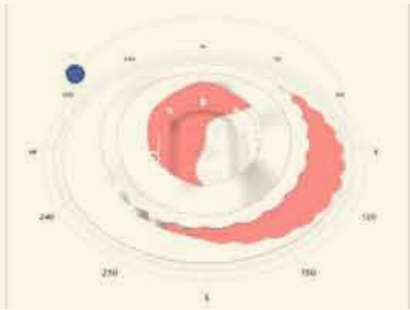
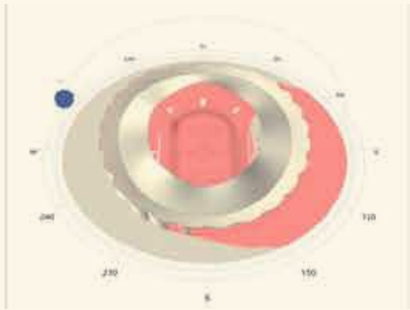
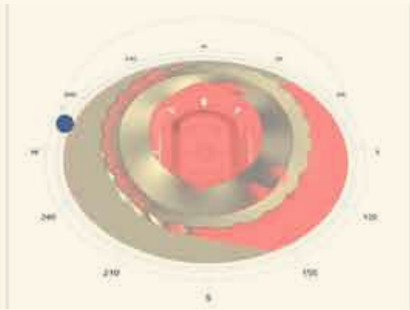
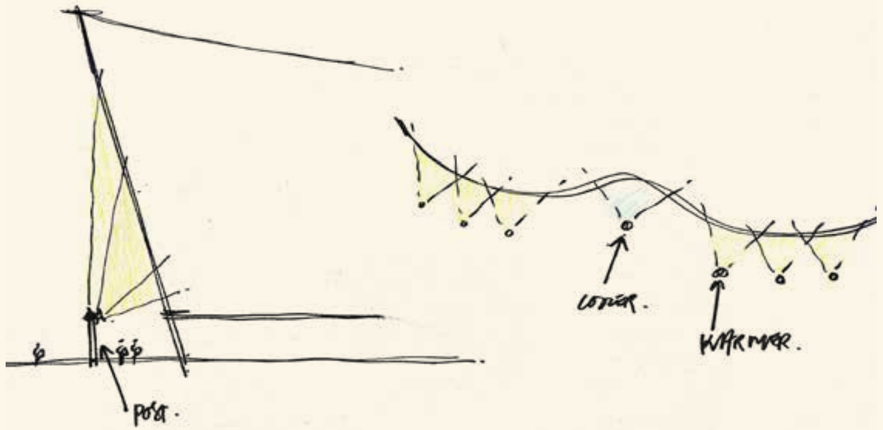

15 Hours

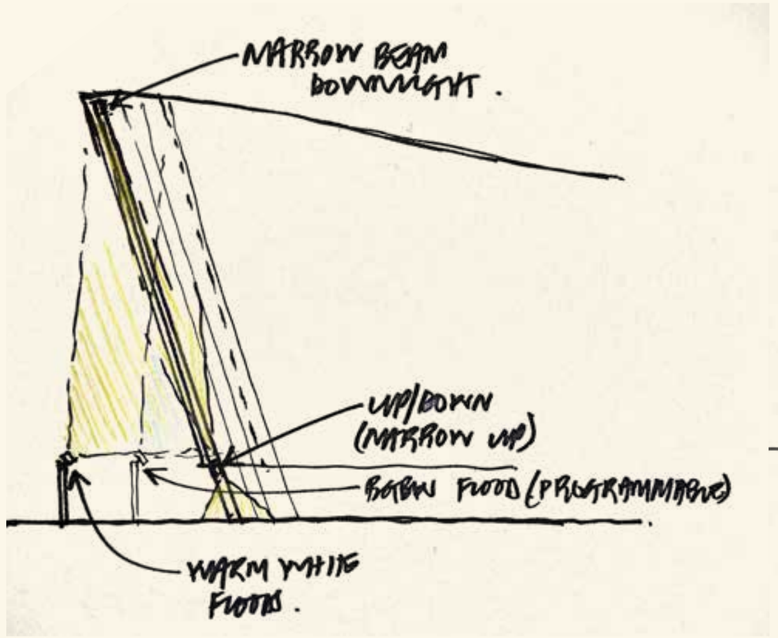

16 Hours

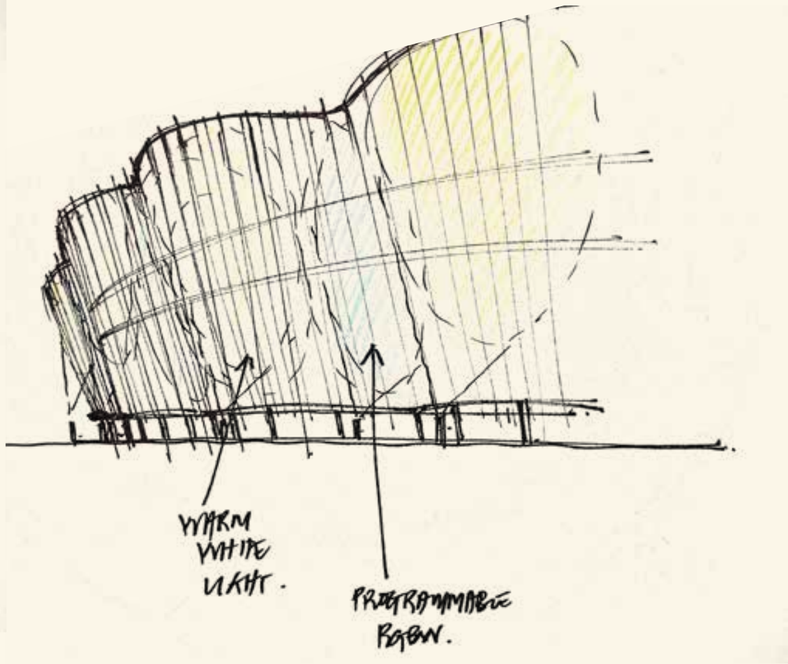

17 Hours


18 Hours

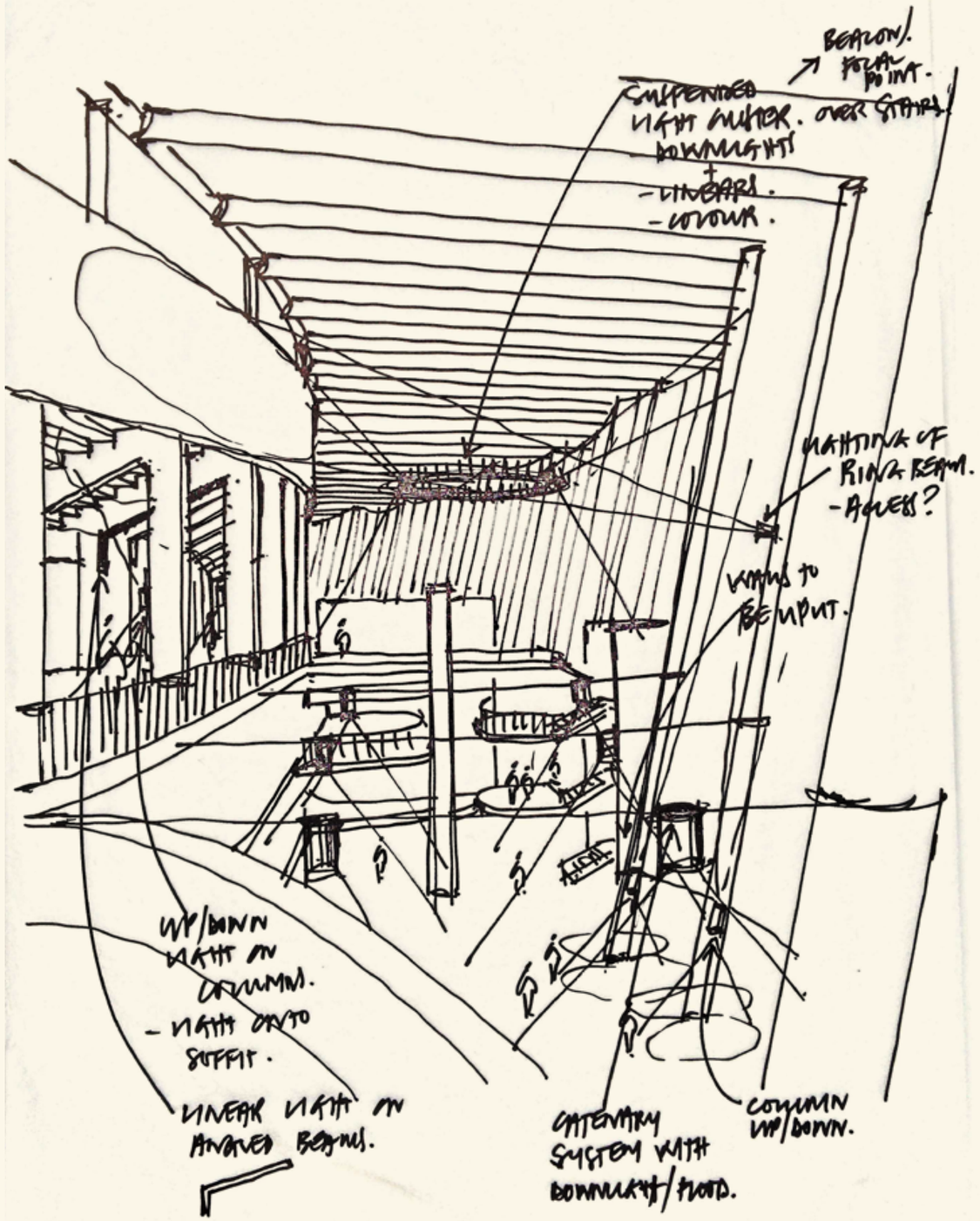
Lighting


POST.


NARROW BEAM
DOWNLIGHT.
UP/DOWN
(NARROW UP)
WARM WHITE
FLOODS.

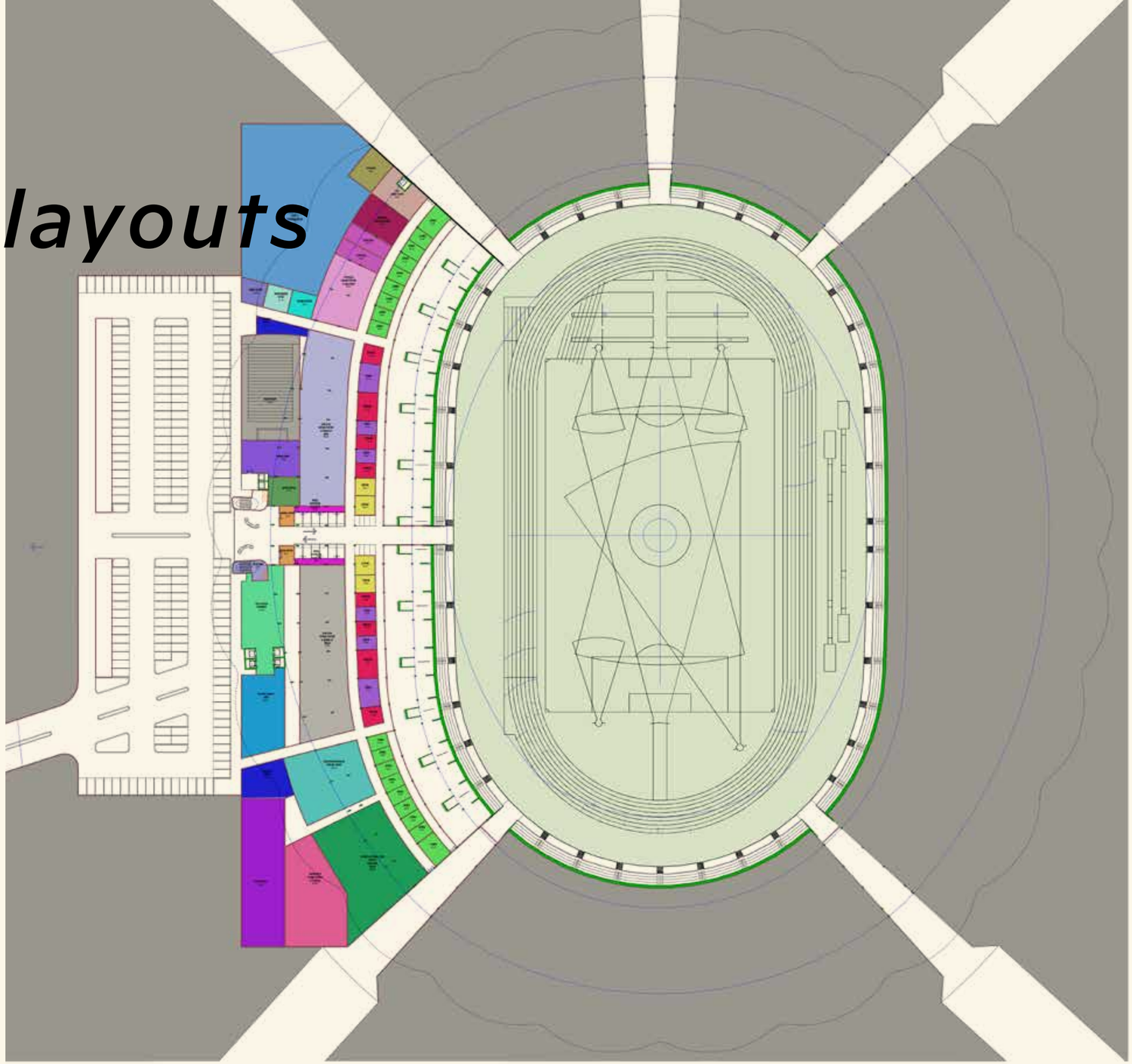

WARM
WHITE
LIGHT.

Lighting

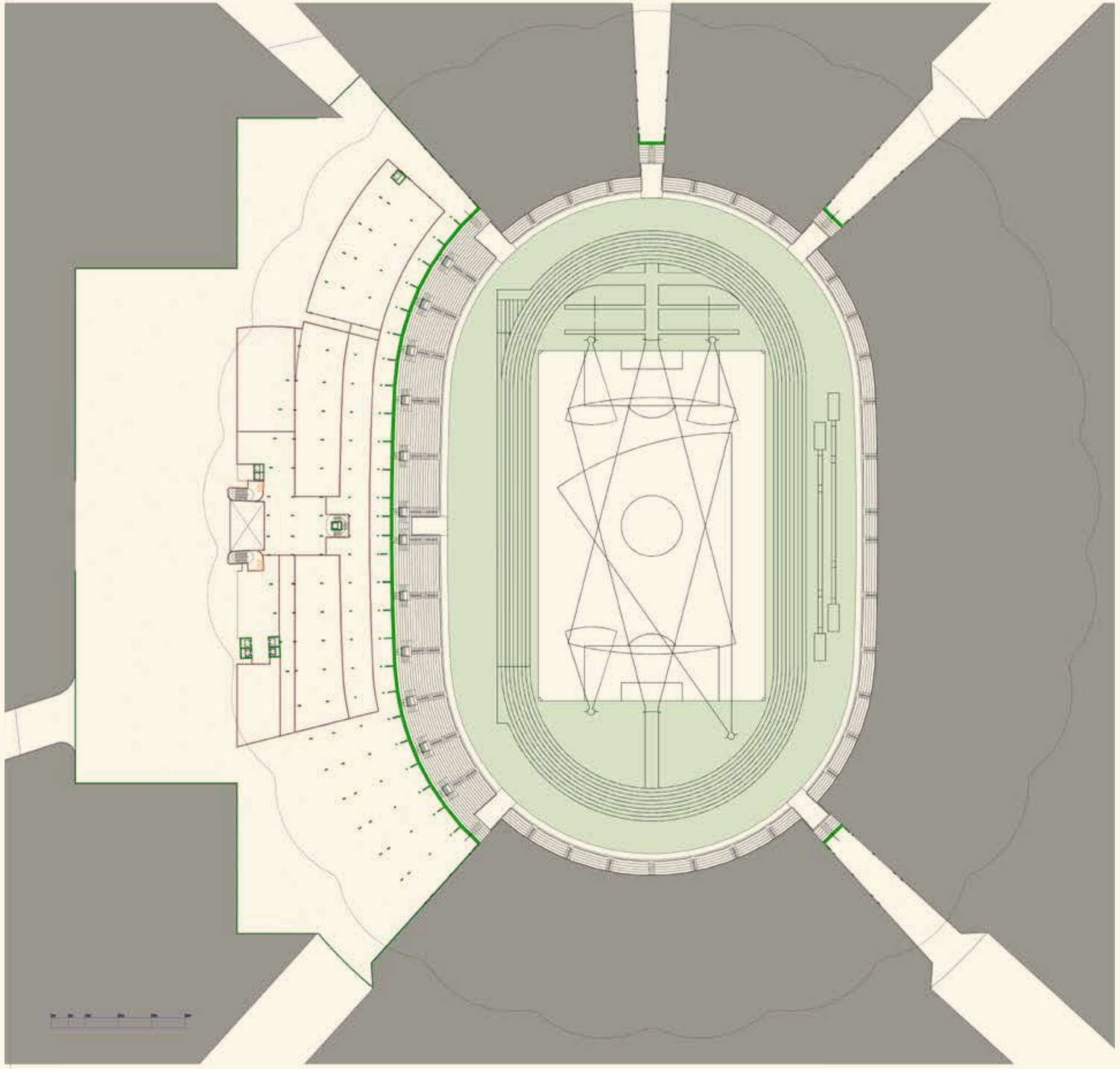

BEACON/
FOCAL
POINT.
SUSPENDED
LIGHT CLUSTER.
DOWNLIGHTS
- LINEARS.
- COLOUR.
OVER STAIRS.
LIGHTING OF
RIVER REALM.
- ACCESS?
WIRING TO
BE INPUT.
UP/DOWN
LIGHT ON
COLUMNS.
- LIGHT ONTO
SOFFIT.
LINEAR LIGHT ON
ANGLED BEAMS.
CATENARY
SYSTEM WITH
DOWNLIGHT/FLOOD.
COLUMN
UP/DOWN.

