



CAPITALS
ALLIANCE



Introduction

We have begun developing some basic programmatic information to be used as a starting point for the development of a new capital city in the charrette.

For background information we have included diagrams from Re Kgabisa Tshwane a program of the South African Government led by the Department of Public Works (DPW), the Department of Public Service and Administration (DPSA) together with the City of Tshwane Metropolitan Municipality (CTMM). The main purpose of Re Kgabisa Tshwane is to ensure a long term accommodation solution of an acceptable standard for national government department head offices and agencies within the inner city of Tshwane.

The DPW and DPSA were mandated by a Presidential Program of Action in June 2004 to develop a framework to improve the physical working environment for national government. Re Kgabisa Tshwane is the aspect of this framework that deals with national Government department head offices and agencies. In terms of a Cabinet decision taken in October 1997, and reaffirmed in February 2001, headquarters of national government departments are to remain in the inner city of Tshwane in order to prevent inner city deterioration and promote inner city urban renewal.

We have started with a few assumptions about space needs for any capital, and developed some generic square footage numbers to use as a base. Assuming that we would be merging several capital cities into one, a few government functions would be required from the outset and so the buildings and programs we have listed below are our best guess at what those needs would be. For the next several weeks, Capitals Alliance delegates and other experts from around the world to work on creating these initial design schemes, which will serve as a point of departure for further development of Tshwane's master plan

Issue to be Addressed
Sites and Buildings
Transit
Public Space
Security
Greening

The plan will be made up several elements including campus programs for:

1. Government buildings and enclaves

2. Transit is another issue that came up in the Tshwane 2005 development plan and so, parking and public transportation should be included as element of the charrette.

3. Open space. The open spaces can be linked using a set of public parks which could also act as connectors to existing open spaces.

4. Security. Another issue facing capitals so we will try to add a note about security to the program requirements for each building in order to get some attention paid to that issue as building massings are created.

5. Greening is the principal theme for the entire exercise. We would like to apply the US Green Building Council LEED Standards as a baseline for buildings and create a group of sustainable site standards using guideline currently being developed by the ASLA the American Society of Landscape Architects. The plan would be to develop 8 to 10 categories that we could set standards for to measure against. We have list a few potential categories at the bottom of the page.

Over the next week a few architects and planners on NCPC's staff will develop a set a simple development framework plans, to use as both examples and base diagrams for Capitals Alliance delegates and their staffs. The goal is for the delegates to share ideas about planning and designing capital cities from that countries perspective as an approach to new Tshwane plan.

We will bring those comments and notes together on August 18th in a virtual meeting, and use the meeting as an opportunity to meld the ideas and concepts into 3 schemes to be used a point of departure for design.

LEED

LEED is a third-party certification program and the nationally accepted benchmark for the design, construction and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality

Different LEED versions have varied scoring systems based on a set of required "prerequisites" and a variety of "credits" in the six major categories listed above. In LEED v2.2 for new construction and major renovations for commercial buildings there are 69 possible points and buildings can qualify for four levels of certification:

1. Certified - 26-32 points
2. Silver - 33-38 points
3. Gold - 39-51 points
4. Platinum - 52-69 points

LEED certification is obtained after submitting an application documenting compliance with the requirements of the rating system as well as paying registration and certification fees. Certification is granted solely by the Green Building Council responsible for issuing the LEED system used on the project

Sustainable Sites Initiative Metrics

1. Site materials Landscape, Hardscape and Furniture
2. Energy
3. Transportation Impacts
4. Water Quality and Storm Water Management
5. Lighting
6. Water Conservation
7. Site Contamination
8. Waste Minimization



Project Scope

Re Kgabisa Tshwane is a programme of the South African Government led by the Department of Public Works (DPW), the Department of Public Service and Administration (DPSA) together with the City of Tshwane Metropolitan Municipality (CTMM). The main purpose of Re Kgabisa Tshwane is to ensure a long term accommodation solution of an acceptable standard for national government department head offices and agencies within the inner city of Tshwane.

The DPW and DPSA were mandated by a Presidential Programme of Action in June 2004 to develop a framework to improve the physical working environment for national government. Re Kgabisa Tshwane is the aspect of this framework that deals with national Government department head offices and agencies. In terms of a Cabinet decision taken in October 1997, and reaffirmed in February 2001, headquarters of national government departments are to remain in the inner city of Tshwane in order to prevent inner city deterioration and promote inner city urban renewal.

Re Kgabisa Tshwane Benefits

Re Kgabisa Tshwane has numerous benefits. One of the benefits will be to afford civil servants a more pleasant working environment, not only in terms of the building in which they are located but the public open spaces and infrastructure in the vicinity of the building.

A key beneficiary of Re Kgabisa Tshwane will not only be government employees but members of the public who will benefit from a more productive, accessible and improved public service. The infusion of Batho Pele principles is an important part the programme.

These include potential sharing of services and facilities, such as, auditoria, archives and communication solutions. There is also the possibility of department headquarters and agencies using their combined purchasing power in negotiations for goods and services with the private sector.