Plan layouts

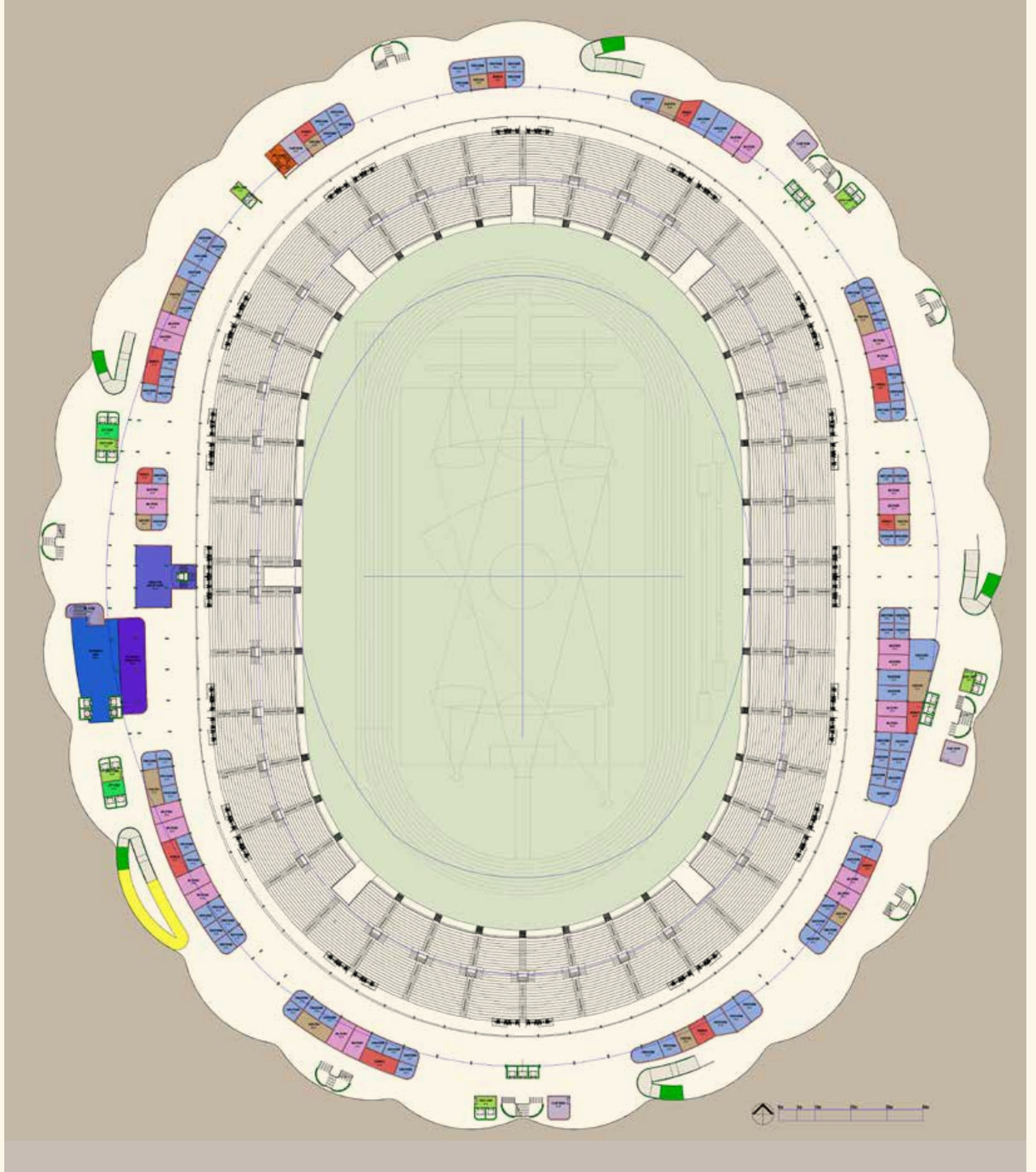
Tier 01
Athletics field



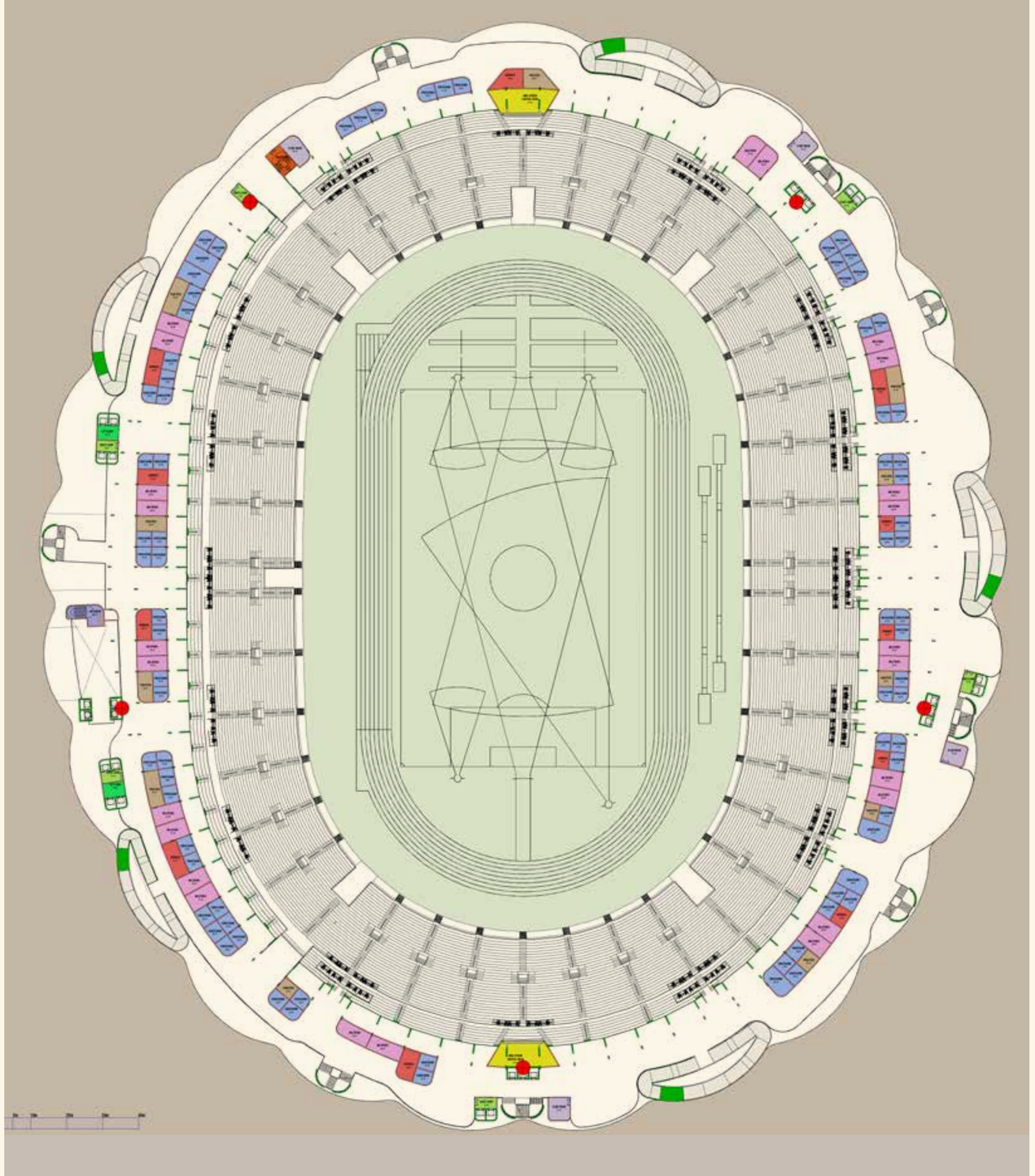
Tier 01
Mezzanine-level



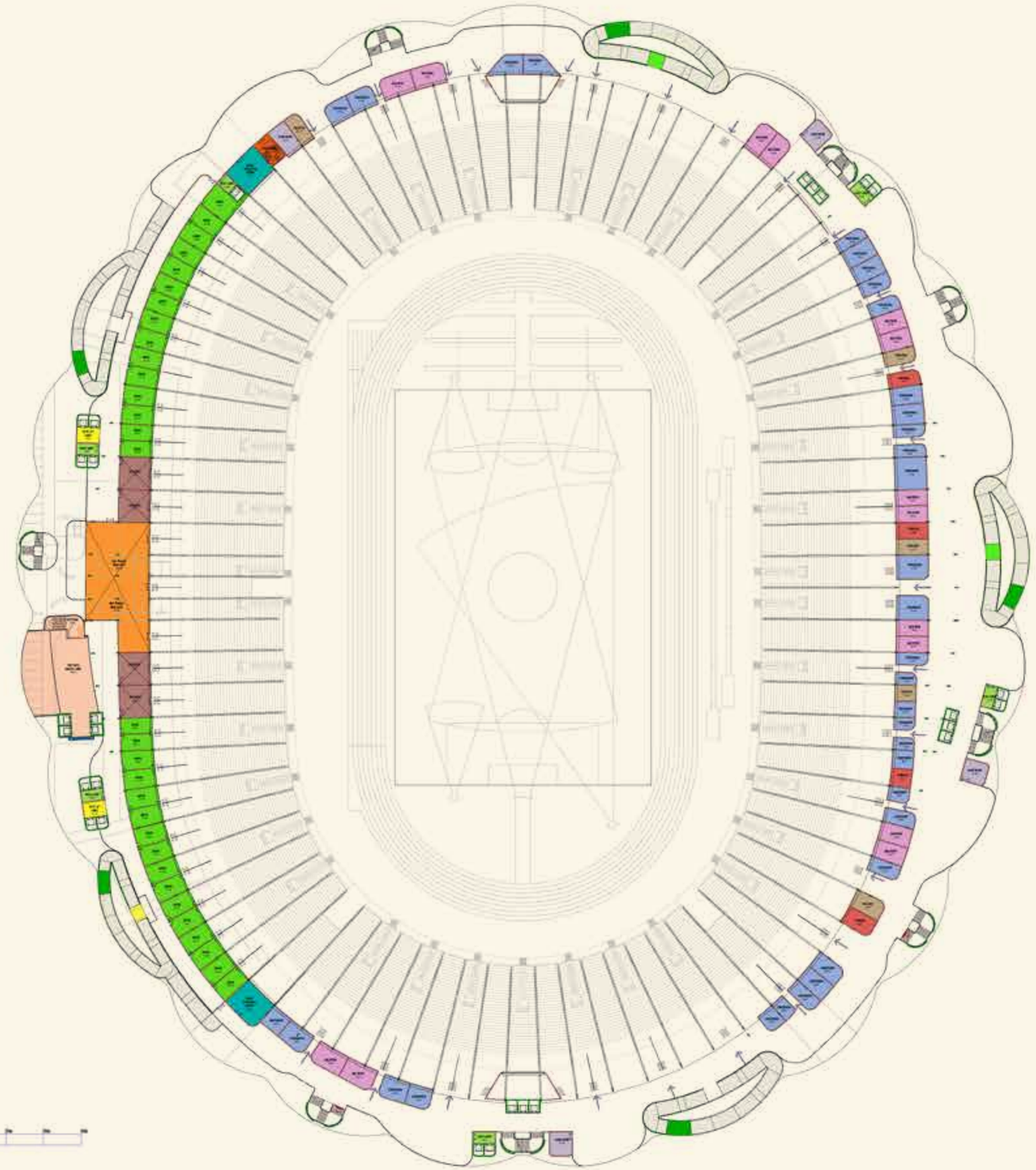
Tier 02
Podium level



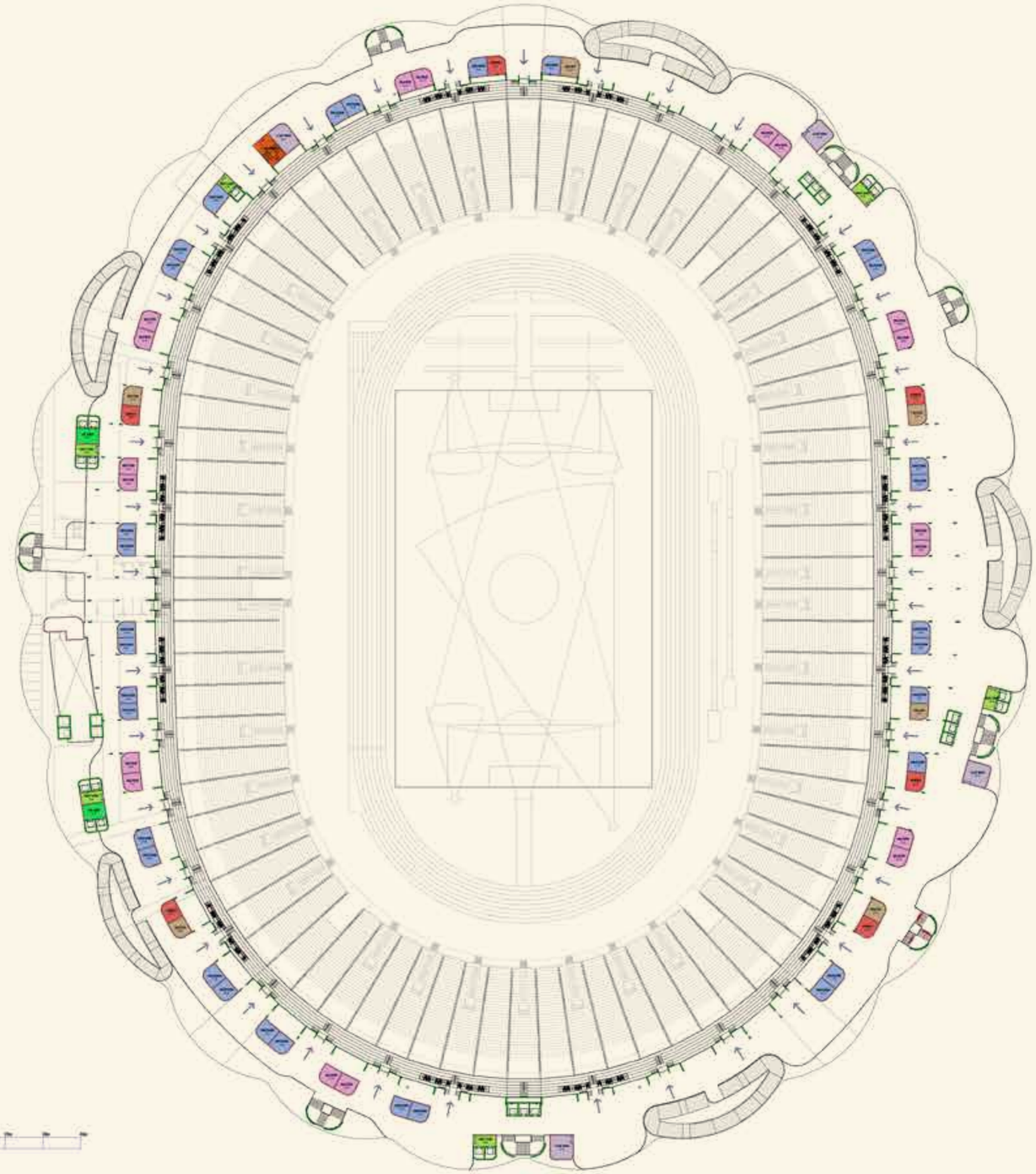
Tier 02
Mid level



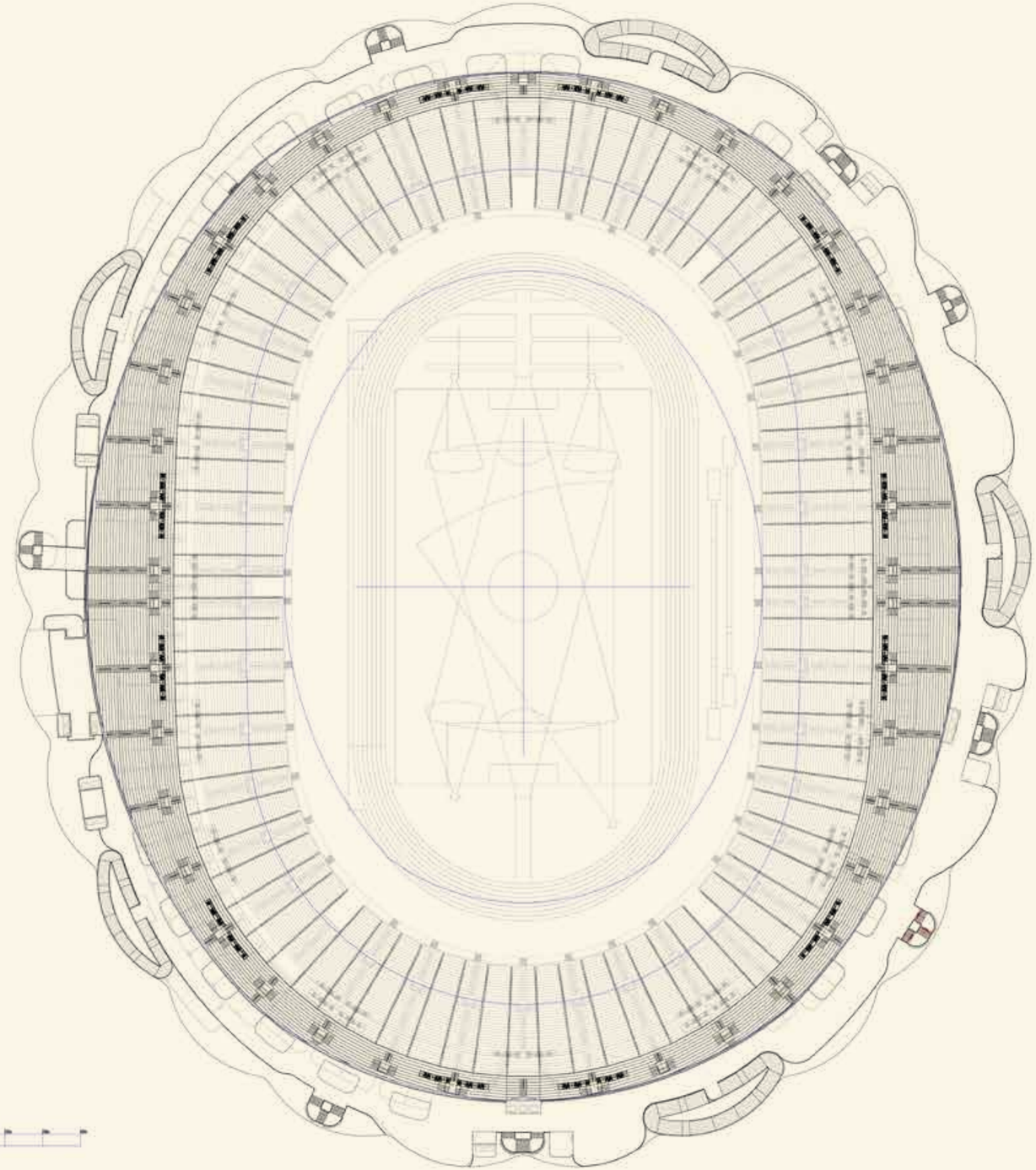
Tier 03
Suite level



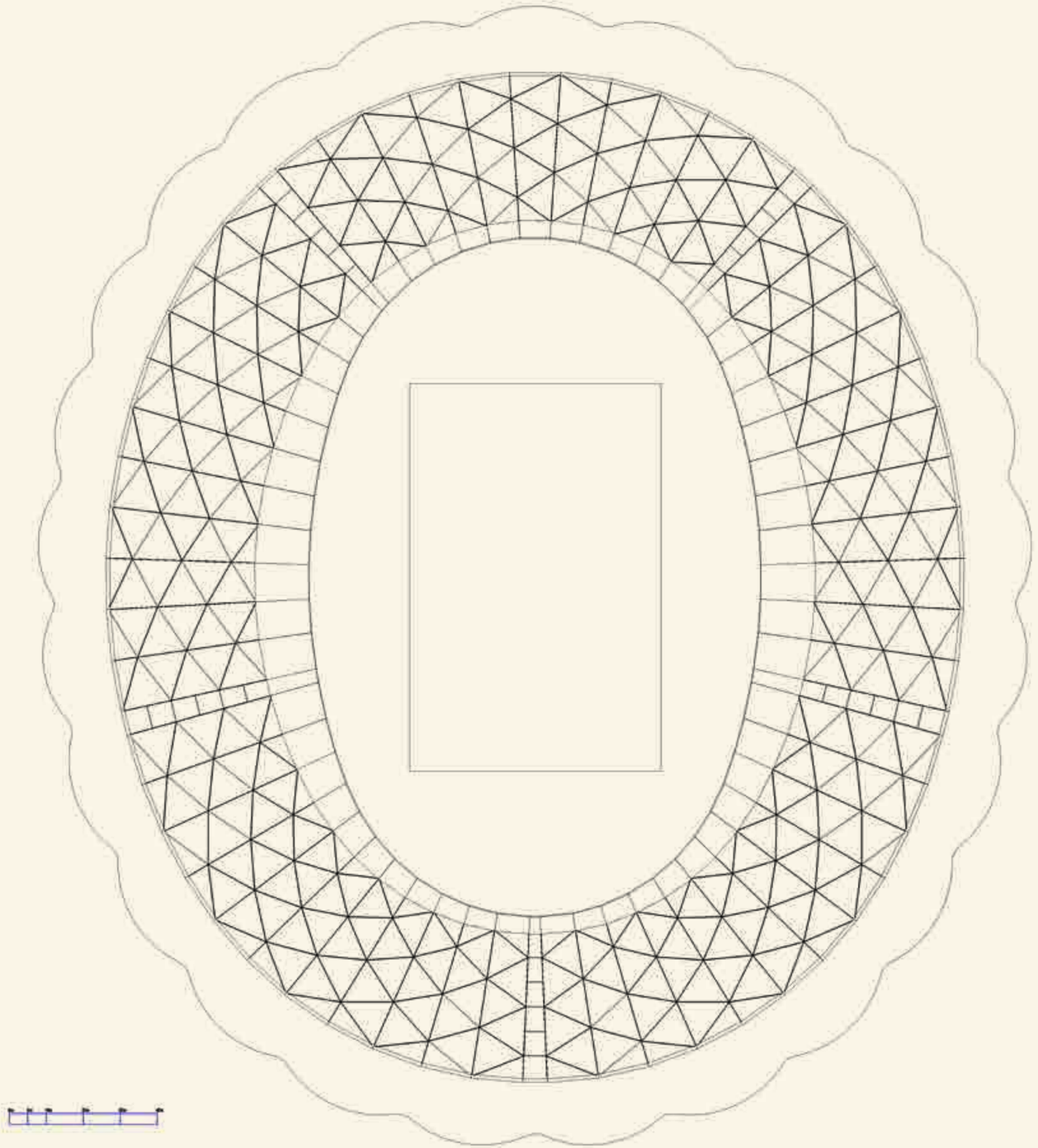
Tier 04
Lower level



Tier 04
Upper level



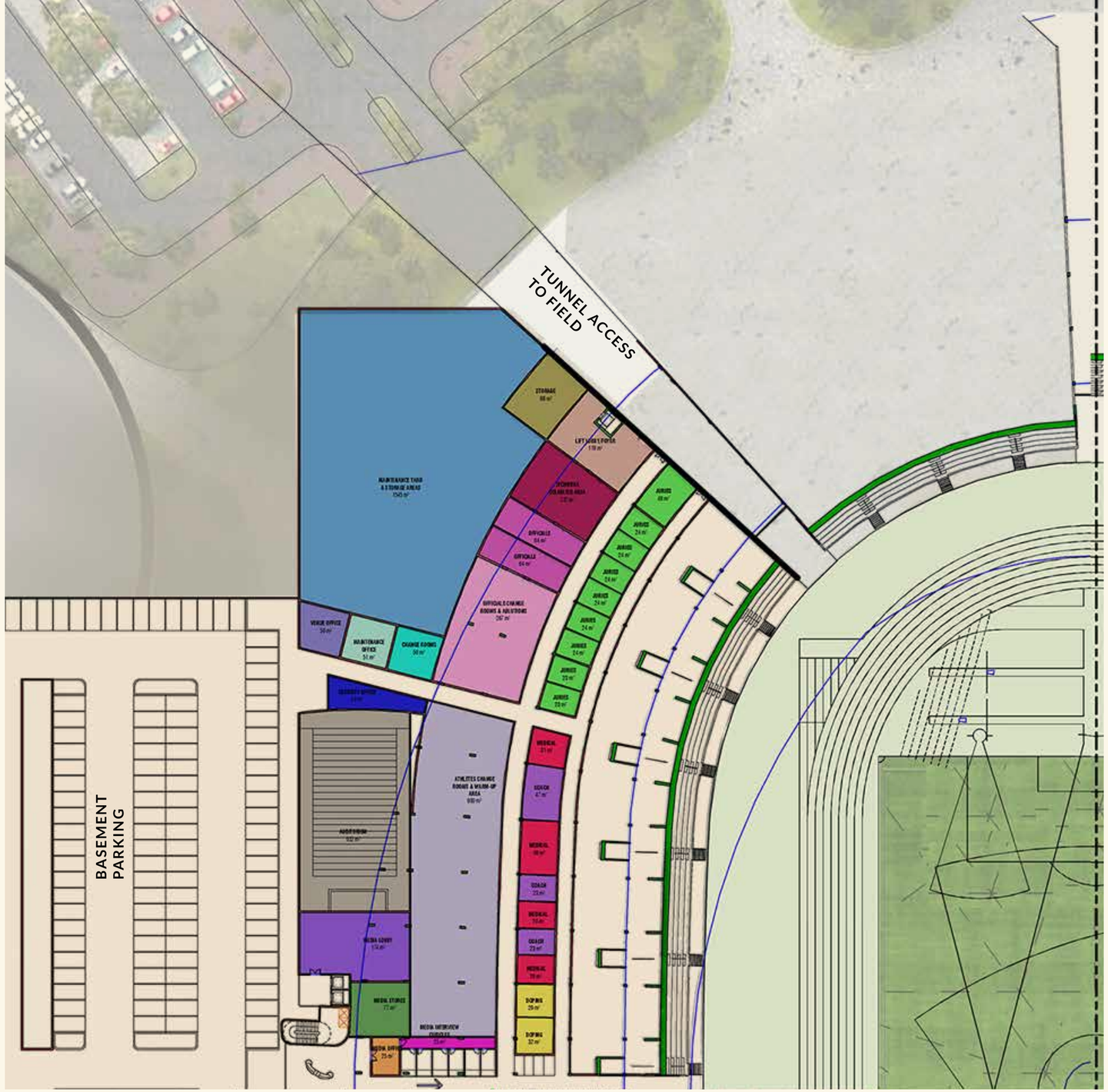
Roof level



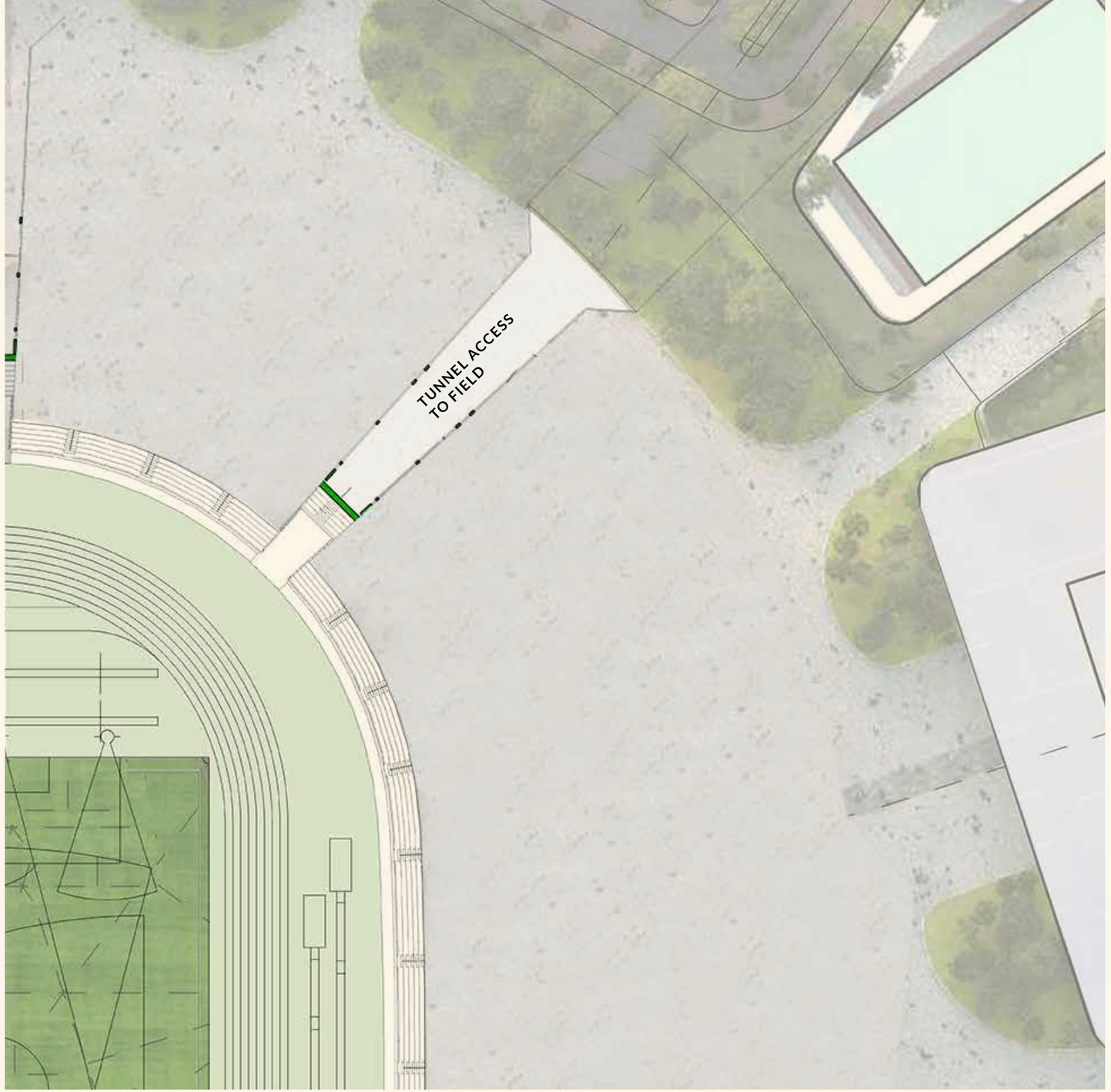
Quadrants

Athletics field/
Basement level

- Equipment/storage/field maintenance
- Venue maintenance offices
- Security
- Auditorium
- Athletes change rooms and warm up
- Jurries
- Medical
- Coach
- Doping
- Media stores/office
- Officials Change Room/Officials/ Technical Delegate Area

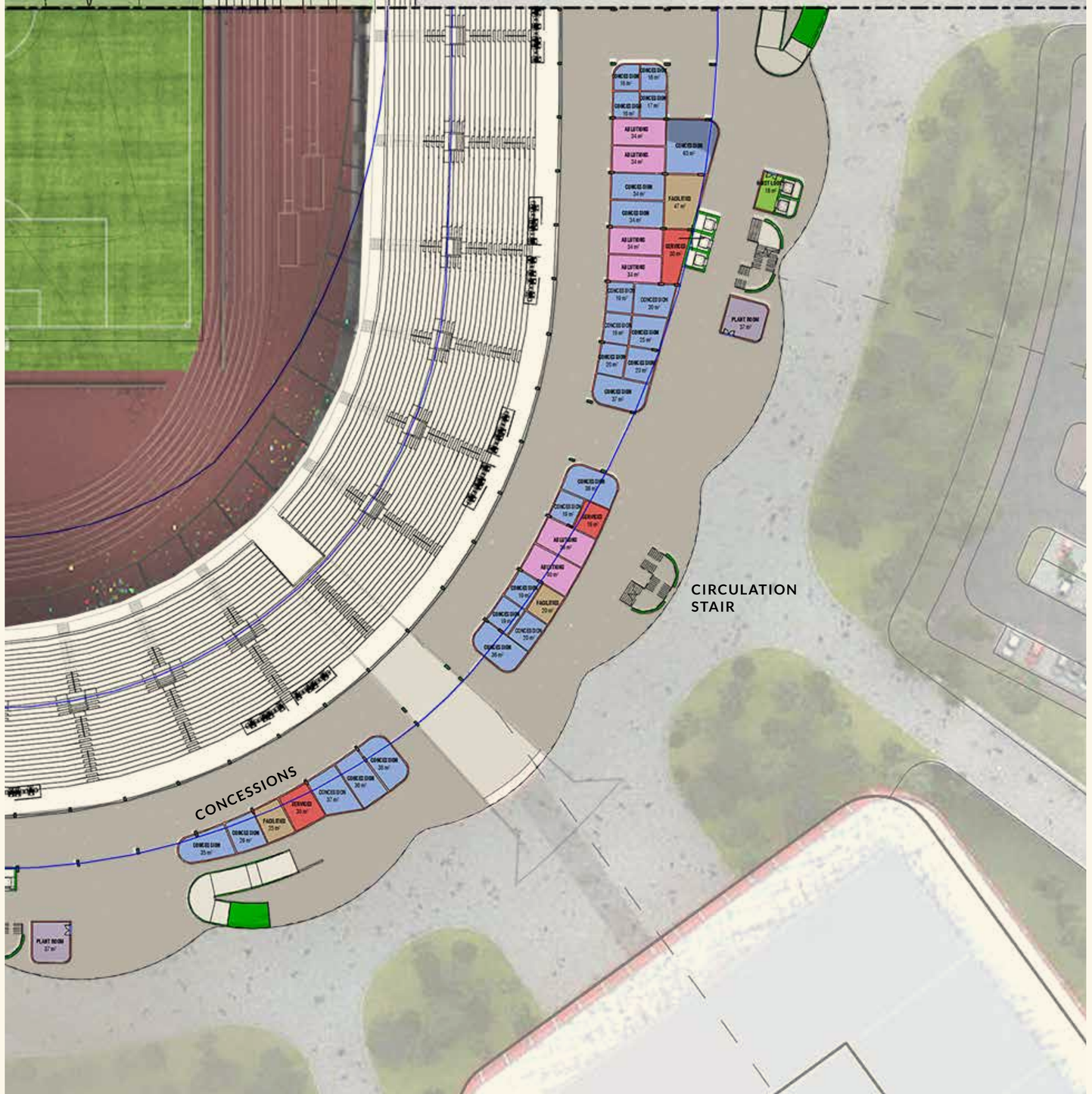


Tier 01
Mezzanine level



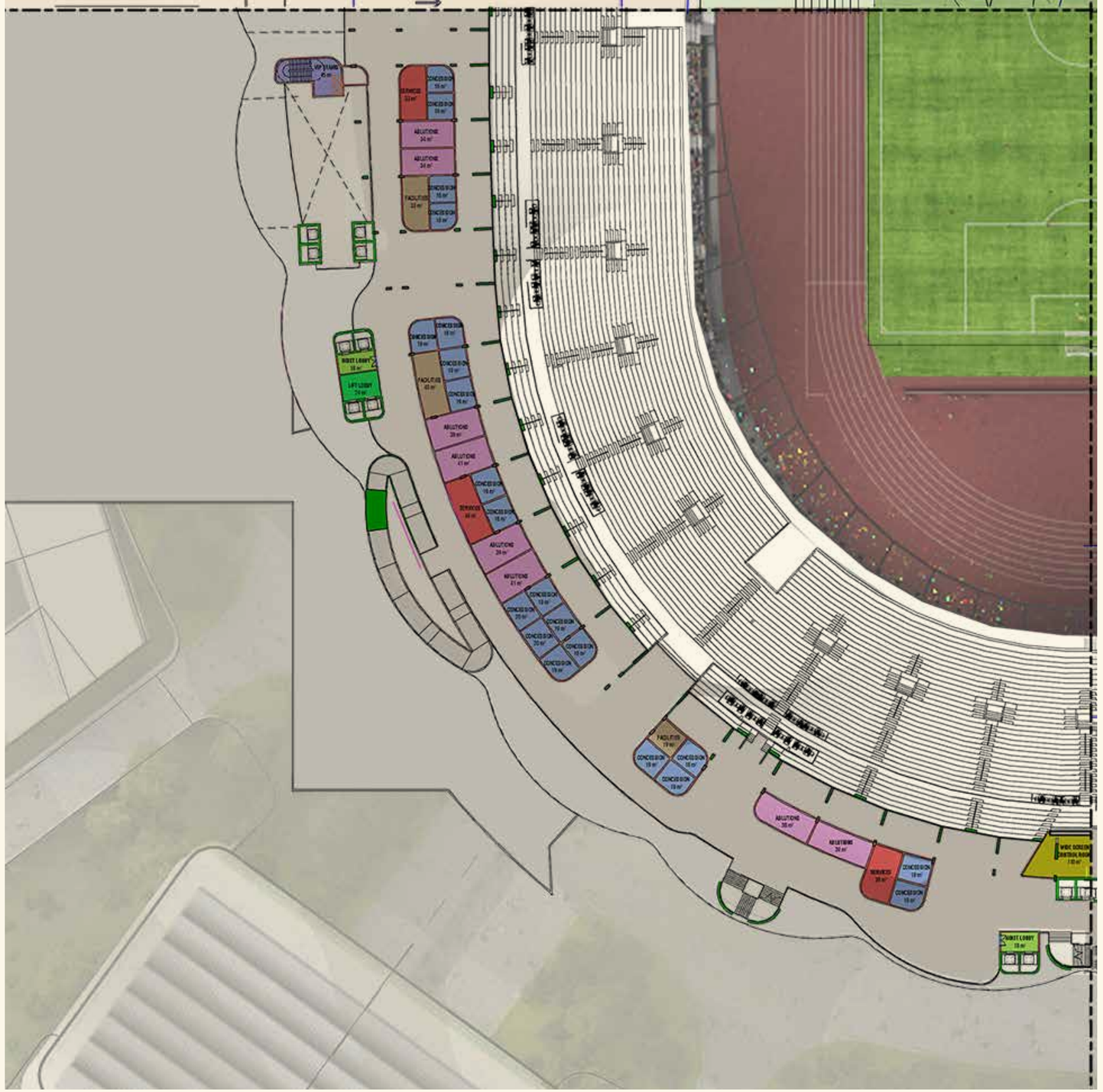
Tier 02
Podium level

- Communication ramps
- Concessions
- Ablutions
- Service/ hoist lift
- Services
- Security



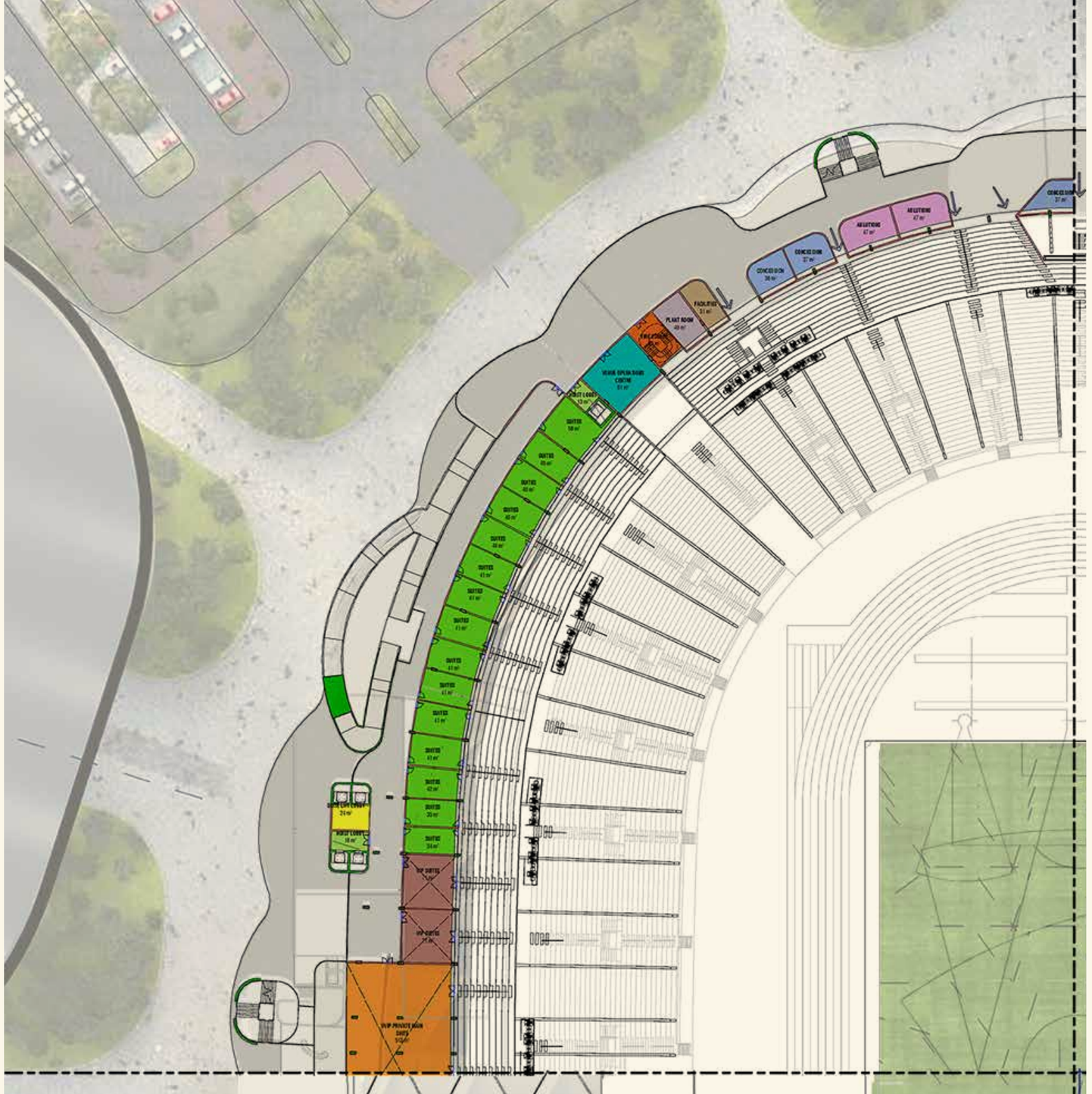
Tier 02
Mid level

- Communication ramps
- Concessions
- Ablutions
- VIP lift to suites
- Services
- Security
- Facilities

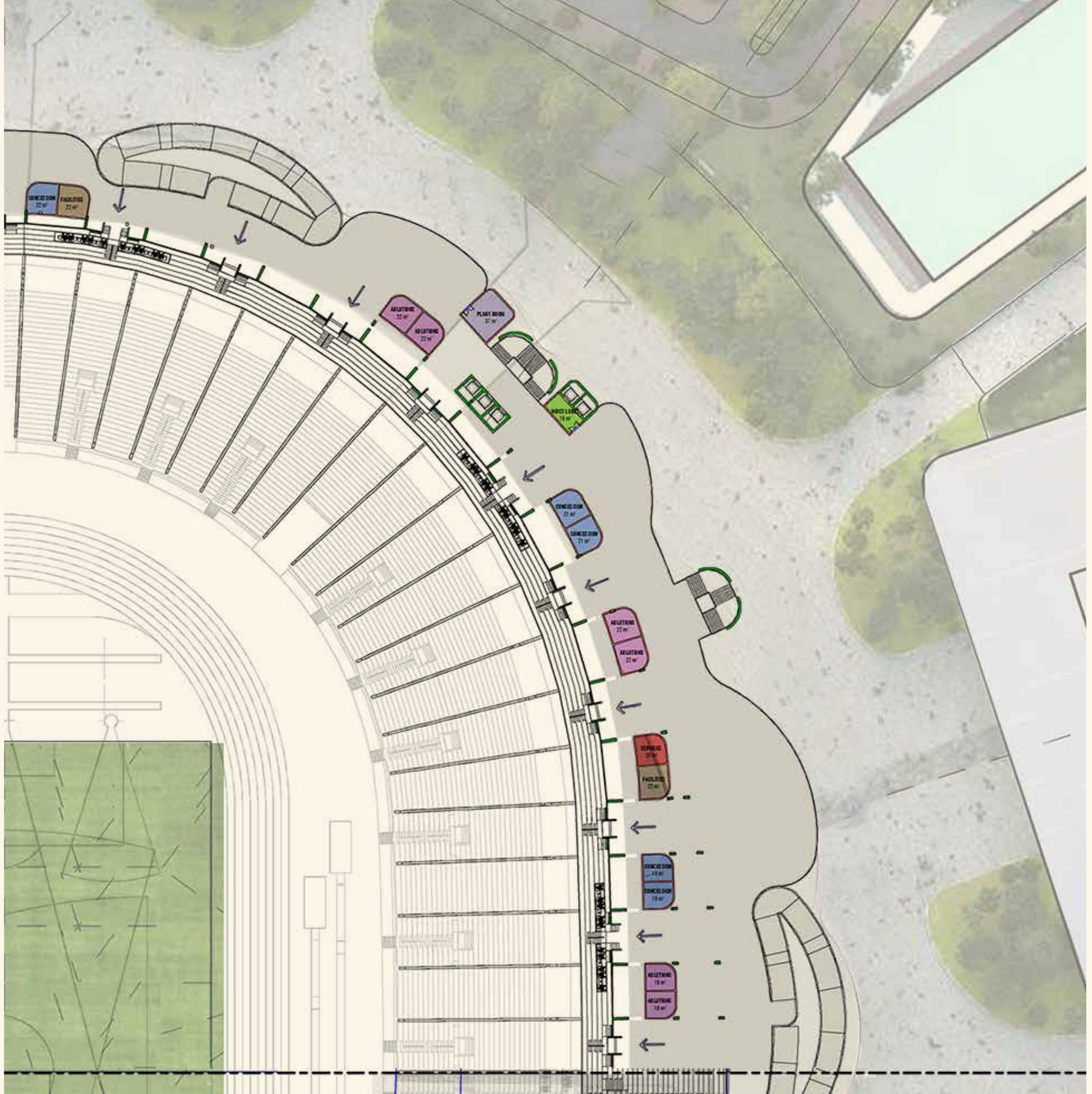


Tier 03
Suite level

- Communication ramps
- Concessions
- Ablutions
- Suites
- VIP lift to suites
- Venue operations
- Presidential suite
- VIP suites

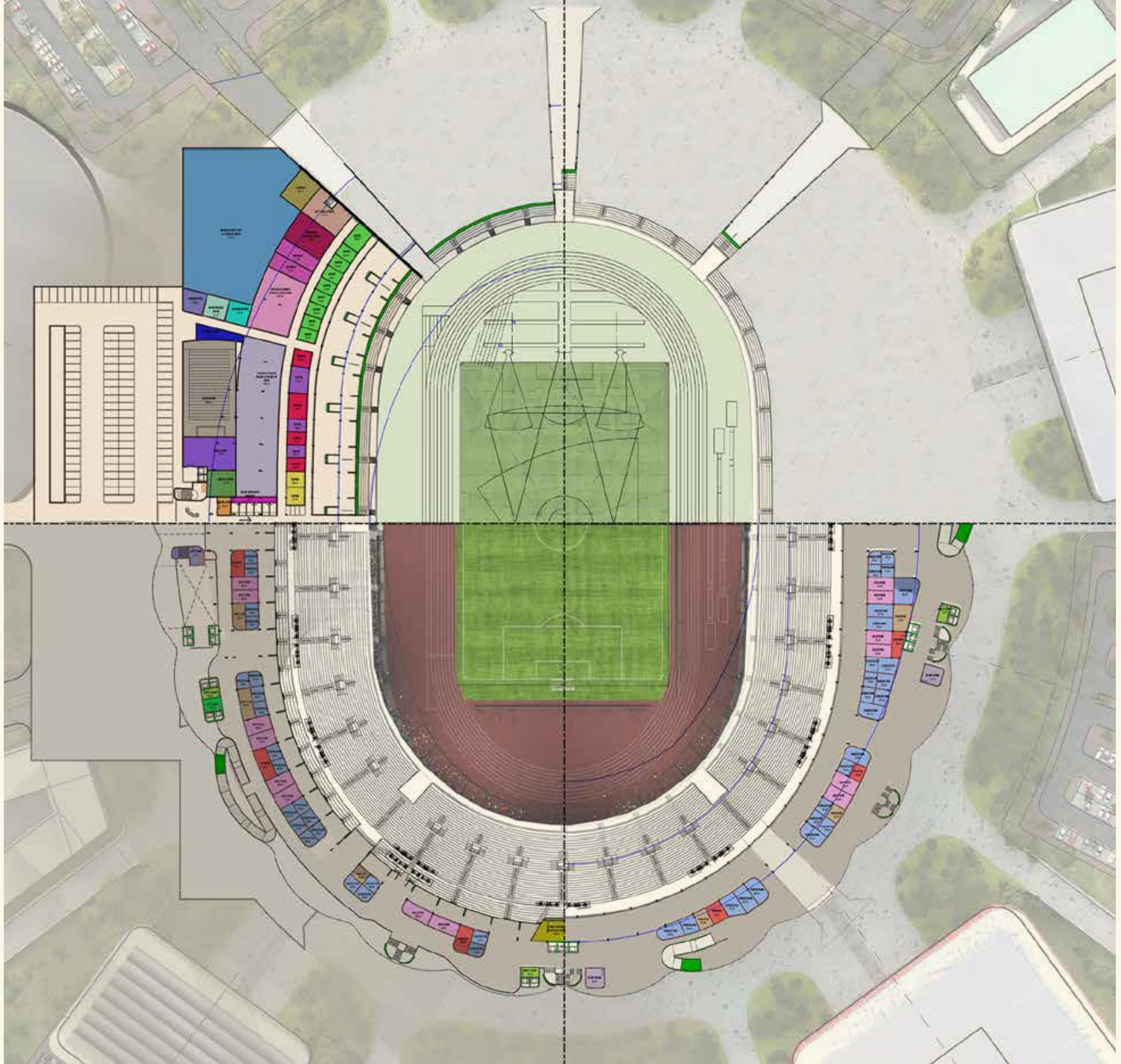


Tier 04
Lower Concourse level



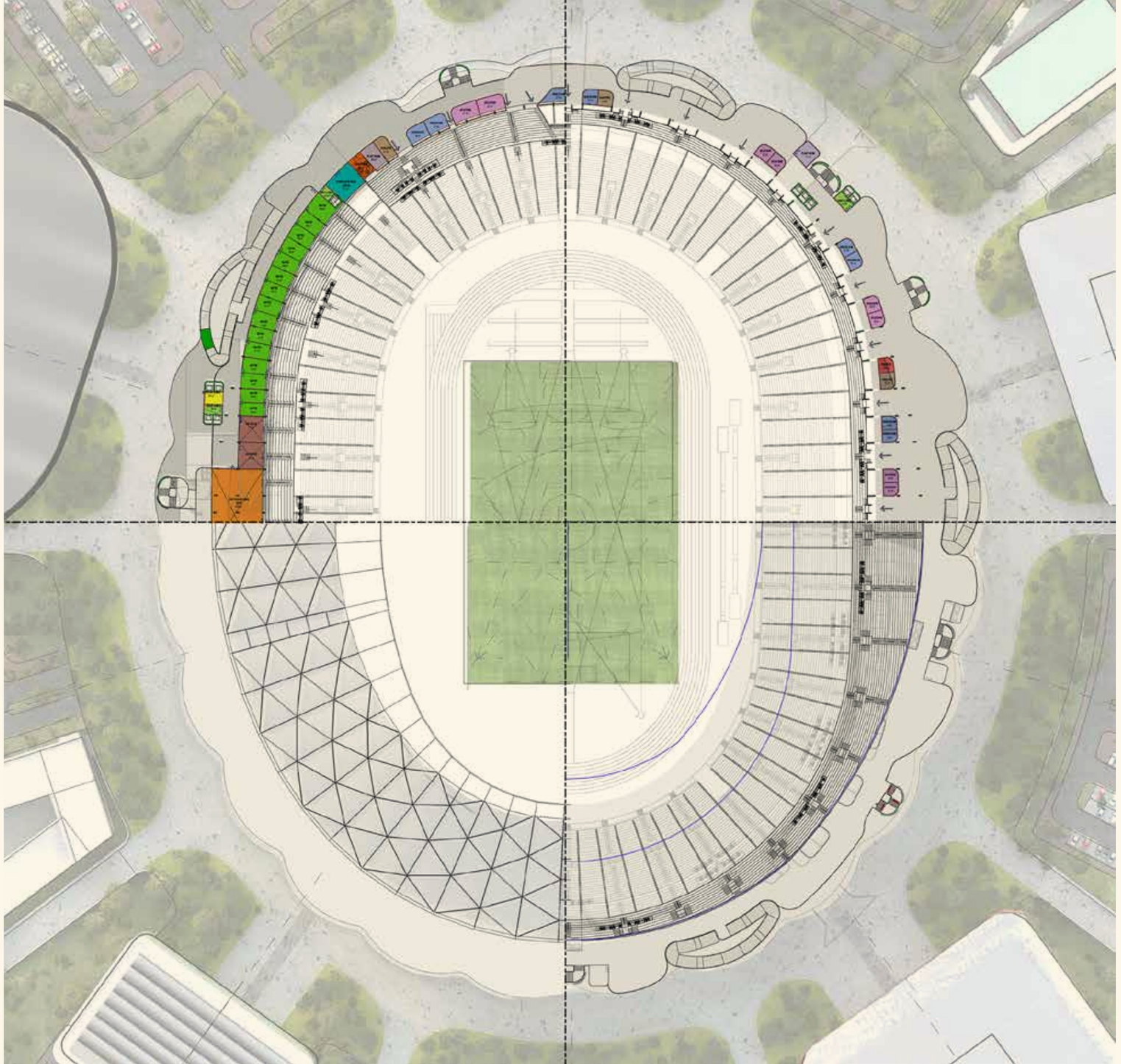
- Communication ramps
- Concessions
- Ablutions
- Service/ hoist lift
- Services
- Security
- Facilities

Quadrants



Athletics field/ Basement level	Tier 01 Mezzanine level
Tier 02 Mid level	Tier 02 Podium level

Quadrants



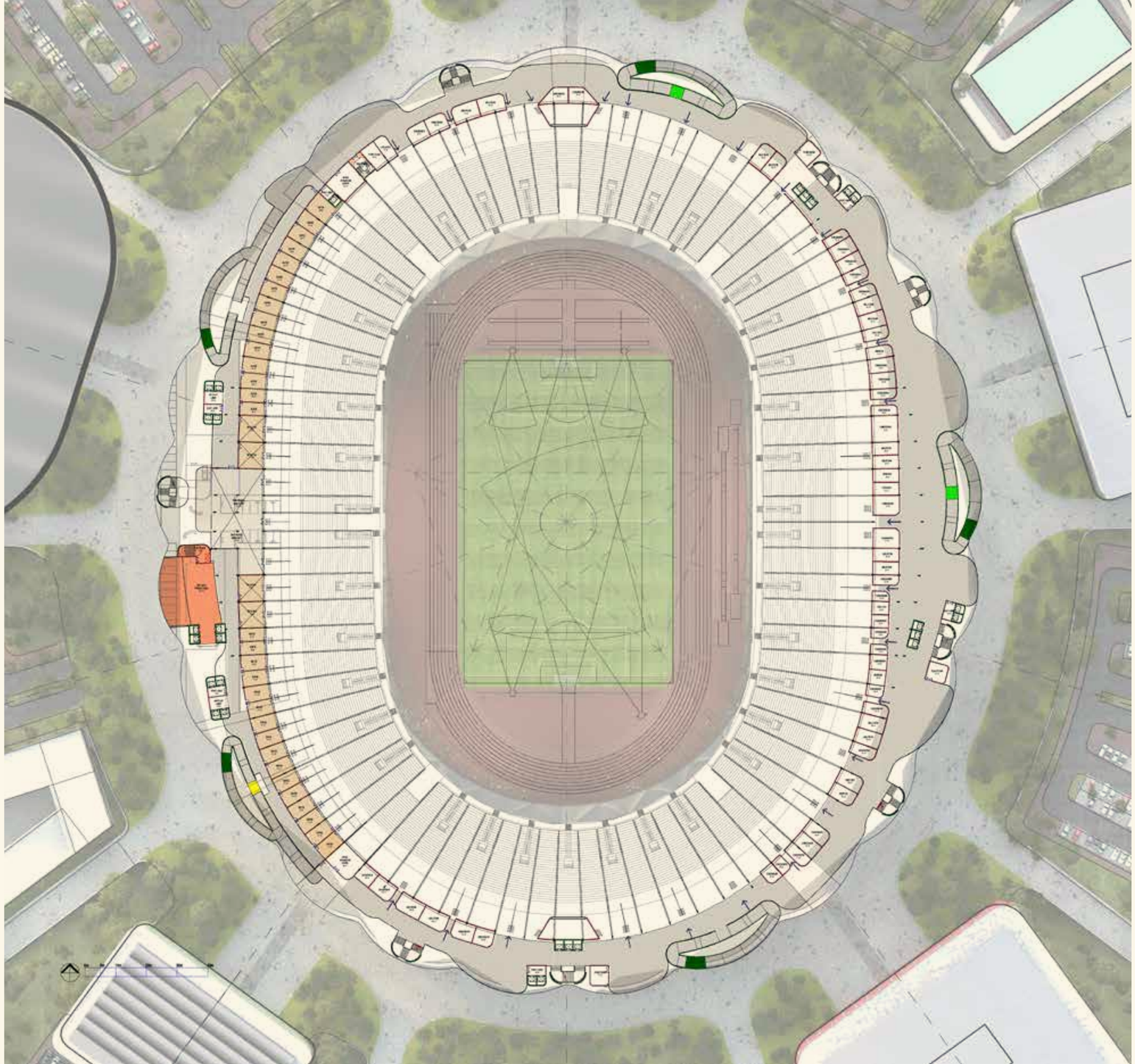
Tier 03
Suite level

Tier 04
Lower
Concourse level

Tier 05
Roof level

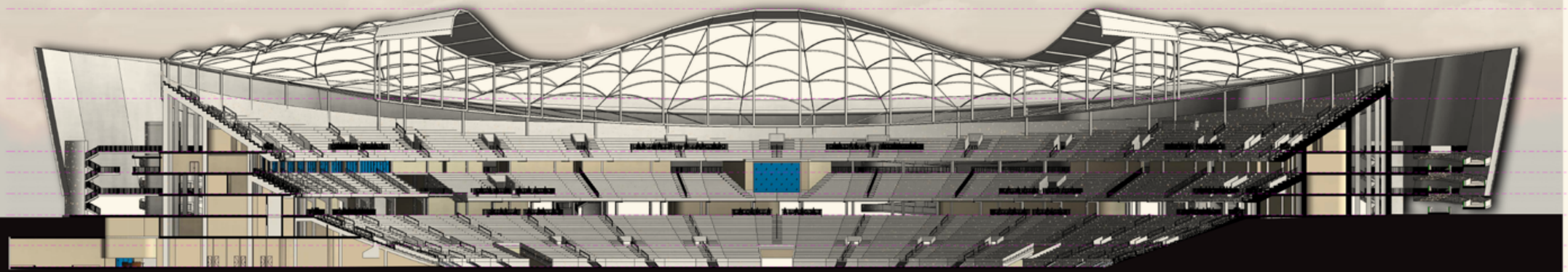
Tier 04
Upper

Tier 03
Suite level



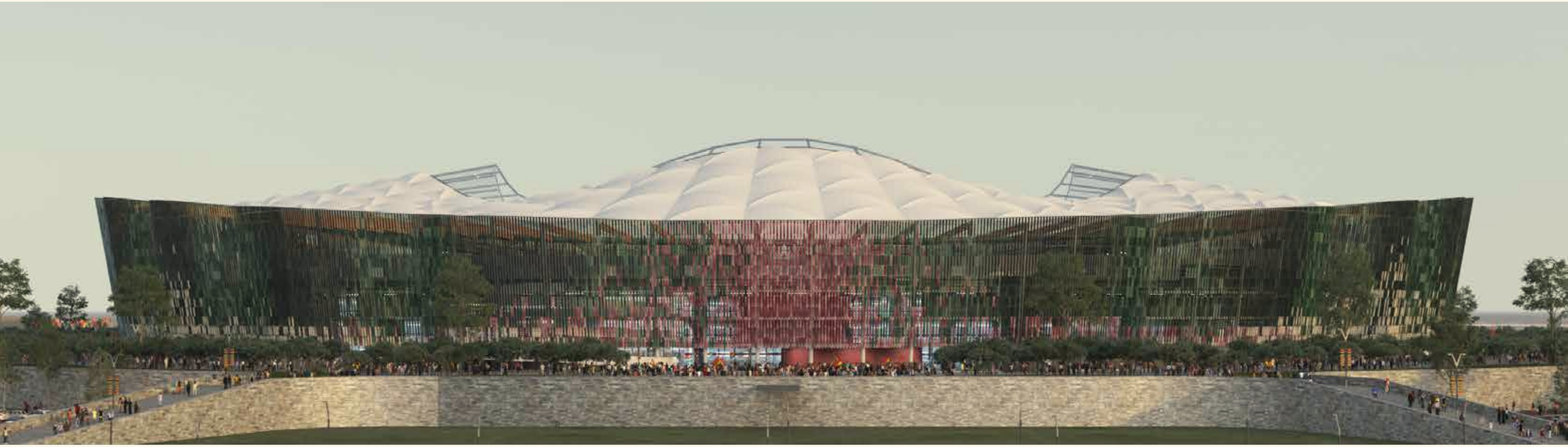
- VVIP lobby
- Suites

Section A-A [West-East]