The revitalization of Tshwane in the form of improved infrastructure and urban management is core to the programme which will enhance the city's image and reputation as a leading African capital city. encouraged as is the norm on all government projects of this magnitude.



Church Square Precinct



Church Square



Justice Place



Church Square

Mandela Corridor Precinct



Lion Bridge Park



Lion Bridge

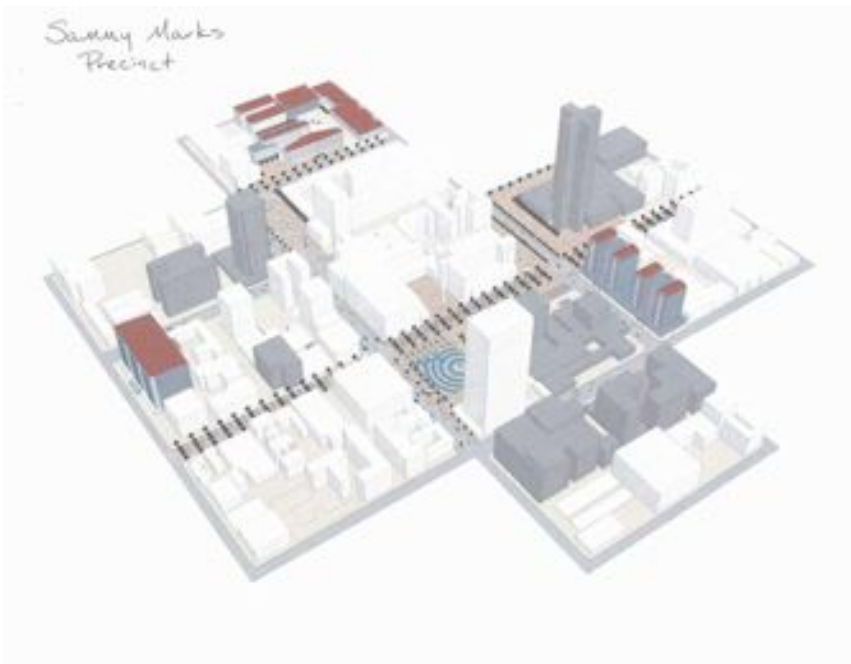


Mandela District





Presidency / Union Buildings

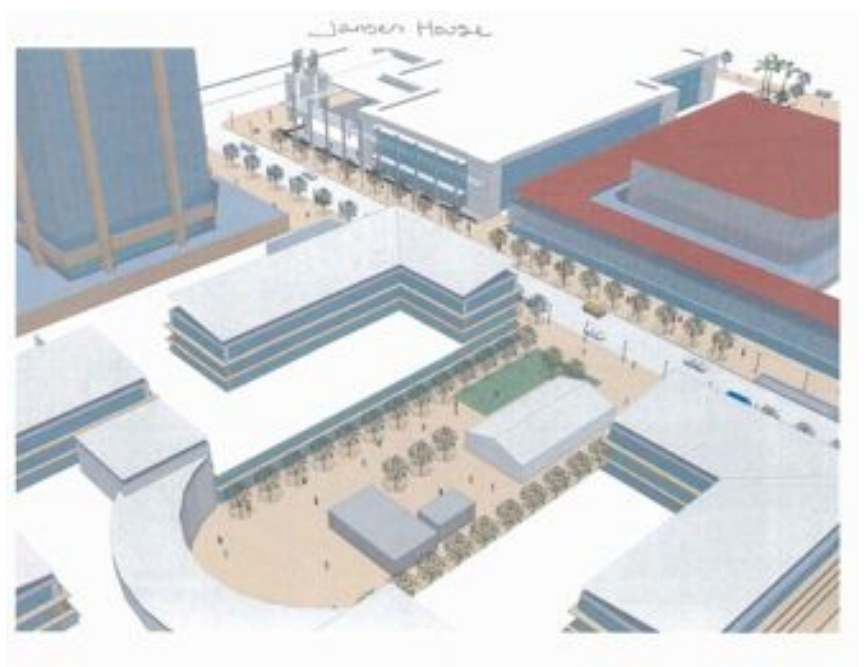
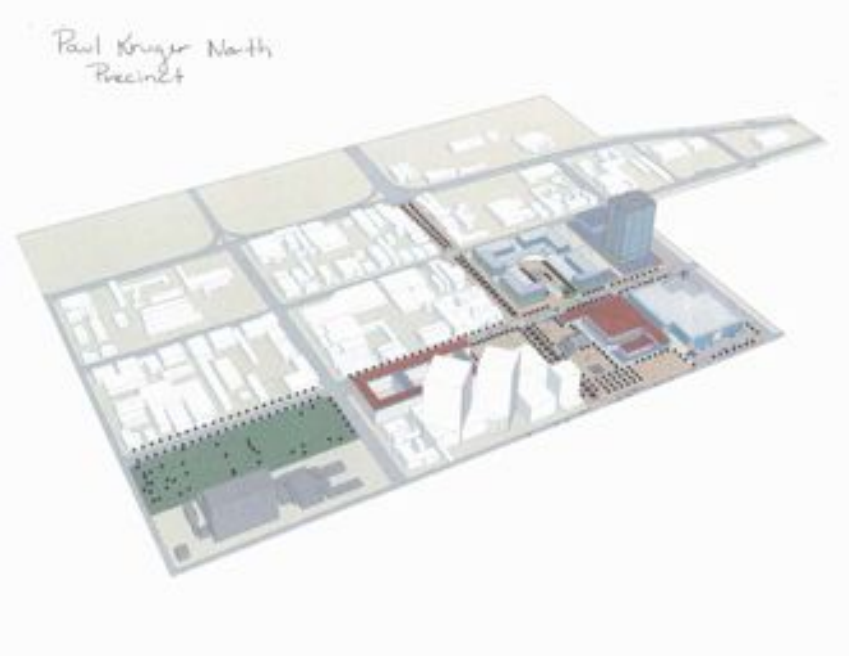