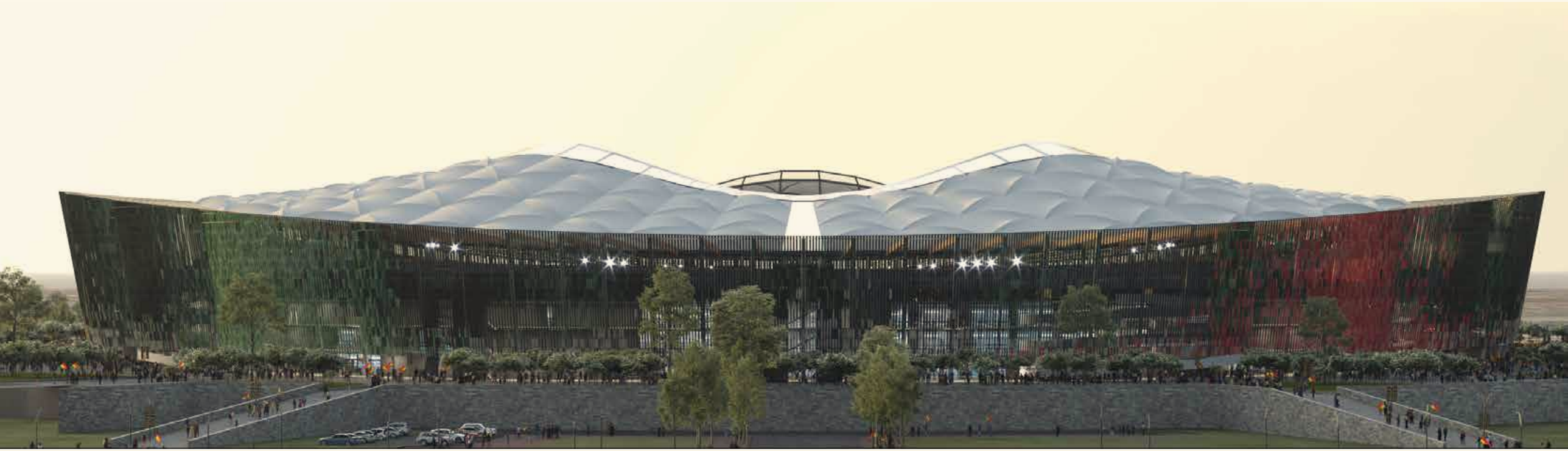


Section B-B [North-South]

North elevation

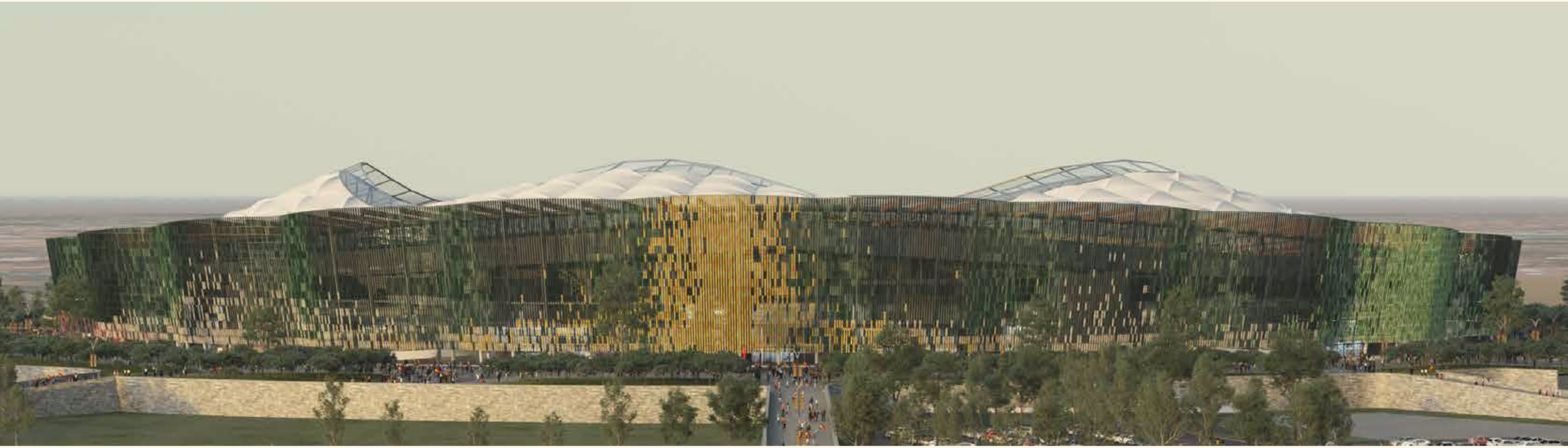


South elevation



East elevation

West elevation



The arena

Introduction

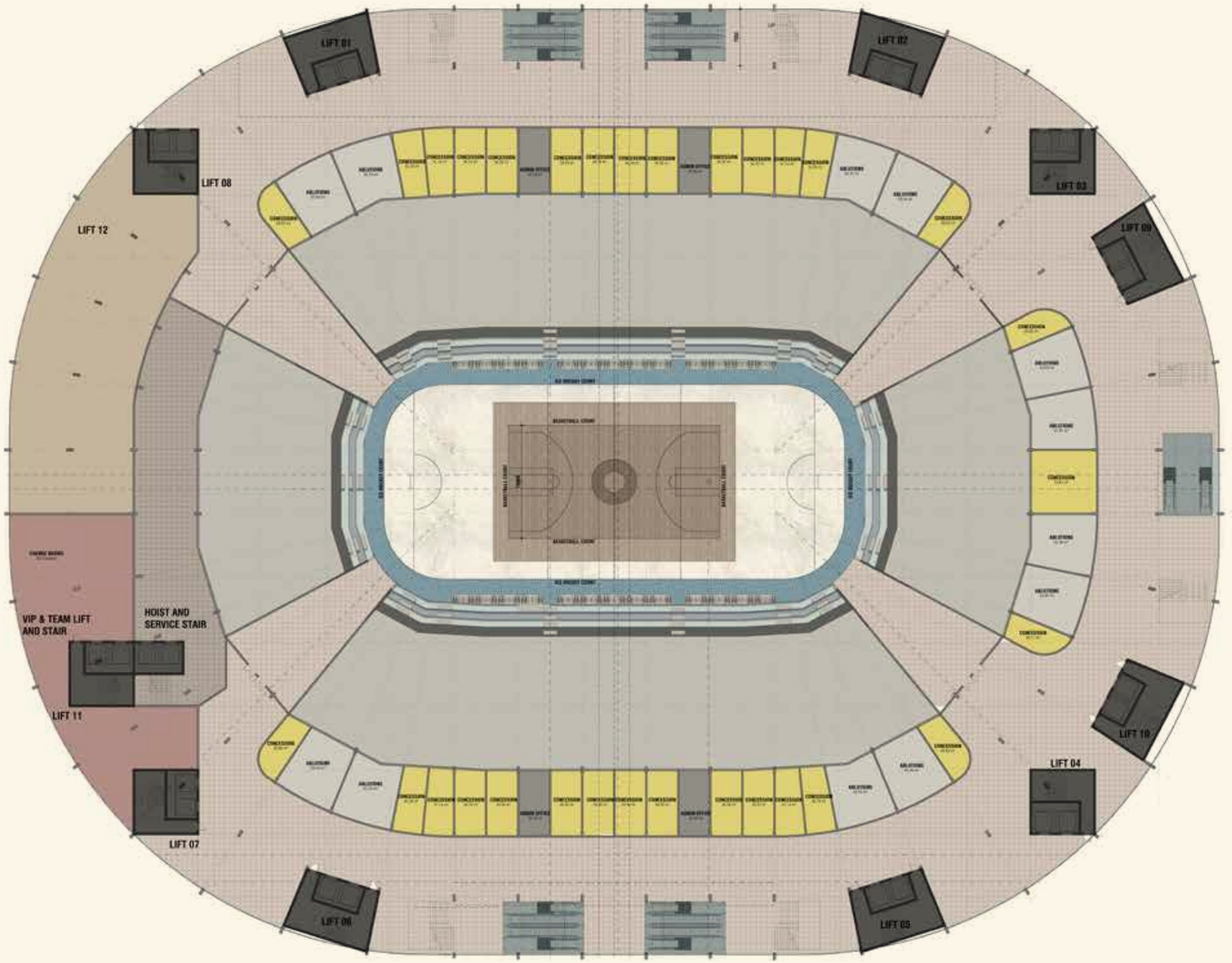
The brief from the All Africa Games committee called for basketball to be hosted within 1 of 2 multi-use sports halls to be built at the Ghana Sports Centre. Basketball in particular is a sport on the rise in Africa, and there are talks among sporting bodies across the continent looking to create an African Basketball League.

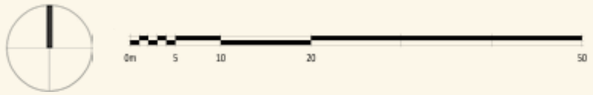
There is an opportunity to create a more significant multi-sport arena as part of the All Africa Games 2023 build programme, with a view to the legacy of the Ghana Sports Centre precinct to become a commercially sustainable sports destination offering by having world class facilities for a variety of sport types. While it is envisaged that it will become known as a basketball venue, it would also be able to host a variety of other sport types and different events, such as conventions, large scale church gatherings, concerts and live performances that are too small to be hosted at the stadium, but too big for other venues available in Accra.

B+P in association with QA Venue Solutions are already developing a prototype arena design (contained herewith) and are well placed in terms of knowledge of the design and management of such venues, as well as available funding partners to assist the Ministry of Youth and Sport in delivering this new asset.

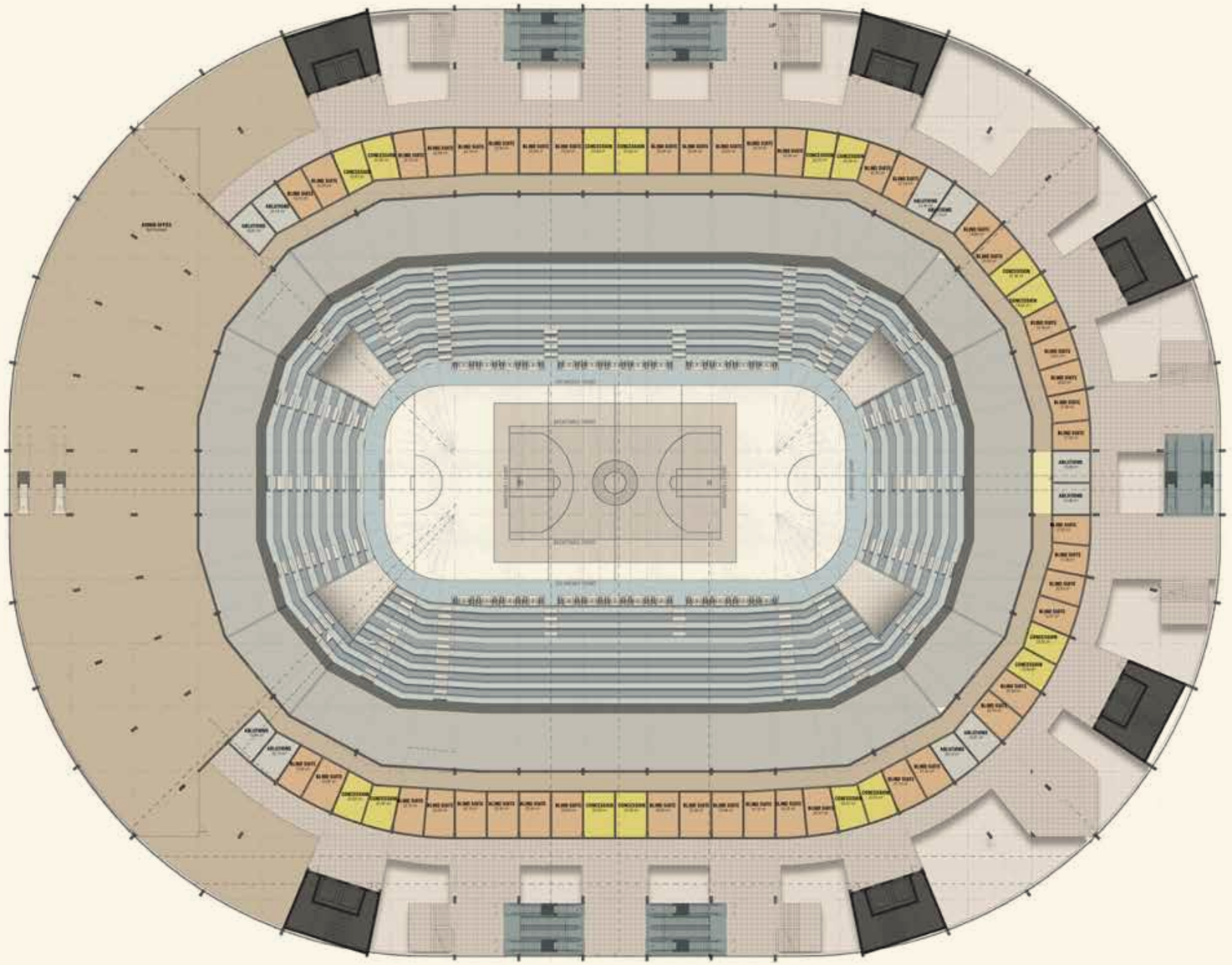
Court level

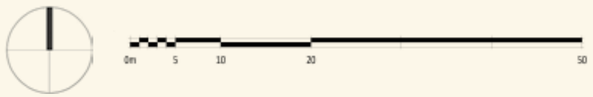
Floor plans



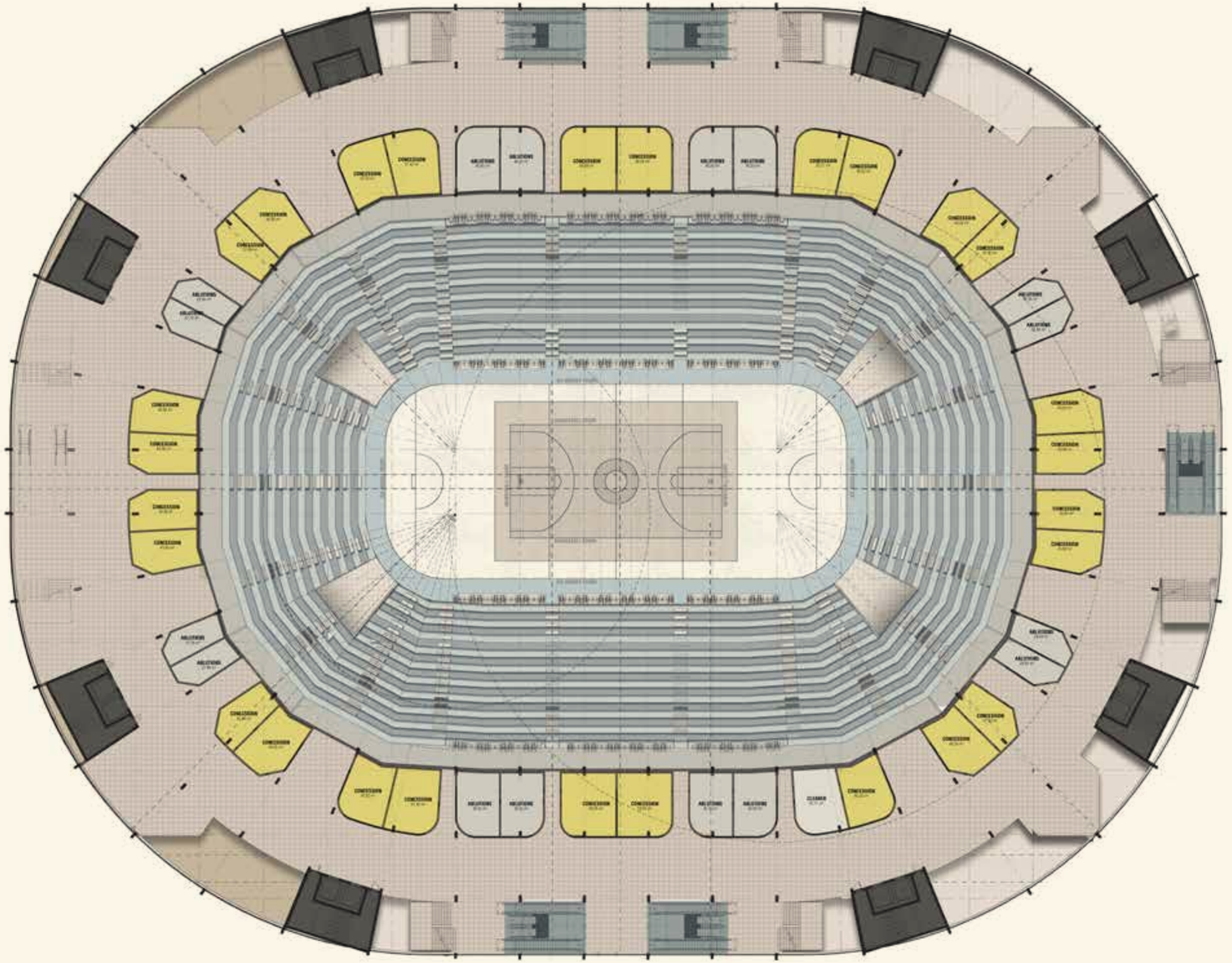


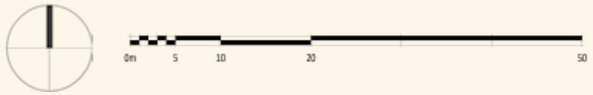
Level 01



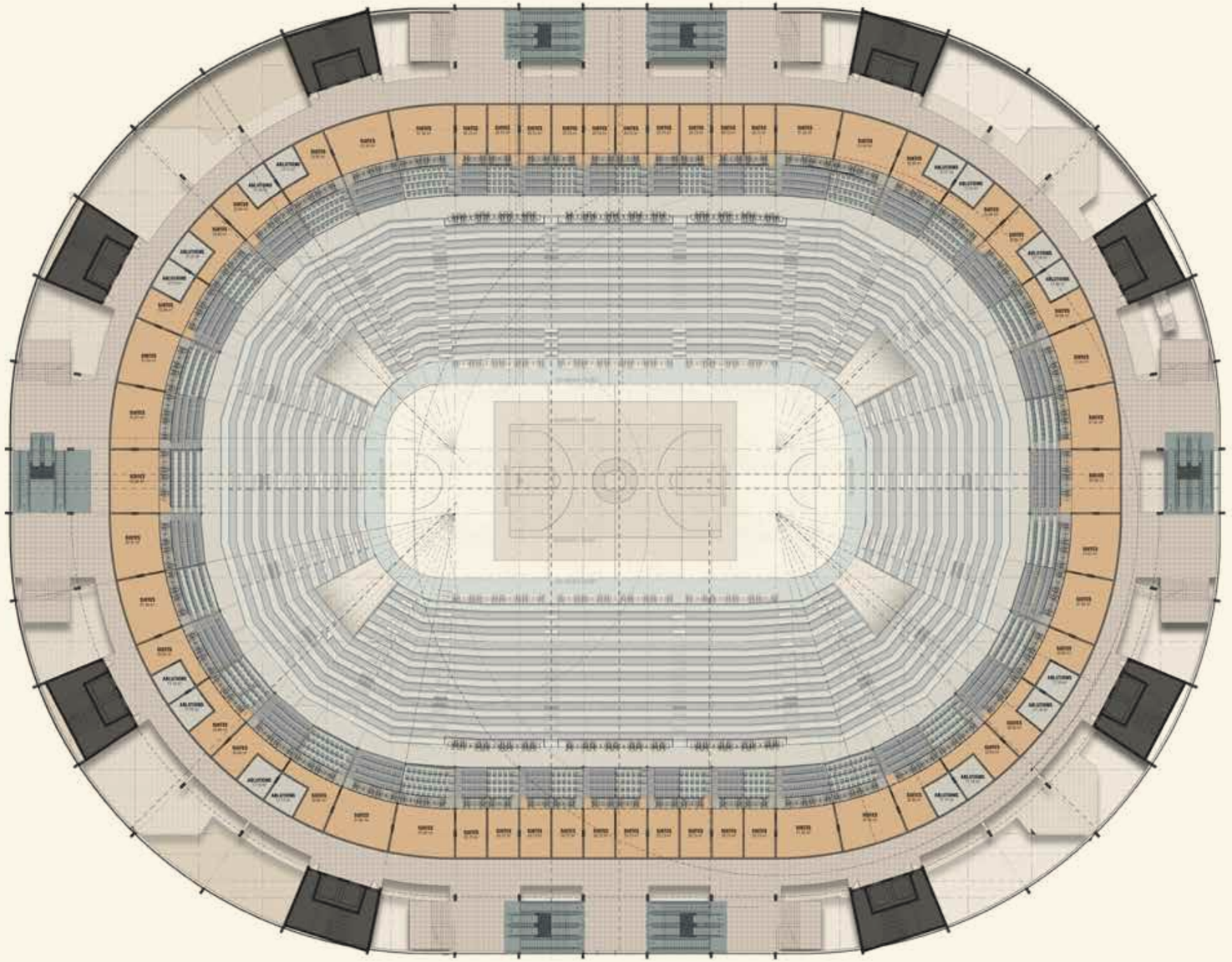


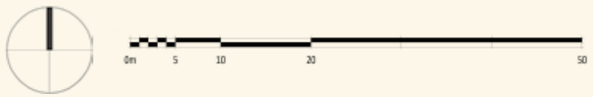
Level 02



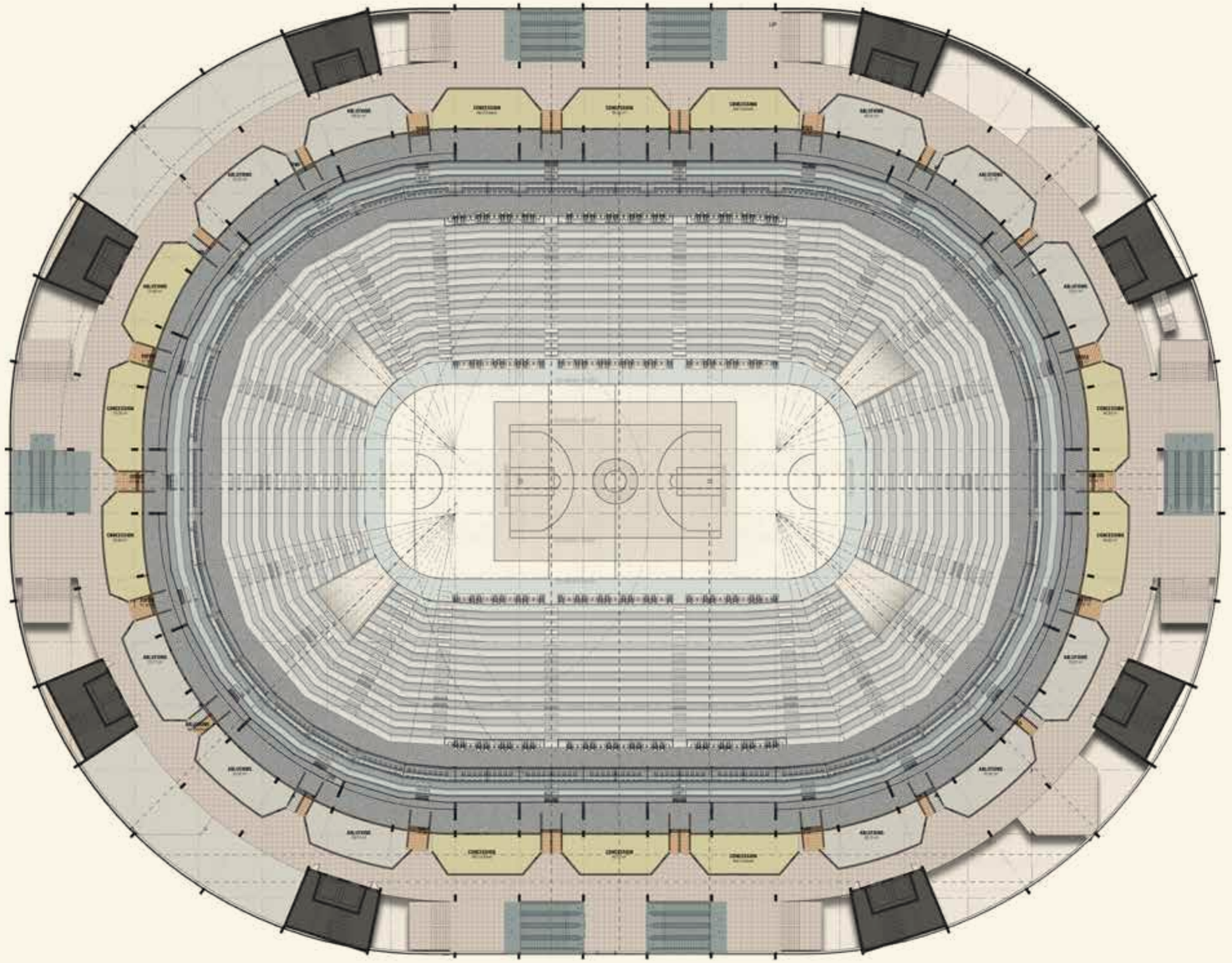


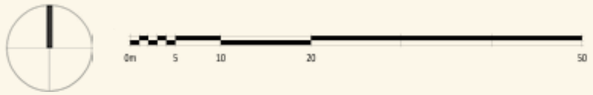
Level 03



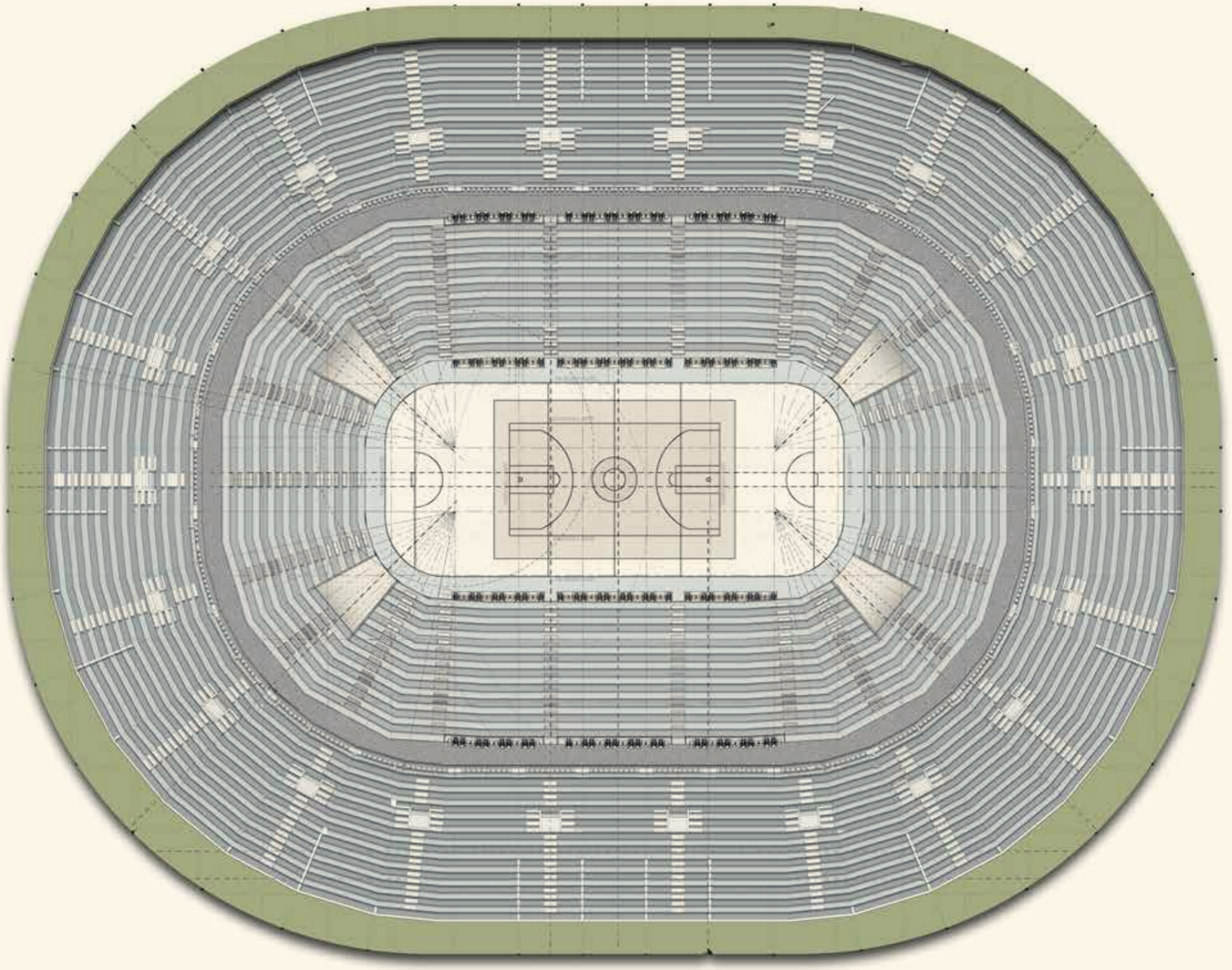


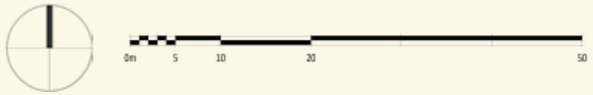
Level 04





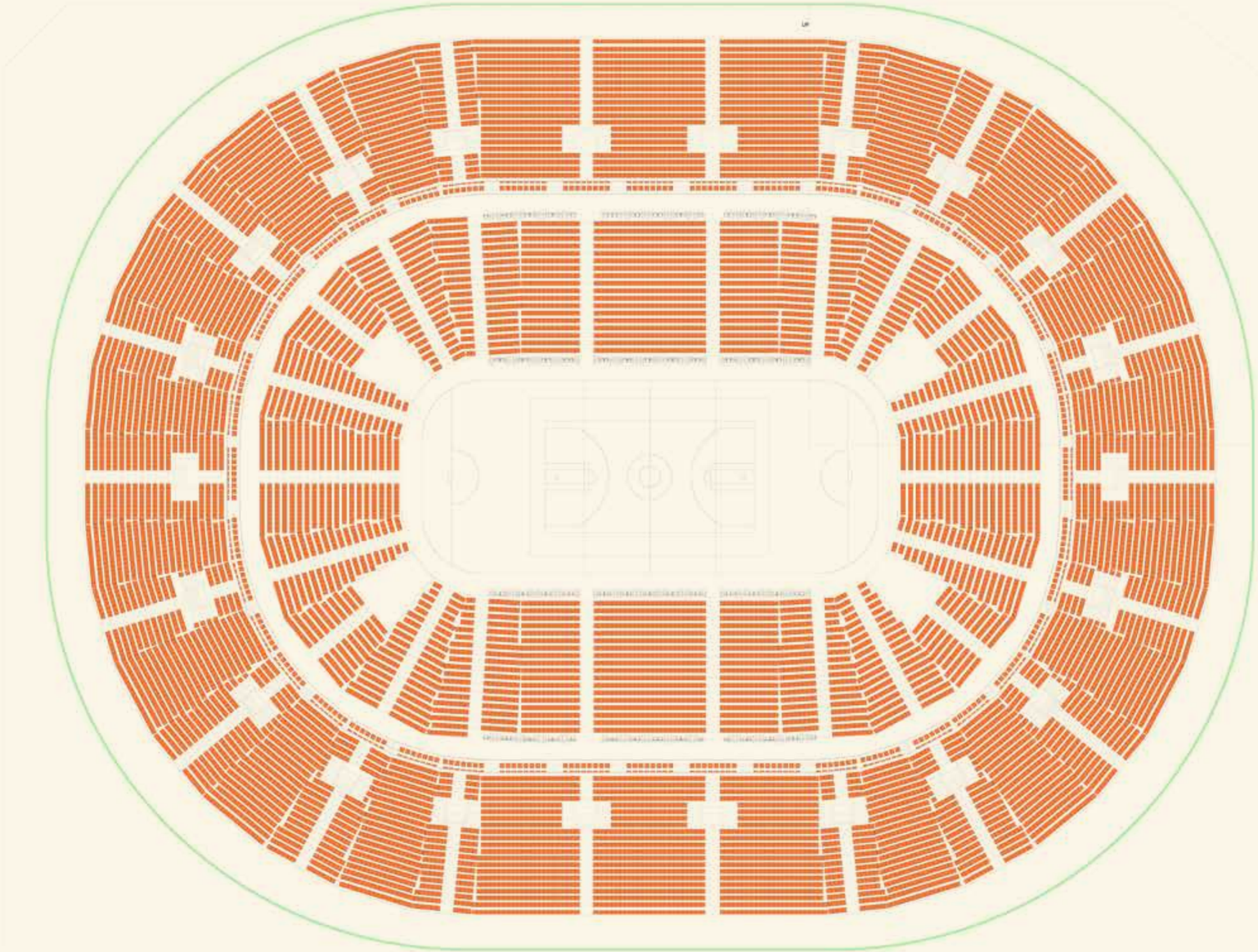
Roof level

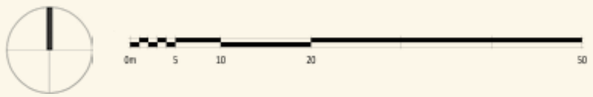




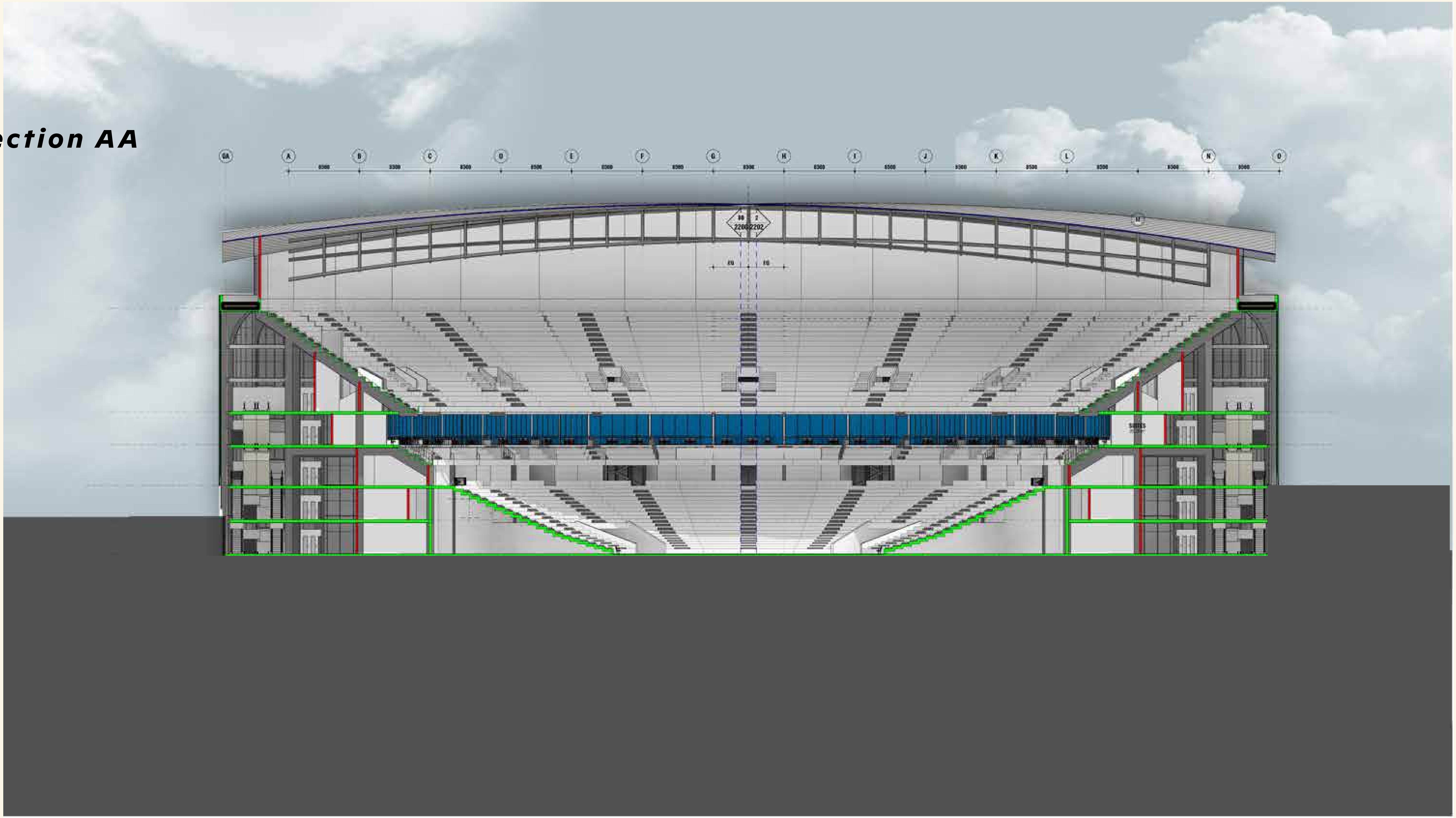
Seat count

TOTAL STADIUM SEAT COUNT FOR ALL LEVELS:	
TOTAL SEATING COUNT - LEVEL (ARENA/COURT)	5 668 SEATS
TOTAL SUITE SEATING COUNT - LEVEL 3	1 320 SEATS
TOTAL SEATING COUNT - LEVEL 4	11 090 SEATS
TOTAL ARENA - SEATING COUNT FOR ALL LEVELS	**18 078 SEATS**

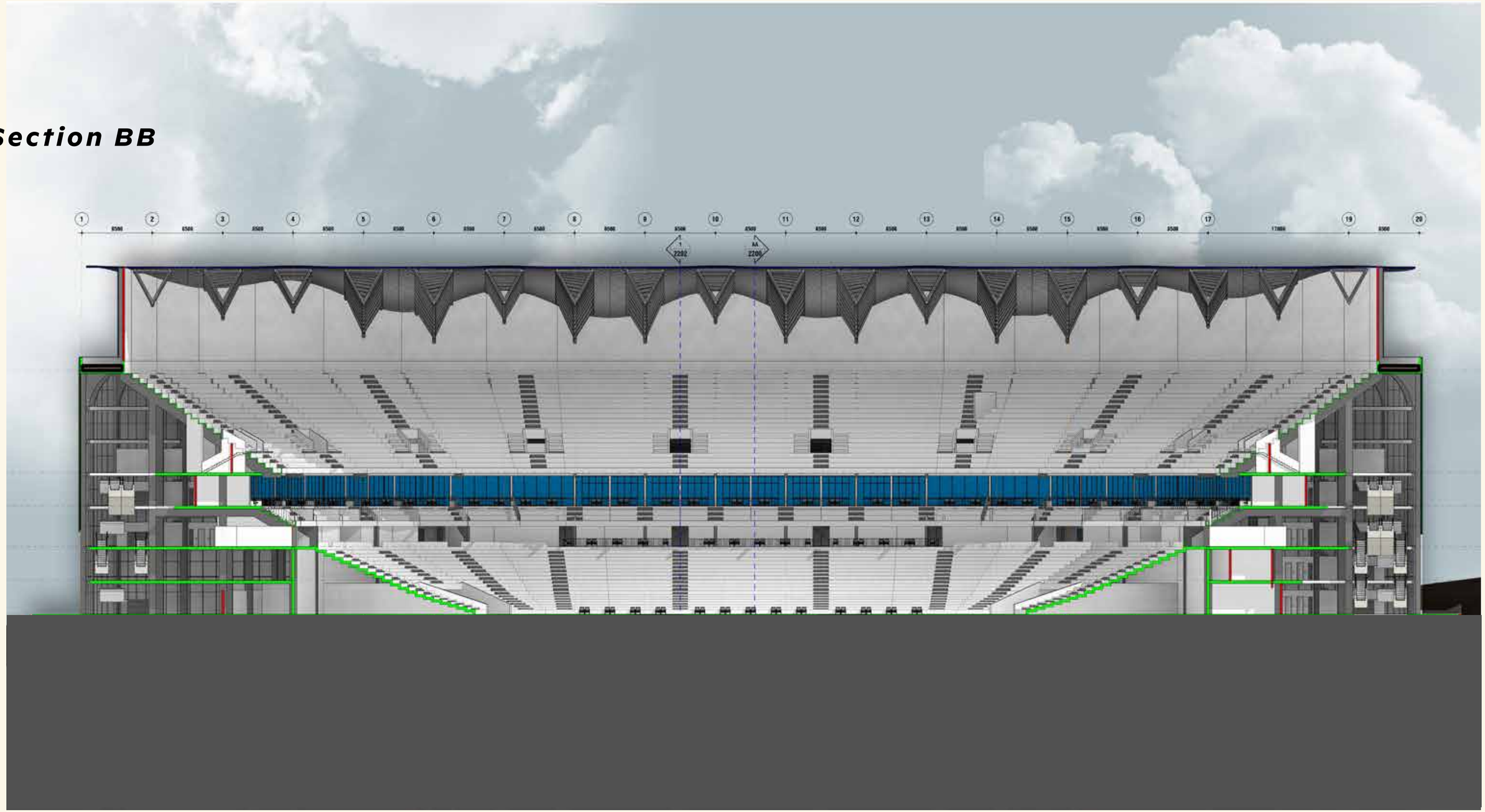




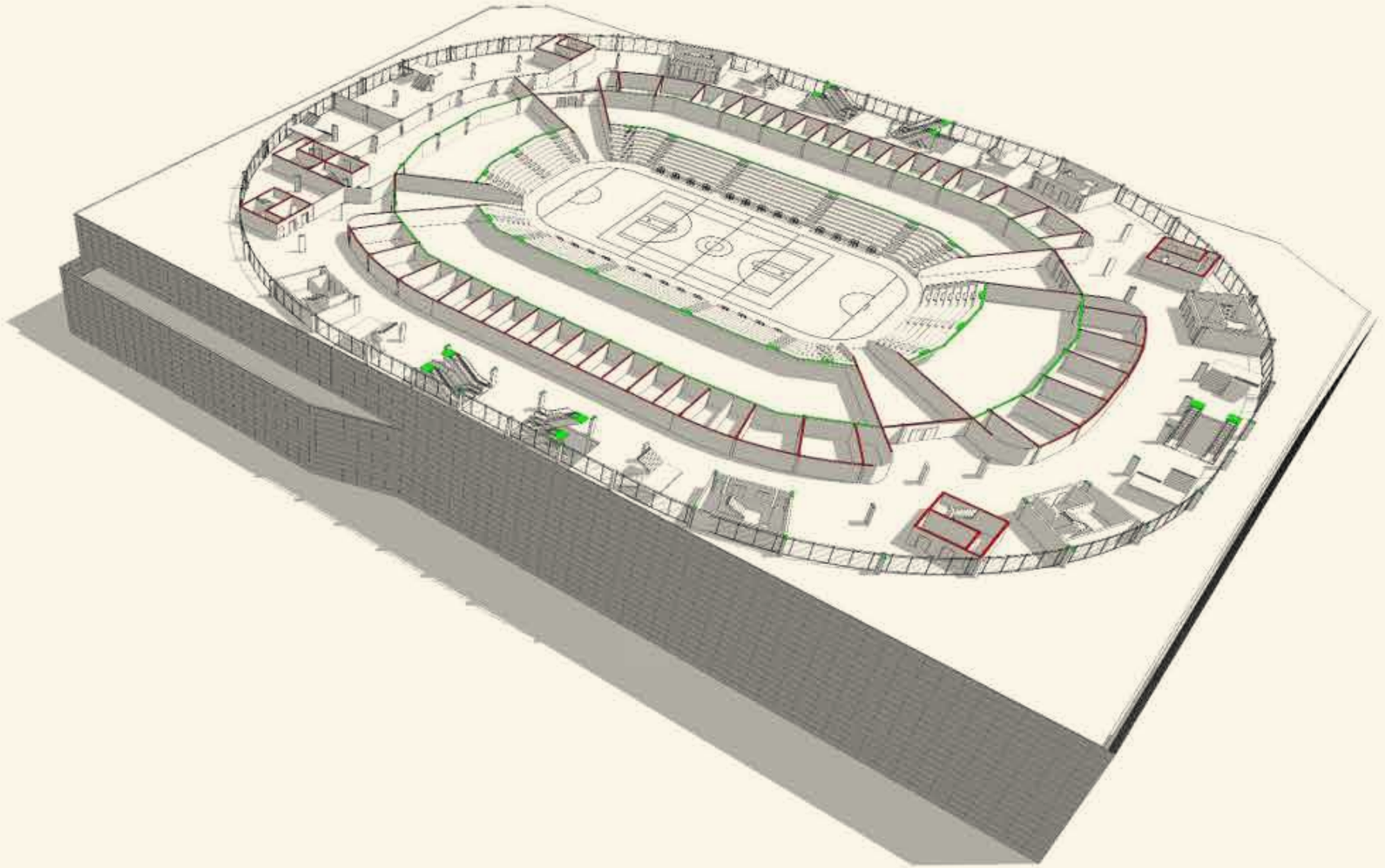
Section AA



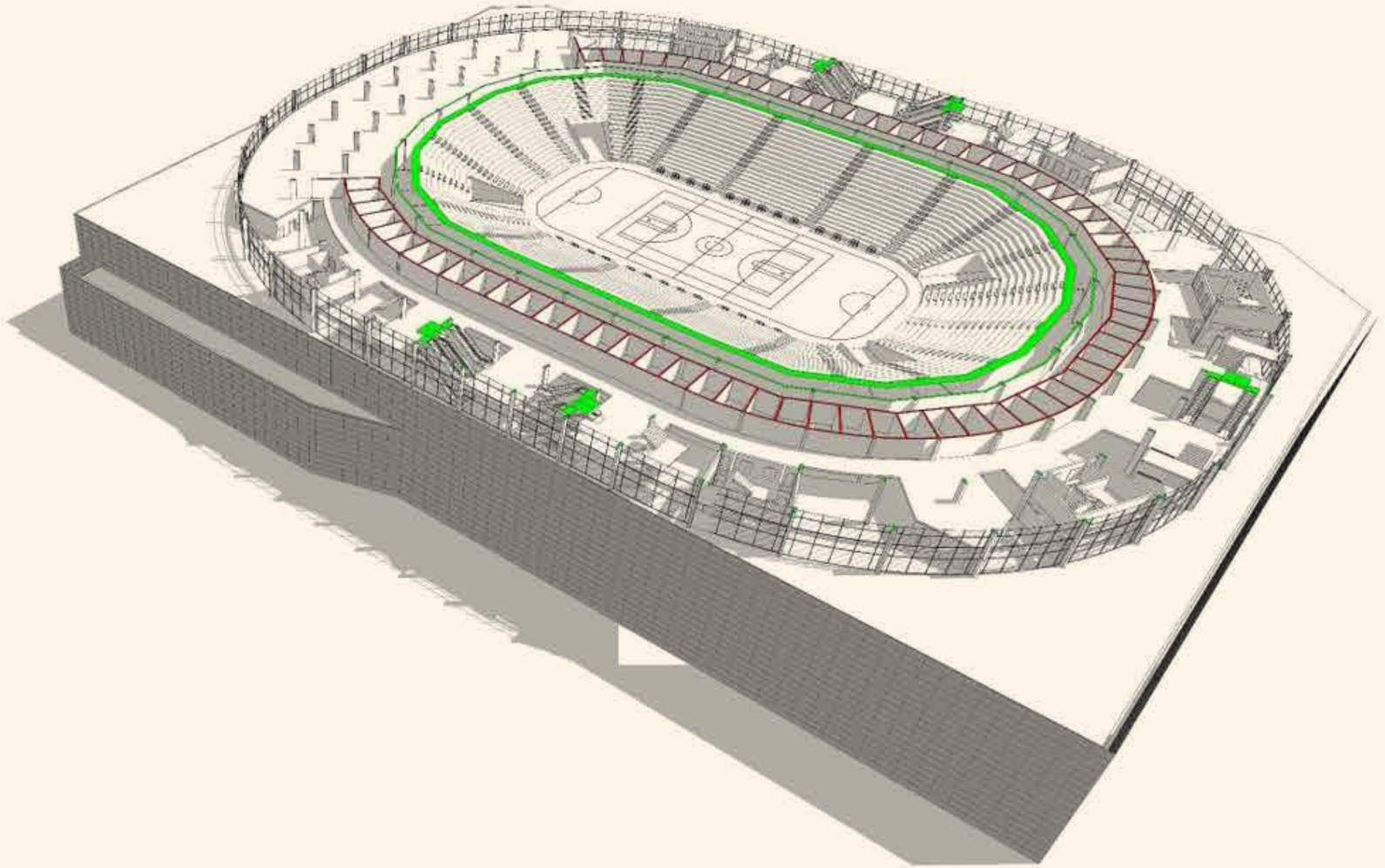
Section BB



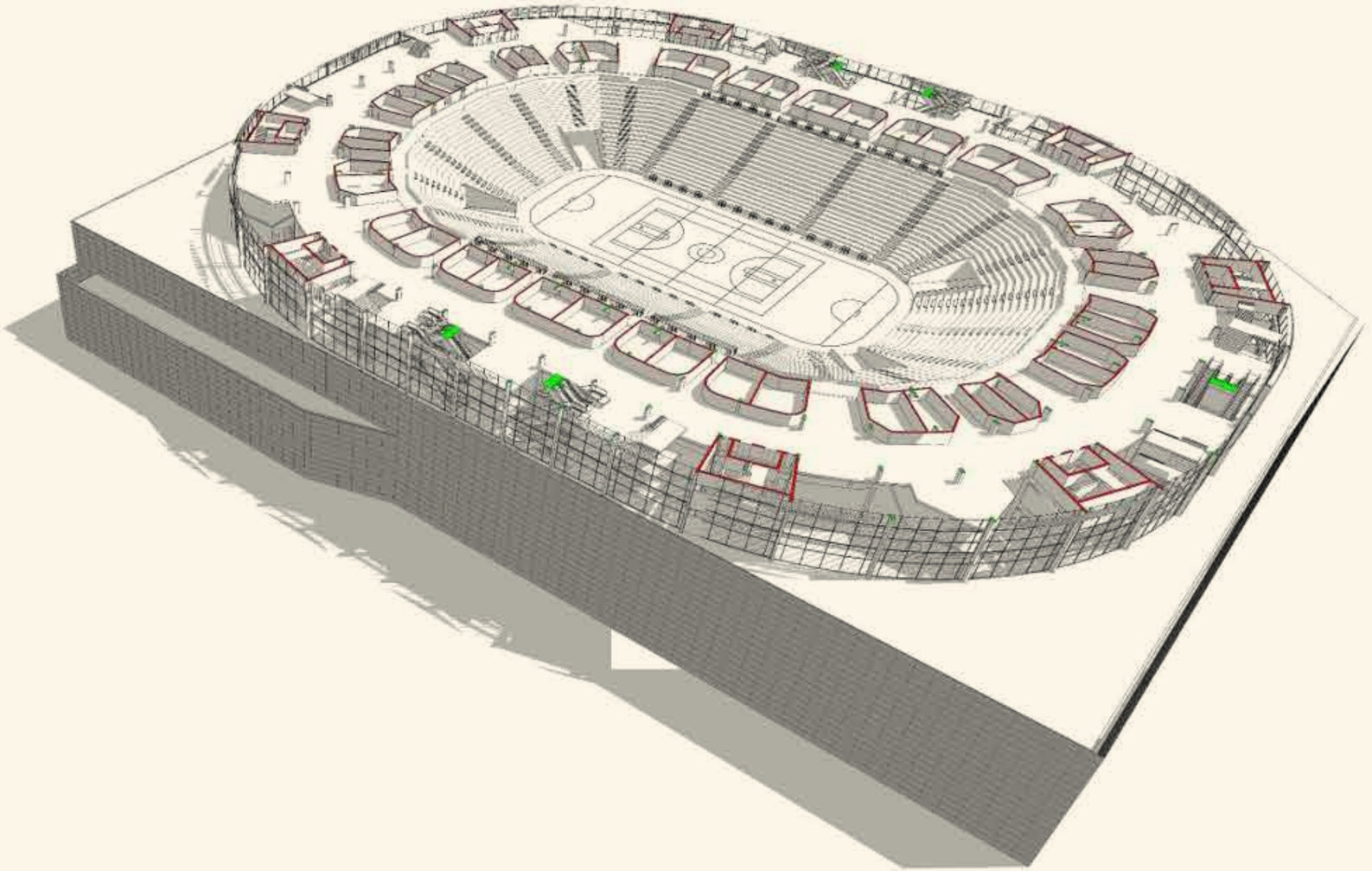
Arena Level



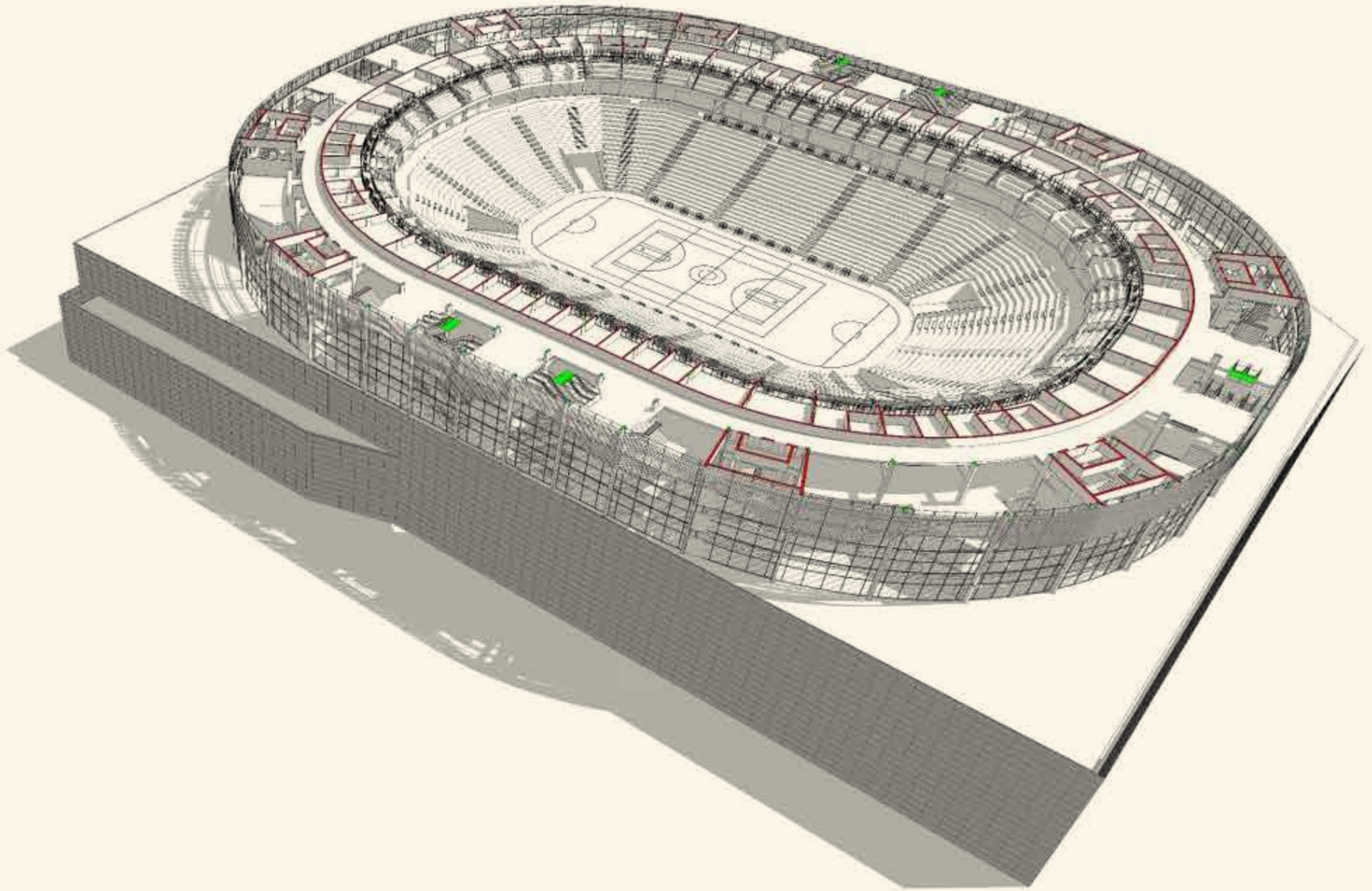
Level 1



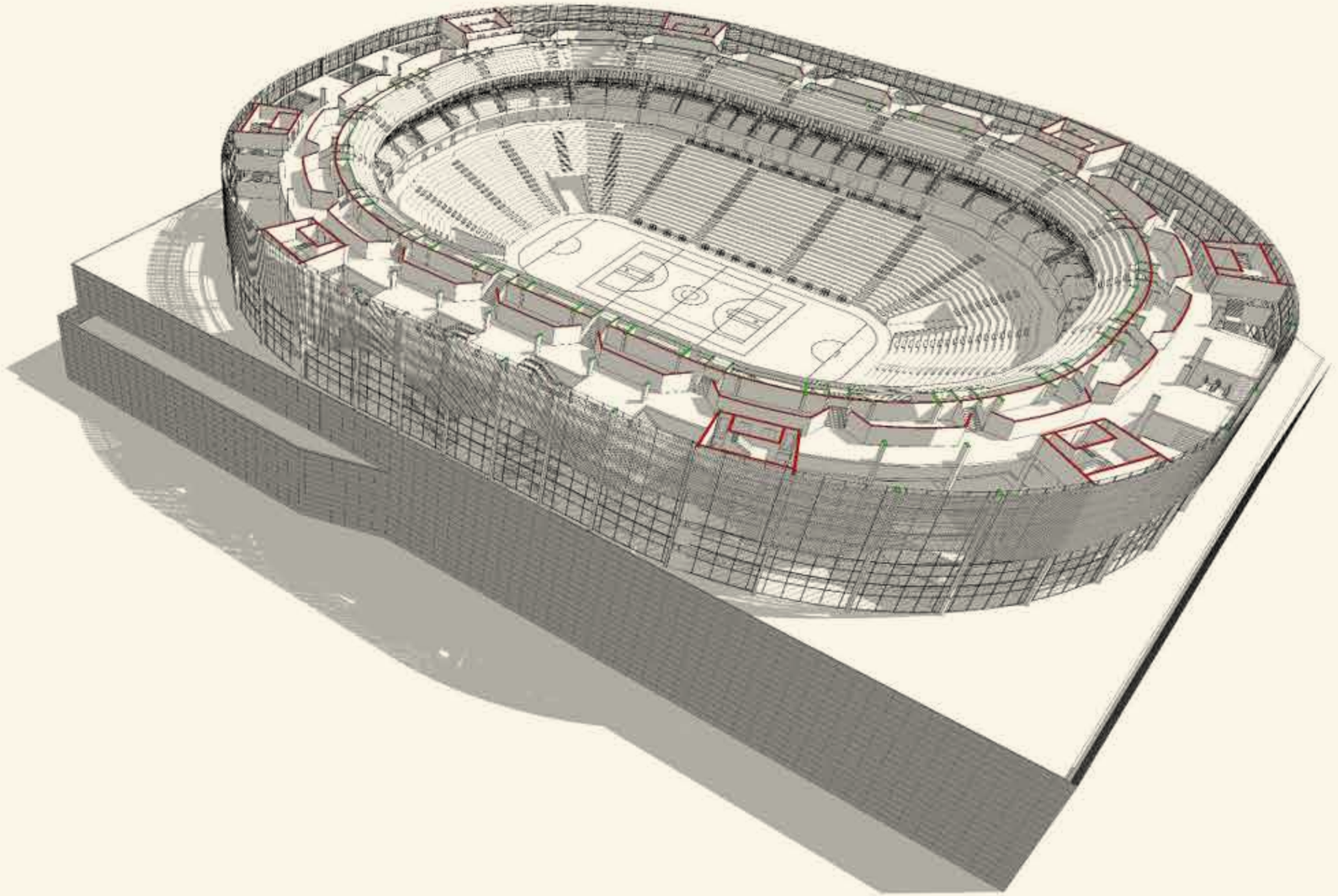
Level 2 - Main concourse



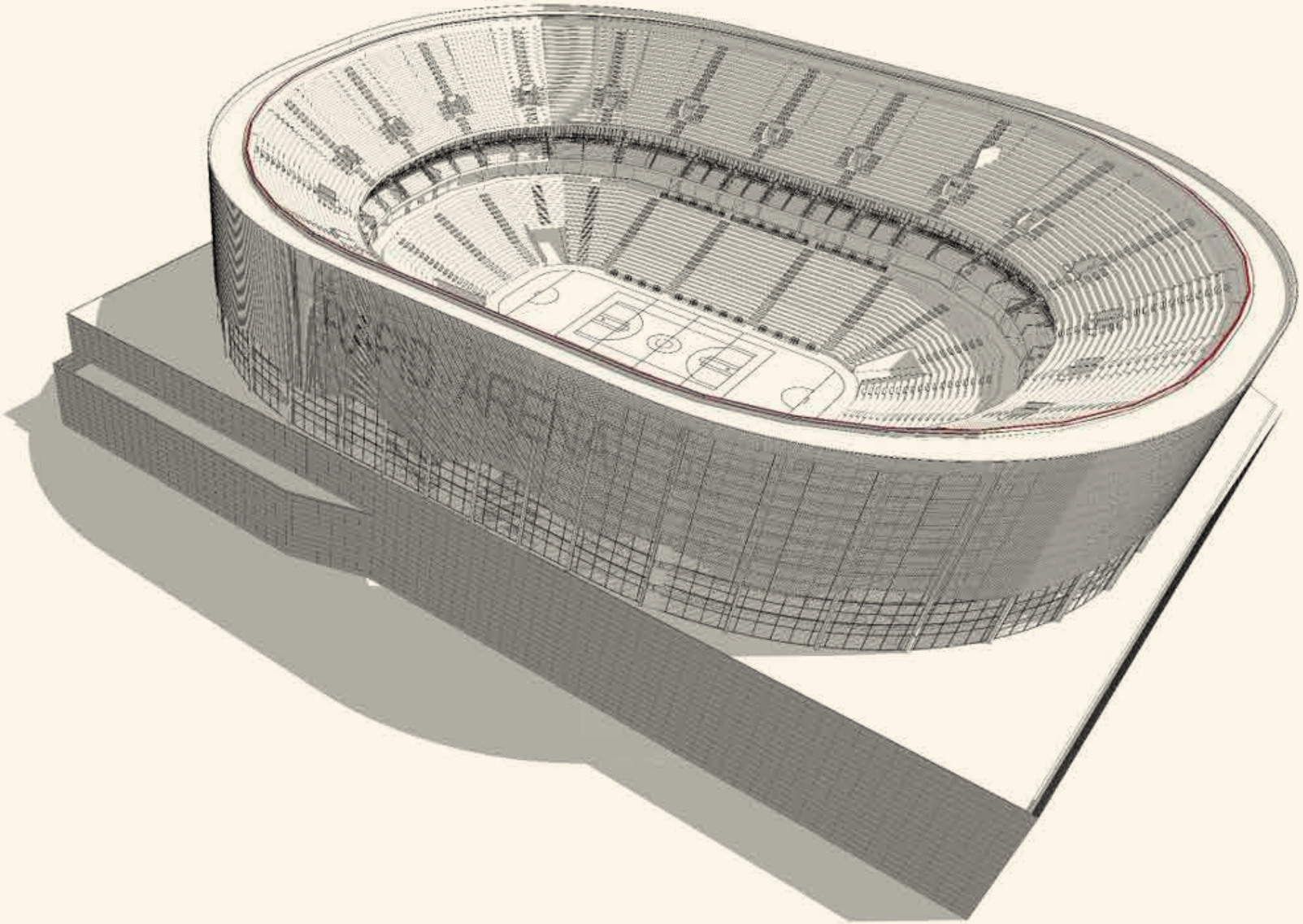
Level 3 - Suites



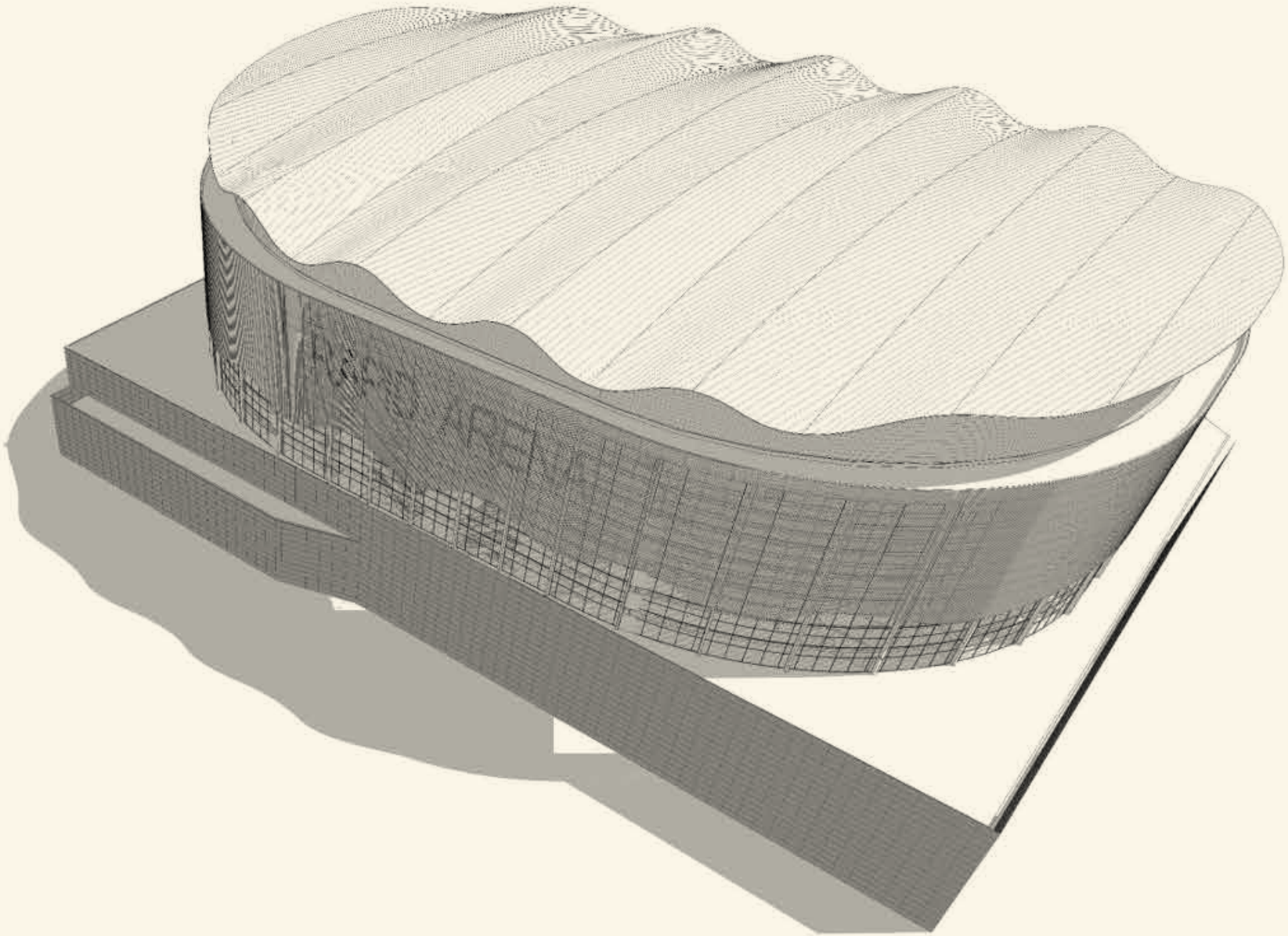
Level 4 - Upper tier



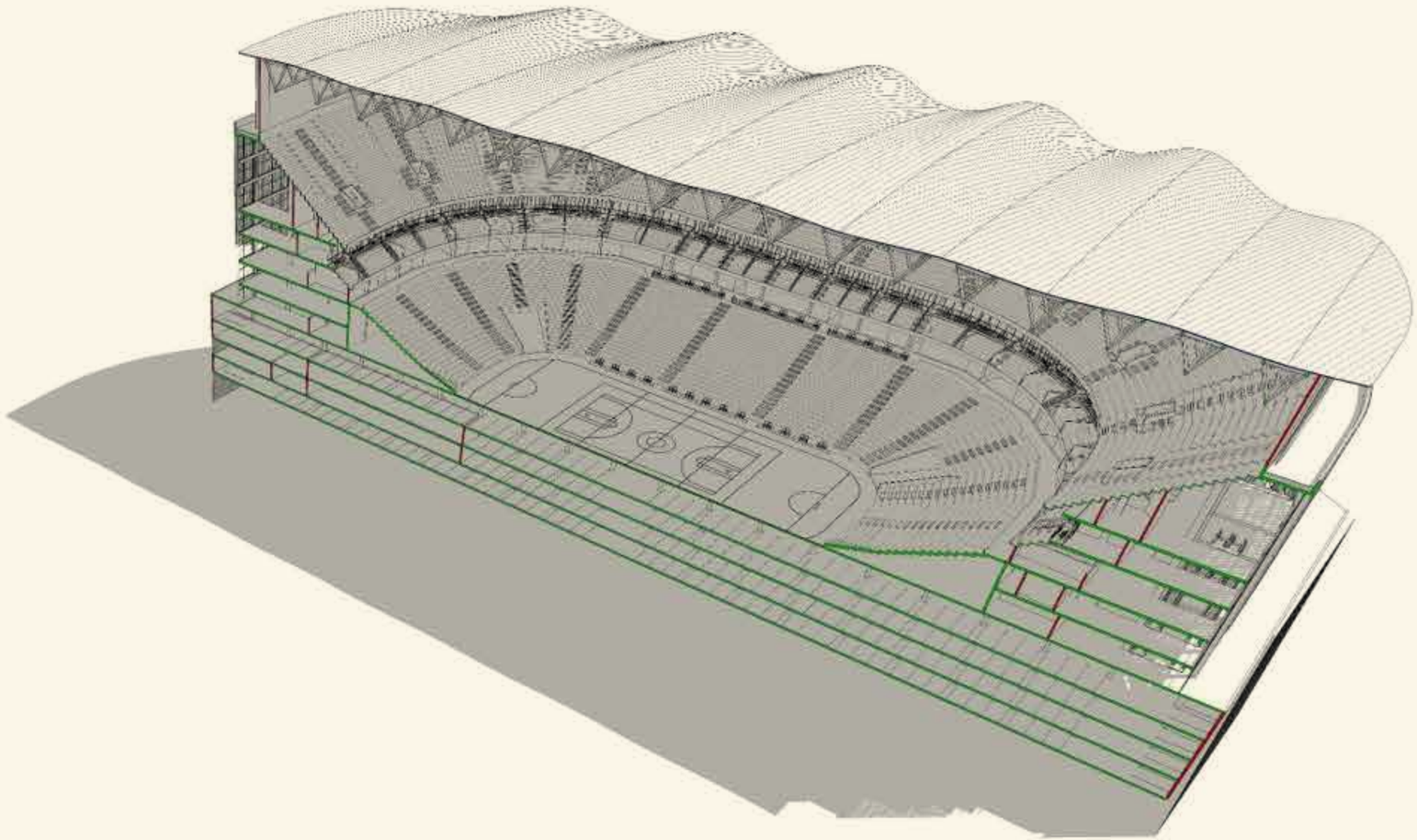
Top of seating



Roof



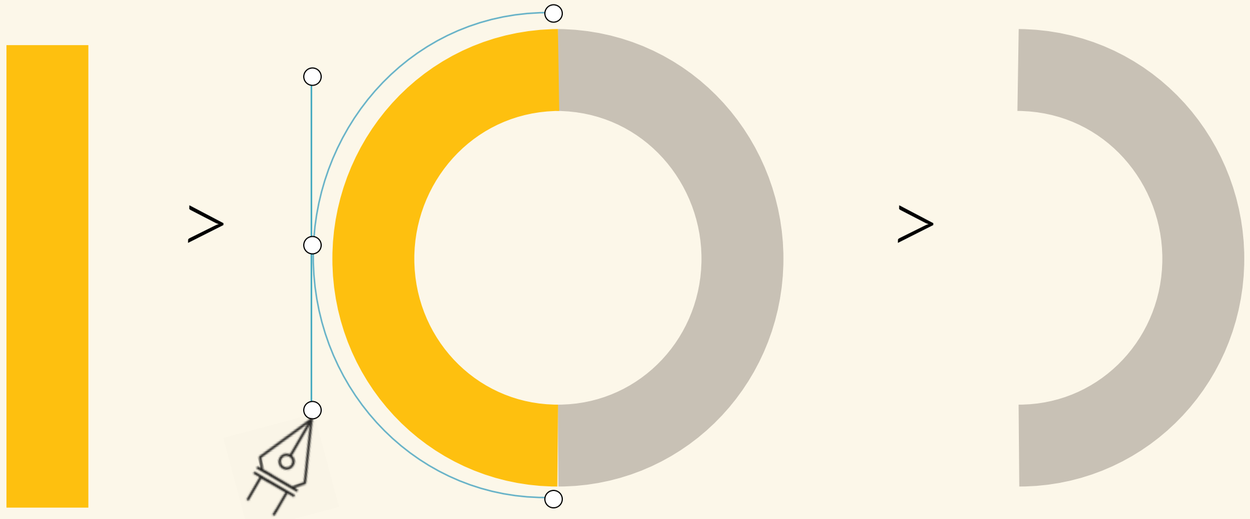
Long section



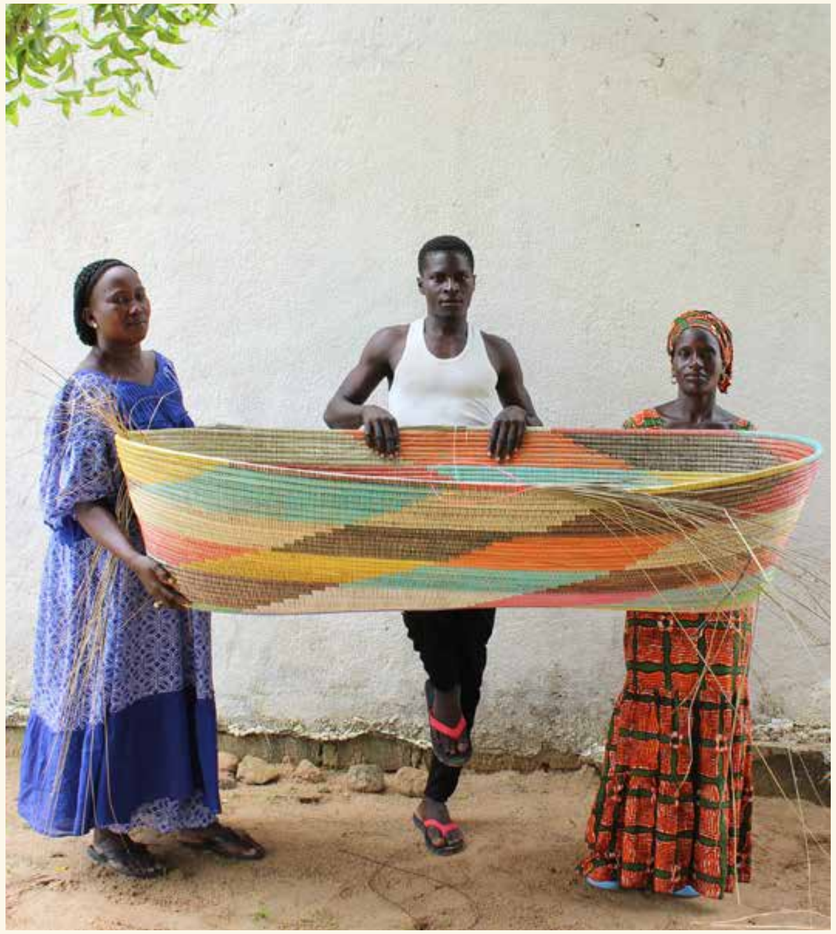
Branding

‘Creating and leaving behind a legacy’

Circular approach

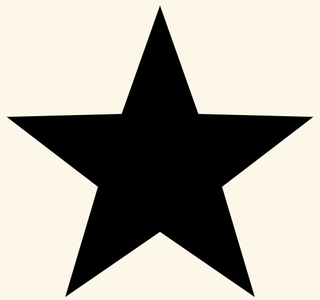


‘Shaping the future’



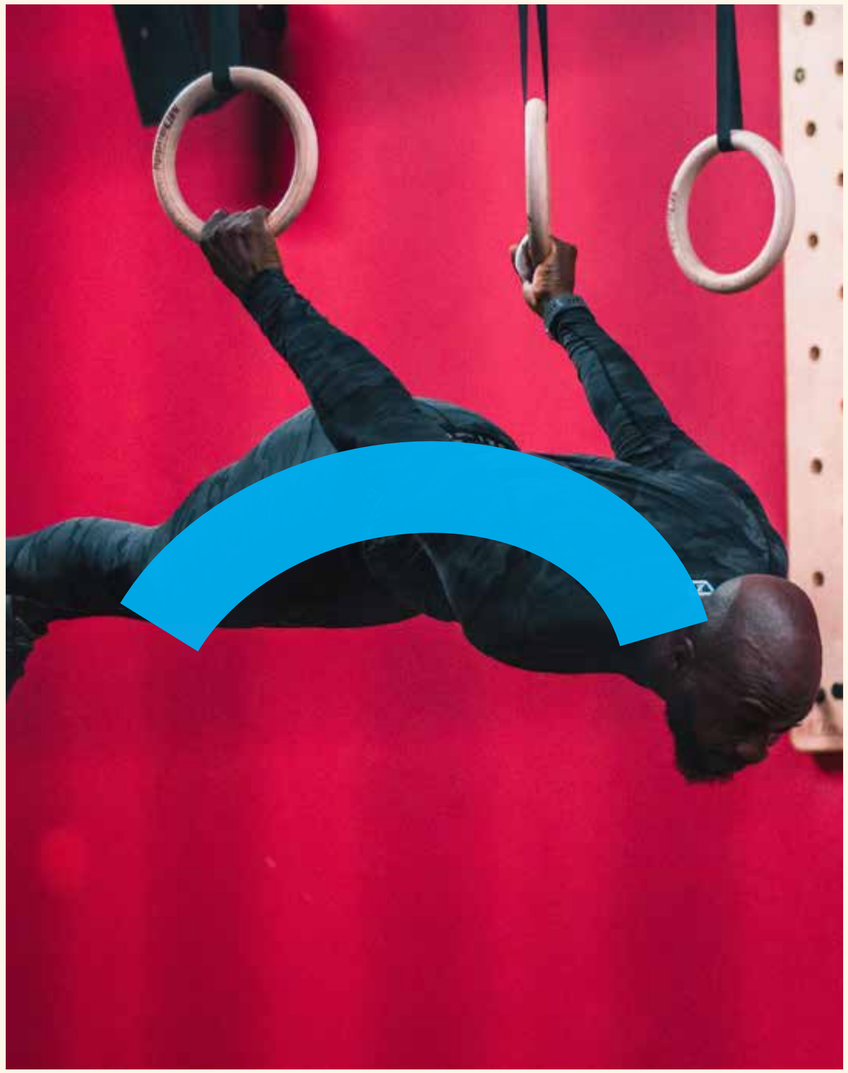
The bowl

‘Diversity’



‘NATIONAL PRIDE’

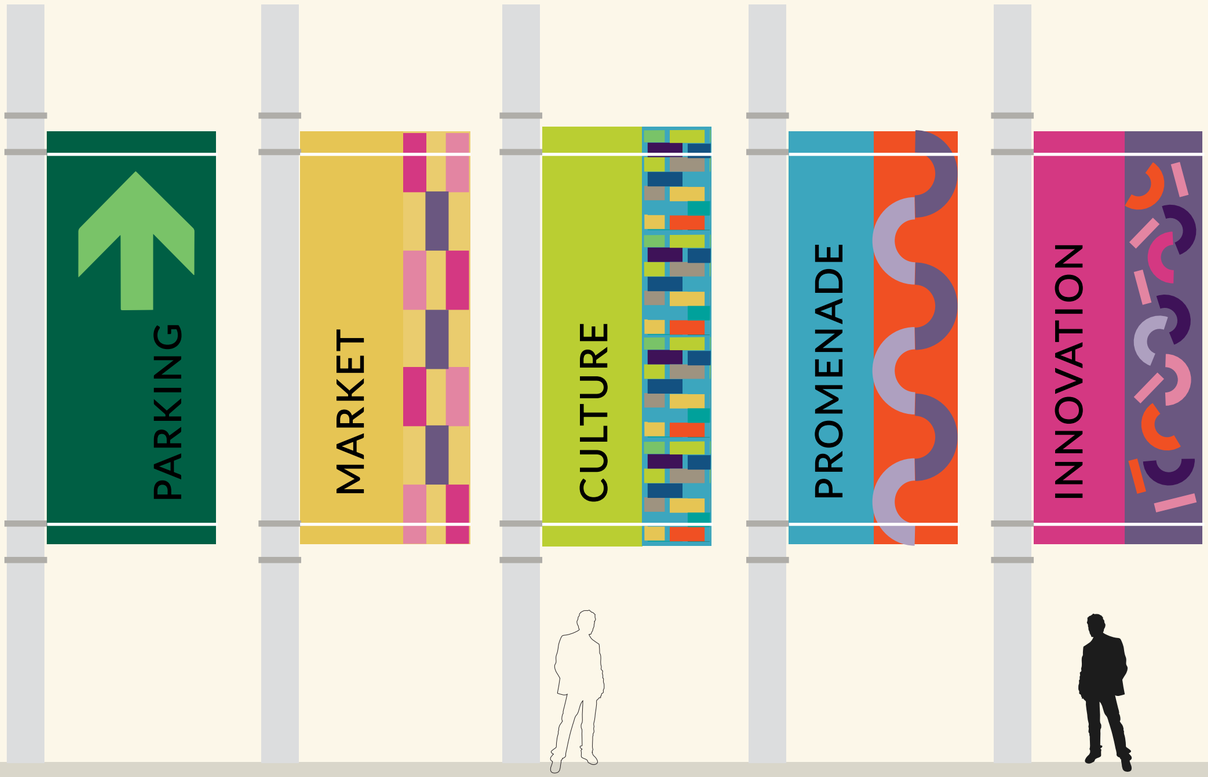
Ghana
SPORTS
CENTRE



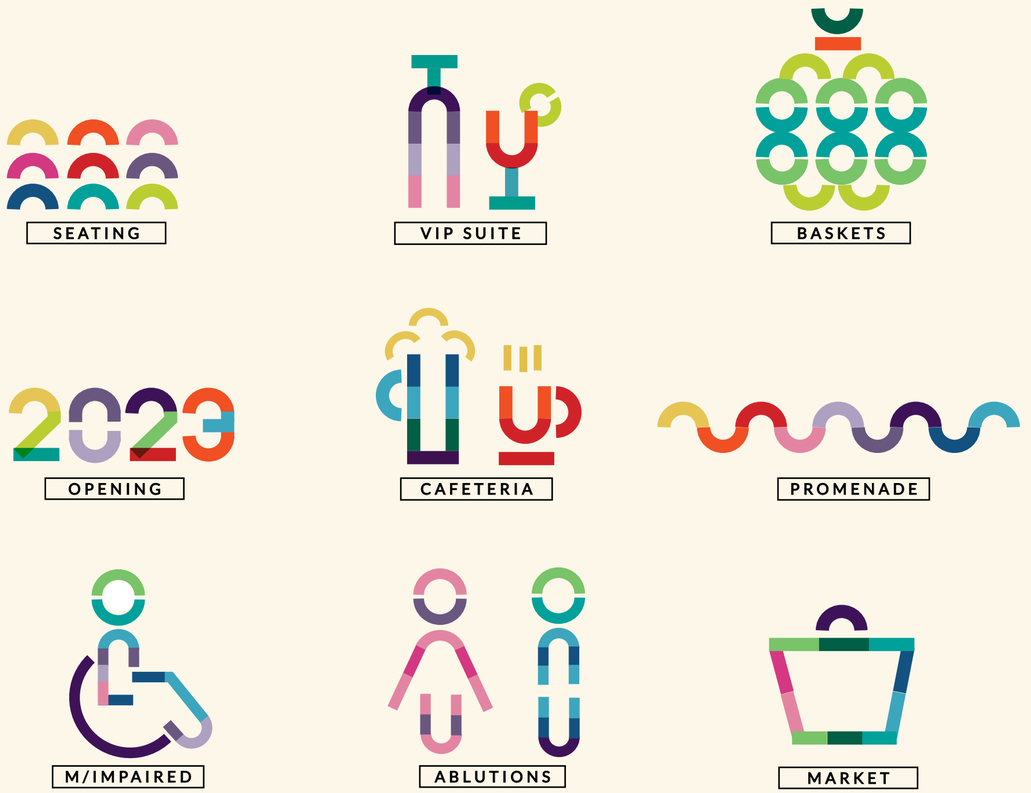

ahana

Back

Front



Signage



The precinct

Circular economy

A Circular Story

‘How can we shift our linear process from a take, make, use and dispose approach to a more circular one that involves a make, remake, rethink and reuse response to our projects ?’

Moving Towards A Wellbeing Economy

Taking inspiration from natural systems, we need to find cost effective and kinder solutions to our environment, saving on natural resources and finding viable alternatives to conventional and unsustainable manufacturing processes. Much of our history is influenced by a culture of extraction that leaves huge imprints on our environment. This has resulted in a critical need to manage globally common resources, forcing us to shift our way of thinking and our relationship to nature to design for nature and a wellbeing economy.

There are many forms of creative entrepreneurism in and around the sports precinct. Artists, artisans, urban gardeners, carpenters, shoemakers, metal and woodworkers, clothing designers and others, live and work in and around the site. By developing partnerships and mobilising a network of informal and formal sectors, can the sports precinct create pockets of vibrant business development, build community through purpose driven initiatives and encourage innovation and participation to mutually support sustainable positive change?

‘Imagine a stadium of zero waste where the materials used are the direct products of nature and are ready to return to nature.’

Recent statistics show that Ghana is estimated to have produced about 812 thousand tons of cocoa beans annually. Of the total cocoa fruit, only 10% is used for its commercialisation leaving 90% or 730 thousand tons of the cocoa production discarded as waste. While one part of the fruit from the Cacao plant, the cocoa bean, is used as the raw material for chocolate manufacturing, how can we turn the by-products or waste into productive raw material?

The restorative and regenerative making processes from the cocoa pod are endless. Cocoa bean shells are one of the main by-products in the production of cocoa beans. The increasing demand for cocoa has led to an accumulation of this by-product, resulting in a serious disposal problem that has both an economic and environmental impact.

We’ve developed a series of ‘What if’ scenarios that delve into the by-products of the cocoa bean. These demonstrate the possibilities of a waste material such as the cocoa bean shell to be used as a raw material for new products or systems that have a positive impact on our environment.

What if cocoa bean shells could be used as an organic mulch or fertilizer for the landscaping of the precinct sports fields and gardens?

Cocoa bean shells have been incorporated into bioplastics to give them biodegradable characteristics. As a material innovation combined with technology and creativity, bioplastic can be used in architecture, to create a fully circular and compostable material resource that can be used in the design of the stadium. Can we combine the material technology of bioplastics with the skills used in traditional sculptural wood carved stools to form the stadium seats?

Up to 60% of cocoa bean shells can be added to particleboard - what if we could use this as part of the material palette for construction?

What if we could convert cocoa bean waste into concrete? By incinerating the cocoa beans shells, the ashes can be used as an additive to cement in concrete creating a more sustainable yet robust structural material.

Cocoa bean shells can be used as an ingredient for textile dyes and is said to increase UV protection properties to cotton fabric. What if we could extract a natural dye from the diverse colours of the cocoa pod to inform our material palette? Natural dyes have potential savings on our natural resources such as water and energy and are a viable alternative to conventional dyeing processes. The entire process is organic and the residue from the extraction of the dye is reusable.

In Ghanaian culture, intricate cloth strips are hand woven from brightly coloured silk to create bold and bright items of clothing. What if we can draw inspiration from traditional Ghanaian processes of weaving fibres and hand crafting? If we combine jute fibres from the bags carrying the cocoa beans, in combination with cotton fibres, to create a new hybrid textile that is naturally dyed, we can create products that combine tradition and innovation in a sustainable way.

Ghana is well known for the large, colourful market baskets made by the indigenous Frafra women. Weaving elephant grass into large, round-bottomed baskets with broad stripes and geometric patterns has been a skill passed down over many generations. What if we combine grass fibres like elephant grass with compressed cocoa bean shells, similar to compressed coffee grounds and add natural glues to create biodegradable wearables or products?

The cocoa pod has the ability to influence many other industries beyond the built environment, ranging from the food industry to its use as a renewable energy resource. Using cocoa bean husks to generate biofuel can provide a secure, reliable and affordable energy supply for communities.

‘As designers we have a duty to safeguard the future of our environment - to recover and reuse as many of the products and materials that we use in a systematic way.’

In order to develop resilience and transformation at a local and global scale we need to rethink a more circular approach to the design of our products, spaces, precincts and cities. Designers need to work in partnership with community, developers, local business, institutions and urban policy makers to actively tackle the problem of a siloed urban planning system. This will enable a more circular approach and a shift towards a wellbeing economy that has a positive impact on our human and natural systems.

An Architecture of Re-use

How does the work of an artist inform an architectural process?

Internationally recognised Ghanaian artist, Ibrahim Mahama uses the 'transformation of materials to explore themes of commodity, migration, globalisation and economic exchange.' In collaboration with other artists, Mahama generates a palette of materials from his urban surroundings. Working with leftover timber and discarded jute sacks collected from the cocoa industries, he creates large-scale installations from stitched textiles, wrapping structures and adding new layers of meaning to sculptural architectural forms.

Every material used in the artist's process tells a layered story, tracing its origins, intended use, value and sometimes its repurposing as another commodity based on ingenuity and improvisation. Materials have a life cycle and inherent potential and often undergo a series of transitions through exchange. For Mahama, the jute sacks demonstrate 'a strong reference to global transaction and how capitalist structures work.'

In a multi-disciplinary way, similar to that of a building project, Mahama's work is constructed within the constraints of a site. The process moves from material selection, collection and collaboration towards final installation with a team ranging from artists, architects, engineers, local authorities and citizens. There is an emphasis on the value of materials throughout this journey. Through his immersive works, he explores the idea of the collective over the singular and the power of art to address transformation and reimagine new possibilities.

Documentation

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PROPOSED GHANA STADIUM & ANCILLARY FACILITIES
in ACCRA, GHANA
for BRIGHTWATER PROPERTY INVESTMENTS GHANA LTD

THIS IN AN ORDER OF MAGNITUDE ESTIMATE OF DEVELOPMENT COST BASED ON PRELIMINARY INFORMATION AND ASSUMPTIONS AND IS SUBJECT TO REFINEMENT AS THE DESIGN, SPECIFICATIONS AND PROGRAMME ARE FURTHER DEVELOPED

P20014/A1/N1R2

01 JULY 2020

ORDER OF MAGNITUDE ESTIMATE : NUMBER 1 REVISION 2
SUMMARY

	EXTERNAL WORKS / URBAN FABRIC	SPORTS STADIUM (incl dedicated external works)	MULTISPORT ARENA	VELODROME	SWIMMING POOL FACILITY	GYMNASIUM	MULTI-USE SPORTS HALL	SPORTS SCIENCE CENTRE	MUSEUM OF AFRICAN SPORTS	HOTEL	OFFICES	TOTAL
GBA	N/A	144,500 m²	95,000 m²	8,000 m²	6,100 m²	4,500 m²	7,700 m²	2,500 m²	9,750 m²	8,250 m²	3,375 m²	**289,675 m²**
SEATS	N/A	58,777 No	18,000 No	1,500 No	2,500 No	1,500 No	6,000 No	N/A	N/A	N/A	N/A	**88,277 No**
GBA PER SEAT	N/A	2.46 m²	5.28 m²	1.00 m²	2.44 m²	3.00 m²	1.28 m²	N/A	N/A	N/A	N/A	**3.28 m²**
KEYS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	150 No	N/A	**150 No**
GBA PER KEY	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	55 m²	N/A	**55 m²**

ELEMENT / ITEM	% OF DEV COST	EXTERNAL WORKS / URBAN FABRIC	SPORTS STADIUM (incl dedicated external works)	MULTISPORT ARENA	VELODROME	SWIMMING POOL FACILITY	GYMNASIUM	MULTI-USE SPORTS HALL	SPORTS SCIENCE CENTRE	MUSEUM OF AFRICAN SPORTS	HOTEL	OFFICES	TOTAL (US$)
1 BUILDING WORKS		-	152,708,900	HIGH LEVEL ALL-IN RATE / m² ALLOWANCE ONLY TO BE CONFIRMED WITH ACTUAL DESIGN & SPECIFICATION									
2 SERVICES INSTALLATION		-	77,420,500										
3 EXTERNAL WORKS		57,395,900	23,824,600										
4 PRELIMINARY AND GENERAL ITEMS		9,757,300	43,172,200										
ESTIMATED CURRENT CONSTRUCTION COST	**71%**	**67,153,200**	**297,126,200**	**117,531,400**	**20,000,000**	**15,950,000**	**9,000,000**	**38,500,000**	**5,000,000**	**29,250,000**	**22,275,000**	**5,062,500**	**626,848,300**
5 ESCALATION	2%	1,655,600	7,325,600	2,897,700	493,100	393,200	221,900	949,200	123,300	721,200	549,200	124,800	15,454,800
6 CONSTRUCTION CONTINGENCY	7%	6,881,000	30,445,000	12,042,900	2,049,300	1,634,300	922,200	3,944,900	512,300	2,997,100	2,282,400	518,700	64,230,100
ESTIMATED ESCALATED CONSTRUCTION COST		**75,689,800**	**334,896,800**	**132,472,000**	**22,542,400**	**17,977,500**	**10,144,100**	**43,394,100**	**5,635,600**	**32,968,300**	**25,106,600**	**5,706,000**	**706,533,200**
7 PROFESSIONAL FEES	12%	7,569,000	56,932,500	19,870,800	3,381,400	2,067,400	1,166,600	4,339,400	704,500	4,121,000	3,138,300	656,200	103,947,100
ESTIMATED IMPROVEMENT COST		**83,258,800**	**391,829,300**	**152,342,800**	**25,923,800**	**20,044,900**	**11,310,700**	**47,733,500**	**6,340,100**	**37,089,300**	**28,244,900**	**6,362,200**	**810,480,300**
8 GENERAL COSTS (TO BE CONFIRMED BY CLIENT)	6%	2,497,800	39,182,900	7,617,100	1,296,200	501,100	282,800	1,193,300	158,500	927,200	706,100	159,100	54,522,100
9 D&C FEE	1%	857,600	4,310,100	1,599,600	272,200	205,500	115,900	489,300	65,000	380,200	289,500	65,200	8,650,100
10 DEVELOPMENT MANAGEMENT FEE	1%	866,100	4,353,200	1,615,600	274,900	207,500	117,100	494,200	65,600	384,000	292,400	65,900	8,736,500
11 LAND & ALL ASSOCIATED COSTS	0%	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
12 FINANCE CHARGES $ CAPITALISED INTEREST	0%	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded	Excluded
ESTIMATED DEVELOPMENT COST (excl VAT)	**100%**	**87,480,300**	**439,675,500**	**163,175,100**	**27,767,100**	**20,959,000**	**11,826,500**	**49,910,300**	**6,629,200**	**38,780,700**	**29,532,900**	**6,652,400**	**882,389,000**
13 NHIL @ 2.50%		2,187,000	10,991,900	4,079,400	694,200	524,000	295,700	1,247,800	165,700	969,500	738,300	166,300	22,059,800
14 GETL @ 2.50%		2,187,000	10,991,900	4,079,400	694,200	524,000	295,700	1,247,800	165,700	969,500	738,300	166,300	22,059,800
ESTIMATED DEVELOPMENT COST (Incl levies)		**91,854,300**	**461,659,300**	**171,333,900**	**29,155,500**	**22,007,000**	**12,417,900**	**52,405,900**	**6,960,600**	**40,719,700**	**31,009,500**	**6,985,000**	**926,508,600**
15 VAT @ 12.50%		11,481,800	57,707,400	21,416,700	3,644,400	2,750,900	1,552,200	6,550,700	870,100	5,090,000	3,876,200	873,100	115,813,500
ESTIMATED DEVELOPMENT COST (Incl levies & VAT)		**103,336,100**	**519,366,700**	**192,750,600**	**32,799,900**	**24,757,900**	**13,970,100**	**58,956,600**	**7,830,700**	**45,809,700**	**34,885,700**	**7,858,100**	**1,042,322,100**

PRACTICAL COMPLETION	**25-Jul-23**

BENCHMARKING - STADIUM ONLY

		AVERAGE (excl outliers)	AVERAGE (incl outliers)	MBOMBELA STADIUM South Africa	MOSES MABHIDA STADIUM South Africa	NELSON MANDELA BAY STADIUM South Africa	PETER MOKABA STADIUM South Africa	SOCCER CITY South Africa	CAPE TOWN STADIUM South Africa	EVERTON SOCCER STADIUM UK	TOTTENHAM SOCCER STADIUM UK
ESCALATED CONSTRUCTION COST / m² of GBA (excl VAT)	**2,318 /m²**										
ESCALATED CONSTRUCTION COST / SEAT (excl VAT)	**5,698 /seat**	**5,124 /seat**	**7,944 /seat**	3,890 /seat	8,131 /seat	5,241 /seat	3,424 /seat	4,934 /seat	11,330 /seat	10,822 /seat	15,782 /seat

ANNEXURE "A"

ESCALATED CONSTRUCTION COST BENCHMARKING & VALUE ENGINEERING OPTIONS - STADIUM ONLY

RLB has undertaken a benchmarking exercise to establish the range of costs for a sample of similar stadium developments. RLB used soccer stadium developments of similar nature for benchmarking purposes. A summary of the benchmarking study is detailed below.

STADIUM	$/SEAT	COUNTRY
PETER MOKABA STADIUM	$3,424	SOUTH AFRICA
MBOMBELA STADIUM	$3,890	SOUTH AFRICA
GHANA SPORT STADIUM (OPTION 3)	**$4,700**	GHANA
SOCCER CITY	$4,934	SOUTH AFRICA
AVERAGE OF BENCHMARKING SAMPLES (excl outliers)	**$5,124**	
NELSON MANDELA BAY STADIUM	$5,241	SOUTH AFRICA
GHANA SPORT STADIUM (OPTION 2)	**$5,654**	GHANA
GHANA SPORT STADIUM (OPTION 1)	**$5,698**	GHANA
AVERAGE OF BENCHMARKING SAMPLES (incl outliers)	**$7,944**	
MOSES MABHIDA STADIUM	$8,131	SOUTH AFRICA
EVERTON SOCCER STADIUM	$10,822	UK
CAPE TOWN STADIUM	$11,330	SOUTH AFRICA
TOTTENHAM SOCCER STADIUM	$15,782	UK

	OPTION 1	OPTION 2	OPTION 3	ECONOMICAL
ROOF	100% OF SEATS	80% OF SEATS	80% OF SEATS	60% OF SEATS
FAÇADE	INCLUDED	INCLUDED	INCLUDED	EXCLUDED
CURRENT BUDGET	**5,698 /seat**	**5,654 /seat**	**5,484 /seat**	**4,566 /seat**

	VALUE ENGINEERING / SCOPE CUTTING OPTIONS				
	SAVING PER SEAT	OPTION 1	OPTION 2	OPTION 3	ECONOMICAL
Omission of piling allowance	143 /seat	5,554 /seat	5,511 /seat	5,341 /seat	4,422 /seat
Omission of basement excavations	9 /seat	5,546 /seat	5,502 /seat	5,332 /seat	4,414 /seat
On-grade parking in lieu of basement parking	83 /seat	5,463 /seat	5,420 /seat	5,249 /seat	4,331 /seat
Lower specification fixed seating option	165 /seat	5,298 /seat	5,255 /seat	5,085 /seat	4,166 /seat
Omission of stadium AV systems	353 /seat	4,945 /seat	4,901 /seat	4,731 /seat	3,813 /seat
Omission of field & track timing equipment	11 /seat	4,934 /seat	4,890 /seat	4,720 /seat	3,802 /seat

Note: This is an indication only to be confirmed by the design team and actual site conditions.

ANNEXURE "B"

NOTES

1 BASIS OF ESTIMATE :

- Cost as at 25 June 2020 with a separate escalation allowance
- No detailed measurements & rate build-ups done (rate / m² allowances based on similar developments)
- Architectural information received from B+P (2020/06/08)
- High level structural scheme design received from Fortem (2020/06/10)
- Civil information outstanding (assumptions made)
- Electrical and electronic cost estimates received from AECOM (2020/06/29)
- AV systems and field & track timing equipment cost estimates received from Entertainment Technology Consultants (2020/06/23)
- Mechanical cost estimates as received from Aurecon / Zutari (2020/06/26)
- Fire services information outstanding (assumptions made)
- Wet services information outstanding (assumptions made)
- No fit-out specification available (assumptions made)
- Assume Multisport Arena basement portion of 42,356m² will be parking only with no common areas
- Assume parking for all other ancillary buildings / facilities have on-grade parking with no basements
- Geotechnical report & land survey not available (assumptions made)
- Assumption that piling will be required
- An allowance for general cost has been made which will be based on actual cost and needs to be confirmed by the client for estimating purposes:
  Geotechnical report
  Topographical and land survey
  Environmental impact assessment
  Traffic impact assessment
  Legal fees
  Building permit, plan approval fees, etc.
  Occupation permit
  Project insurance
  Upgrades to bulk infrastructure & site service connection fees
  Allowance for travel & accommodation
  General marketing costs
  Relocation of possible existing services on site
  Sundry local authority costs
  Project setup costs
  PR costs
  Etc.

2 PROGRAMME :

For the purpose of this Analysis the following programme has been used :

- a construction period of 36 calendar months
- commencement of construction on the 03 August 2020
- completion of construction on the 25 July 2023

3 COST ESCALATION :

The pre and post tender escalation used for this estimate have been set out hereunder:

- Prior to construction	0.17%	per month
- During construction	0.13%	per month

4 PROJECT SPECIFIC EXCLUSIONS:

- Lateral support
- Furniture fixtures & equipment (apart from hotel)
- Operating supplies & equipment (apart from hotel)
- Food & beverage equipment (apart from hotel)
- Concession TI allowances
- Pitch maintenance equipment
- Upgrades to external roads, entrances, stormwater, etc. outsite site boundary
- Market research study
- Working capital & pre-opening expenses
- Promotor's fee
- Land and all associated costs
- Finance charges & capitalised interest

16th June 2020

TO: Boogertman + Partners

ATT: Mr Bob van Bebber

Dear Bob

RE: GHANA STADIUM & ARENA - VENUE MANAGEMENT PROPOSAL
POSSIBLE INVESTMENT IN PROPOSED ARENA

Further to the "Ghana Ministry of Youth & Sports - *Project Brief for the Development of Sport Infrastructure and Services for the 13th African Games 2023 Ghana*" received from Boogertman + Partners through the developers "Amalgamated Properties Limited".

Whilst we are grateful to be part of the Development Team on the stadium and arena projects, we would like to propose additional services we could offer that are detailed within the Project Brief:

***PRO TEM* OPERATOR SERVICES – STADIUM & ARENA**

QA Venue Solutions ("QAVS") is experienced in the management of similar venues to be constructed as well as acting as operational client representatives / liaisons with developments.

We offer our management services as *pro tem* operators during the design & construction phases of the Stadium & Arena to ensure the venues are constructed cost-wise and operationally effectively BUT meeting current international best practices.

In addition, but not limited to, we would offer the additional services:-

QAVS would post a Venue Manager / Business Developer to Ghana to work with the Ministry of Youth & Sports in commercialisation plans for both venues - Primary Naming Rights & Other Rights packages etc – would be drawn up well in advance and submitted to potential Rights Investors to ensure rights and rights package income is received well in advance.

QAVS would act as a liaison / coordination link between the Ministry and the Developers / Design Team – We have carried out this role in the past to "translate" and mediate between all parties to ensure what is being designed and constructed fulfills what the client (Ministry of Youth & Sports) expects…..

The operational parameters of both venues would be drawn up to ensure the venues will be utilised to their maximum potential.

Involving an operator from the design process moving forward guarantees cost effectiveness – The QAVS representative in-country would work with the current venue managers and ministry representatives etc and understand the current operation *modus operandi* of existing venues in Ghana to ensure the new venues are being designed to similar operational parameters.

The venues and their potential use can be marketed locally, continentally and internationally to ensure international awareness of the venues and their availability.

VENUE MANAGEMENT SERVICES – STADIUM & ARENA

QA Venue Solutions ("QAVS") would like to submit a proposal to manage / commercialise the Stadium & Arena once constructed – either individually or as combined management proposal.

(This proposal could be through "Amalgamated Properties Limited" or directly with the Ministry of Youth & Sports…)

In principle, working with the Ministry of Youth & Sports either directly or through a third party, we would draw up a proposal that would encompass commercial, financial and operational requirements to suit the Government and the Management Company to provide a "win-win" solution on an ongoing basis.

INVESTMENT IN THE CONSTRUCTION OF THE ARENA

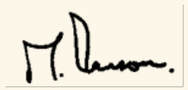
The Project Brief calls for potential investors to invest in areas of the project.

QA Venue Solutions ("QAVS") would like to express our interest to potentially invest in the construction of the proposed Arena, subject to QAVS resourcing suitable investors once the design and estimated cost of the arena have been established, as well as reaching a suitable agreement with the relevant parties (land owners etc) and being granted the Venue Management / Commercialisation Rights of the Arena.

If there is interest in any of the above aspects of the developments, we would be very keen to pursue the conversation and discuss a way forward.

We look forward to hearing from you.

Yours



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Email mark@qavenuesolutions.com
www.qavenuesolutions.com

26 June 2020

VENUE SOLUTIONS

GHANA SPORTS COMPLEX STADIUM, ARENA AND OTHER SPORTING FACILITIES

PRELIMINARY PROPOSAL

QA Venue Solutions ("QAVS") tender an ***expression of interest*** in managing the Ghana Sports Complex currently under development by Boogertman + Partners thru the Ghanaian Development Company - "Amalgamated Properties Limited"..

QAVS has Stadium management experience as well as experience in managing multi-purpose venues. It currently is contracted to manage the Dakar Arena, Senegal and the Kigali Arena, Rwanda and would be very interested in discussing the possibility of working with the Government of Ghana – Specifically the Ministry of Youth and Sports to draw up a business and commercialisation model that encompasses all the venues on the Sports Complex Site that enables the venues to be used productively and are managed and operated cost effectively all year round.

The Sports complex needs to be a symbol of national pride and unity, and must be used extensively and effectively hosting local, regional, continental and international sporting, entertainment, corporate and other types of events.

1

The operating model needs to be drawn up once an understanding is reached between all parties and should be a win-win for all parties…

PRELIMINARY PROPOSAL CONTINUED…

Whilst QA Venue Solutions are grateful to be part of the Development Team on the stadium and arena projects, we would like to propose additional services we could offer that are detailed within the original Project Brief provided.

PRO TEM VENUE MANAGEMENT / OPERATOR SERVICES – SPORTS COMPLEX

QA Venue Solutions ("QAVS") is experienced in the management of similar venues to be constructed as well as acting as operational client representatives / liaisons with developments.

We offer our management services as *pro tem* operators during the design & construction phases of the Stadium & Arena to ensure the venues are constructed cost-wise and operationally effectively BUT meeting current international best practices.

<u>In addition, but not limited to, we would offer the additional pro tem services:-</u>

QAVS would post a Venue Manager / Business Developer to Ghana to work with the Ministry of Youth & Sports in commercialisation plans for both venues - Primary Naming Rights & Other Rights prospectus's etc – would be drawn up well in advance and submitted to potential Rights Investors to ensure rights and rights package income is secured well in advance.

PRELIMINARY PROPOSAL CONTINUED…

QAVS would act as a liaison / coordination link between the Ministry and the Developers / Design Team – We have carried out this role in the past to “translate” and mediate between all parties to ensure what is being designed and constructed achieves or meets what the client (Ministry of Youth & Sports) expects…..

The operational parameters of both venues would be drawn up to ensure the venues will be utilised to their maximum potential.

Involving an operator from the design process moving forward guarantees cost effectiveness – The QAVS representative in-country would work with the current venue managers and ministry representatives etc and understand the current operation *modus operandi* of existing venues in Ghana to ensure the new venues are being designed to similar operational parameters.

The venues and their potential use can be marketed locally, continentally and internationally to ensure international awareness of the venues and their availability.

1

The operating model needs to be drawn up once an understanding is reached between all parties and should be a win-win…

PRELIMINARY PROPOSAL CONTINUED…

ONGOING VENUE MANAGEMENT SERVICES – SPORTS COMPLEX

QA Venue Solutions (“QAVS”) would like to submit a proposal to manage / commercialise the Sports Complex once constructed – as a combined management proposal.
(This proposal could be through “Amalgamated Properties Limited” or directly with the Ministry of Youth & Sports…)

In principle, working with the Ministry of Youth & Sports either directly or through a third party, we would draw up a proposal that would encompass commercial, financial and operational requirements to suit the Government and the Management Company to provide a “win-win” solution on an ongoing basis.

1

PRELIMINARY PROPOSAL CONTINUED…

INVESTMENT IN THE CONSTRUCTION OF THE MULTI-PURPOSE ARENA

The Project Brief calls for potential investors to invest in areas of the project.

QA Venue Solutions (“QAVS”) would like to express our interest to potentially invest in the construction of the proposed Arena, subject to QAVS sourcing suitable investors once the design and estimated cost of the arena have been established, as well as reaching a suitable agreement with the relevant parties (land owners etc) and being granted the Venue Management / Commercialisation Rights of the Arena.

If there is interest in any of the above aspects of the developments, we would be very keen to pursue the conversation and discuss a way forward.

1

Ghana arena
Funding proposal

The Project Brief calls for potential investors to invest in areas of the project.

QA Venue Solutions ("QAVS") would like to express our interest to potentially invest in the construction of the proposed Arena, subject to QAVS sourcing suitable investors once the design and estimated cost of the arena have been established, as well as reaching a suitable agreement with the relevant parties (land owners etc) and being granted the Venue Management / Commercialisation Rights of the Arena.

If there is interest in any of the above aspects of the developments, we would be very keen to pursue the conversation and discuss a way forward.

QAVS will take a 5-step process in developing a funding proposal that will ensure the development of the Indoor Arena project and be able to realistically determine the long-term objectives which will result in a profitable operation.

The 5-step process is as follow:

Step 1: Identify funding requirement

In-order for the funding model to work, the team would need to work through the projected development investment. There is no use designing and building an arena that would result in a large investment package in a market that is unable to produce sufficient return on investment. QAVS will work closely with the operational team to determine the market's ability to service repayments on an investment in-order to achieve the best possible build. This process will be based on the local spending power and event industry data.

Step 2: Determine the outcomes of the project

Once the funding requirement is established, the team would work through the desired outcomes of the project, looking at fundamental elements like the look and feel of the Arena, Marketing campaign and arena management model, both financial and operational. the desired outcomes would play a fundamental role in the formation of the business plan for the project and ensure the project is guided towards success. The outcomes will be realistic and again be determined by market data considering potential fall backs. The results of each outcome will be closely monitored on an on-going basis

Step 3: Design the program

The program would essentially be the business plan of the project and comprise of each stage in the process of developing the Arena and its management proposal. The program would be formulated and developed by experts in their various fields, looking at what others have done, getting buy in from all stakeholders and ensuring that the ultimate solution to the design, build and management model is clear, understandable for those with technical expertise in the market and the general public around the project. This will assist in making the process easier when locating funds.

Step 4: Locate funding sources

QAVS would work with its immediate stakeholders for funding on project, given the fact that QAVS stakeholders are already aligned with the business's objectives. Should additional funding be required, QAVS would expand to businesses that operate in the industry, identifying key strategic partners that would further benefit the project and the last layer of potential funding would be with funding institutions on the continent that have a shared vision of developing infrastructure and industries on the continent.

Step 5: Develop proposals

The last step in the process would be to understand the potential investor(s) and develop a proposal that would align with their objectives as a business. Should the partner be a strategic partner beyond the investment, QAVS would tailor the proposal to integrate the business into the overall operations in the Arena to show the long-term benefit of the partnership over and above the investment. Once proposals have been accepted, investors would be housed under one company which would own the project.

WBHO

WBHO Ghana Limited
Civil Mining Engineering & Building Contractors
Plot No 73, Second Close
Airport Residential Area, Accra
PO Box 147, Trade Fair Site, Accra Ghana
Tel: +233 302 762 189 **Fax:** +233 302 766 706
(e) larry_chinbuah@wbho.co.za
(w) www.wbho.co.za

To : Boogertman & Partners.

Date : 2020-06-24

Att : Mr B van Bebber

Re : Response on programme for Ghana / Accra stadium.

Good day Bob

We thank you for the opportunity to be part of this potential project.

As mentioned previously WBHO would be interested and proud to be associated with a land mark stadium like this and as requested please find our programme attached.

Due to the lack of detailed information and drawings we have made certain assumptions in our draft / non-binding programme and we have based these durations on other stadiums completed previously to calculate our estimated start and completion date.

At this stage we cannot commit to an earlier completion date but we have incorporated the Ghana logistical factor.

We have to highlight that this draft programme is a high level / not detailed programme based on historical stadium experience and from the short brief we received from your selves.

See attached and please feel free to contact us if you need any further information.

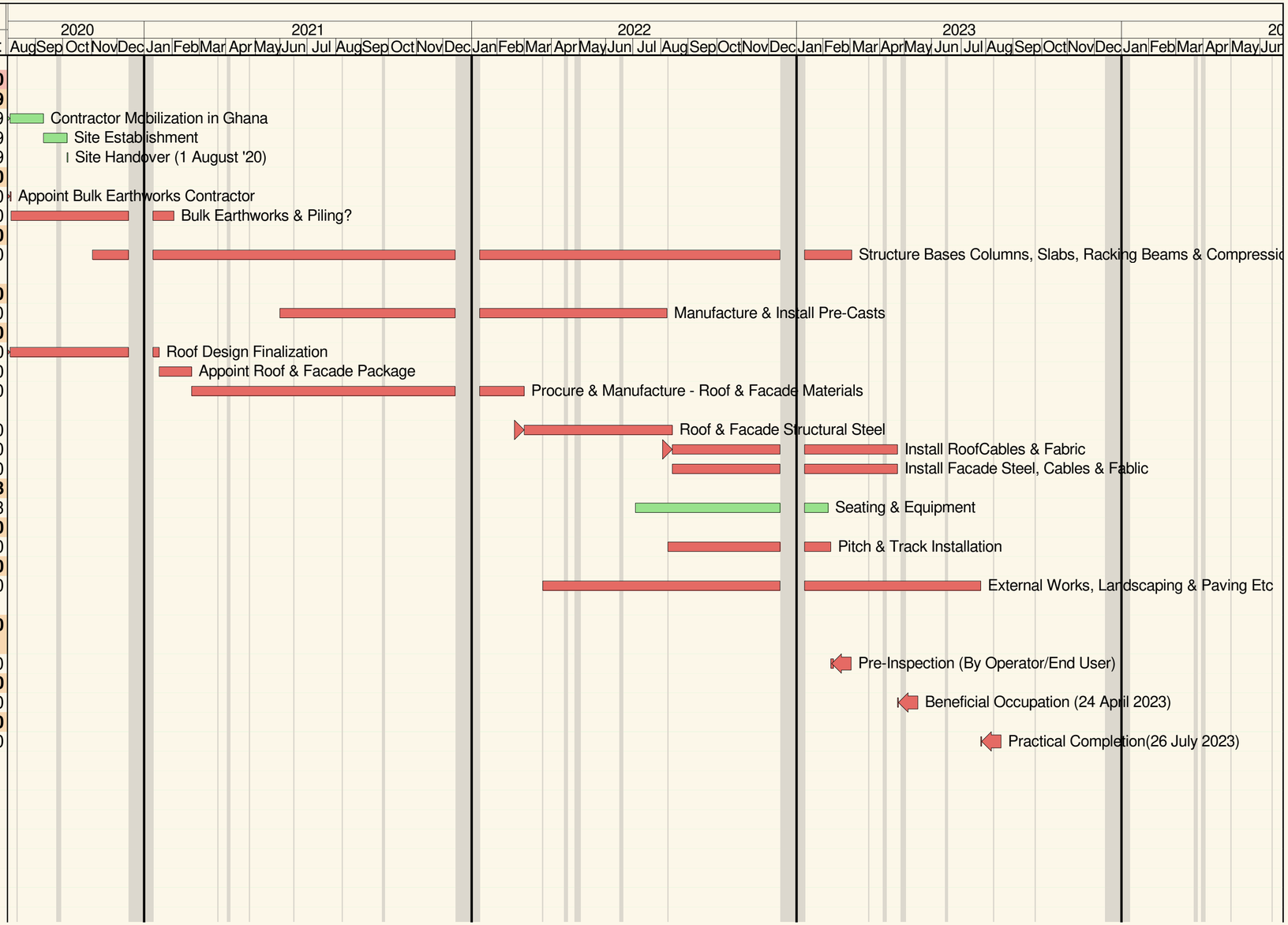
Regards.

PD Robinson.

TENDERS.
Practical Completion = 26 Jul 23

Ghana Stadium Rev C - DRAFT
Summary Barchart (Copy)

Activity description	Durn	Current Start	Current Finish	Float
1000 - GHANA STADIUM	**629**	**03 Aug 20**	**26 Jul 23**	**0**
B032 - CONSTRUCTION PHASE	**41**	**03 Aug 20**	**06 Oct 20**	**19**
B044 - Contractor Mobilization in Ghana	25	03 Aug 20	09 Sep 20	19
B047 - Site Establishment	15	10 Sep 20	05 Oct 20	19
1006 - Site Handover (1 August '20)	1	06 Oct 20	06 Oct 20	19
B050 - BULK EARTHWORKS	**101**	**03 Aug 20**	**03 Feb 21**	**0**
B101 - Appoint Bulk Earthworks Contractor	1	03 Aug 20	03 Aug 20	0
B104 - Bulk Earthworks & Piling?	100	04 Aug 20	03 Feb 21	0
B062 - STADIUM STRUCTURE	**480**	**04 Nov 20**	**02 Mar 23**	**0**
B059 - Structure Bases Columns, Slabs, Racking Beams & Compression ring columns	480	04 Nov 20	02 Mar 23	0
B065 - PRE-CAST SEATING	**255**	**01 Jun 21**	**05 Aug 22**	**0**
B080 - Manufacture & Install Pre-Casts	255	01 Jun 21	05 Aug 22	0
B068 - ROOF, FACADES & PITCH HAND OVER	**569**	**03 Aug 20**	**21 Apr 23**	**0**
B107 - Roof Design Finalization	90	03 Aug 20	15 Jan 21	0
B110 - Appoint Roof & Facade Package	25	18 Jan 21	23 Feb 21	0
B083 - Procure & Manufacture - Roof & Facade Materials	214	24 Feb 21	24 Feb 22	0
B113 - Roof & Facade Structural Steel	100	01 Mar 22	12 Aug 22	0
B086 - Install RoofCables & Fabric	140	15 Aug 22	21 Apr 23	0
B089 - Install Facade Steel, Cables & Fablic	140	15 Aug 22	21 Apr 23	0
B071 - STADIUM SEATING & EQUIPMENT	**120**	**04 Jul 22**	**06 Feb 23**	**3**
B098 - Seating & Equipment	120	04 Jul 22	06 Feb 23	3
B074 - PITCH & TRACK INSTALLATION	**100**	**10 Aug 22**	**09 Feb 23**	**0**
B095 - Pitch & Track Installation	100	10 Aug 22	09 Feb 23	0
B077 - EXTERNAL WORKS	**285**	**22 Mar 22**	**25 Jul 23**	**0**
B092 - External Works, Landscaping & Paving Etc	285	22 Mar 22	25 Jul 23	0
B122 - PRE-BENEFICIAL OCCUPATION INSPECTION	**1**	**10 Feb 23**	**10 Feb 23**	**0**
B125 - Pre-Inspection (By Operator/End User)	1	10 Feb 23	10 Feb 23	0
B011 - BENEFICIAL OCCUPATION	**1**	**24 Apr 23**	**24 Apr 23**	**0**
B014 - Beneficial Occupation (24 April 2023)	1	24 Apr 23	24 Apr 23	0
B116 - PRACTICAL COMPLETION	**1**	**26 Jul 23**	**26 Jul 23**	**0**
B119 - Practical Completion(26 July 2023)	1	26 Jul 23	26 Jul 23	0



Complete project team

ROLE	LOCATION	CONSULTANT	CONTACT
Developer Manager	South Africa/Ghana	Arena Development Company Limited	Osafo Gyimah
MAIN CONTRACTOR	South Africa/Ghana	WBHO	Peter Ransome
PROJECT MANAGERS	Ghana	Diagonal Projects	Moses Honu
Project Communications & Pr	Ghana	Neo Bantu	Ekow Quarcoo
Environmental Health & Safety	Ghana	MBA	Dan Ansah
Geotechnical Consultant	Ghana	Geo Consult	John Pinkrah
	South Africa	TBC	
Urban Design & Event Overlay	South Africa	Boogertman + Partners	Bob van Bebber
			Alasdair Forsyth
			Francois Bredenkamp
	Ghana	Spatial Dimension	Eddie Yawson
		Infinite Group	Kwadwo Boadi-Aboagye
Archtecture & Event Overlay	South Africa	Boogertman + Partners	Bob van Bebber
			Alasdair Forsyth
			Richard Wilkins
			Anton Koekemoer
	Ghana	Spatial Dimension	Eddie Yawson
		Infinite Group	Kwadwo Boadi-Aboagye
Interior Design & Event Overlay	South Africa	Boogertman + Partners	Bob van Bebber
			Julia Carew
			Mia Els
	Ghana	Spatial Dimension	Eddie Yawson
		Infinite Group	Kwadwo Boadi-Aboagye
Quantity Surveyors	South Africa	RLB Pentad	Christiaan Rademan
	Ghana	DelQs Ghana office	Gerhard/ Frimpong
Structural Engineers Concrete	South Africa	Fortem Consulting	Hans Koorn
	Ghana	BSM Baker	Dennis Hoffman
Structural Engineers Roof & Facade	International	Schlaich Bergermann & Partners	Knut Goeppert
	Ghana	TBC	
Civil Engineers	South Africa	BSM Baker	Dennis Hoffman
	Ghana	Aseda Consulting Engineers	kwaku Koranteng
Electrical Engineers	South Africa/Dubai	Aecom	Andre Schoombie
	Ghana	Aseda Consulting Engineers	kwaku Koranteng
Mechanical Engineers	South Africa	TBC	
	Ghana	JOSAP	Kelvin.B. Attoquayefio
Wet Services Engineers	South Africa	Izazi Consulting Engineers	Trinesh Chanka
	Ghana	Unique Josap Engineering	Joseph Appiah
Landscape Architect	South Africa	Boogertman + Partners	Warnu Rode
	Ghana	TBC	
Lighting Design	South Africa	Pamboukian Lightdesign	Paul Pamboukian
Sustainiblity Consultants	South Africa	Solid Green	Marloes Reinick
	Ghana	TBC	
Fire Consultant	South Africa	TBC	
	Ghana	TBC	
Traffic Consultant	UK	Momentum Transport Planning	Roy McGowan
	Ghana	TBC	S. Boamah Danquah
Stadium Specific - These May Be Consultants Who Do Not Have A Ghanaian Counterpart Due To The Specialised Nature Of Their Work			
Stadium & Venue Management	South Africa	QA Venue Solutions	Mark Ransom
Acoustic Engineers	South Africa	LinSpace	Ivan Lin
Crowd Modelling	UK	Momentum Transport Planning	Roy McGowan
Grass/Field Specialist	TBC	TBC	

Contributors to this submission document