Sammy Marks Square



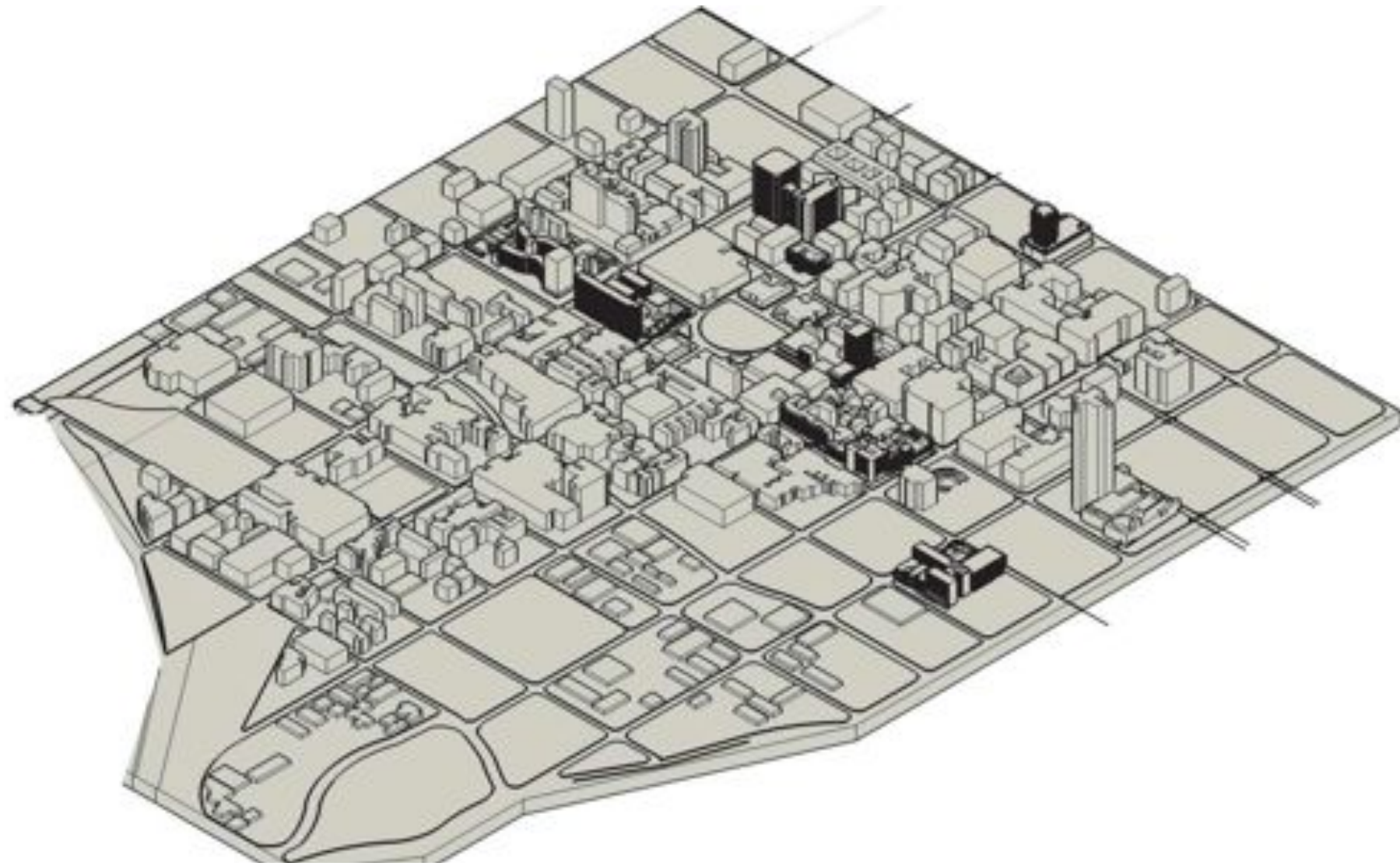


Museum District



Paul Kruger North





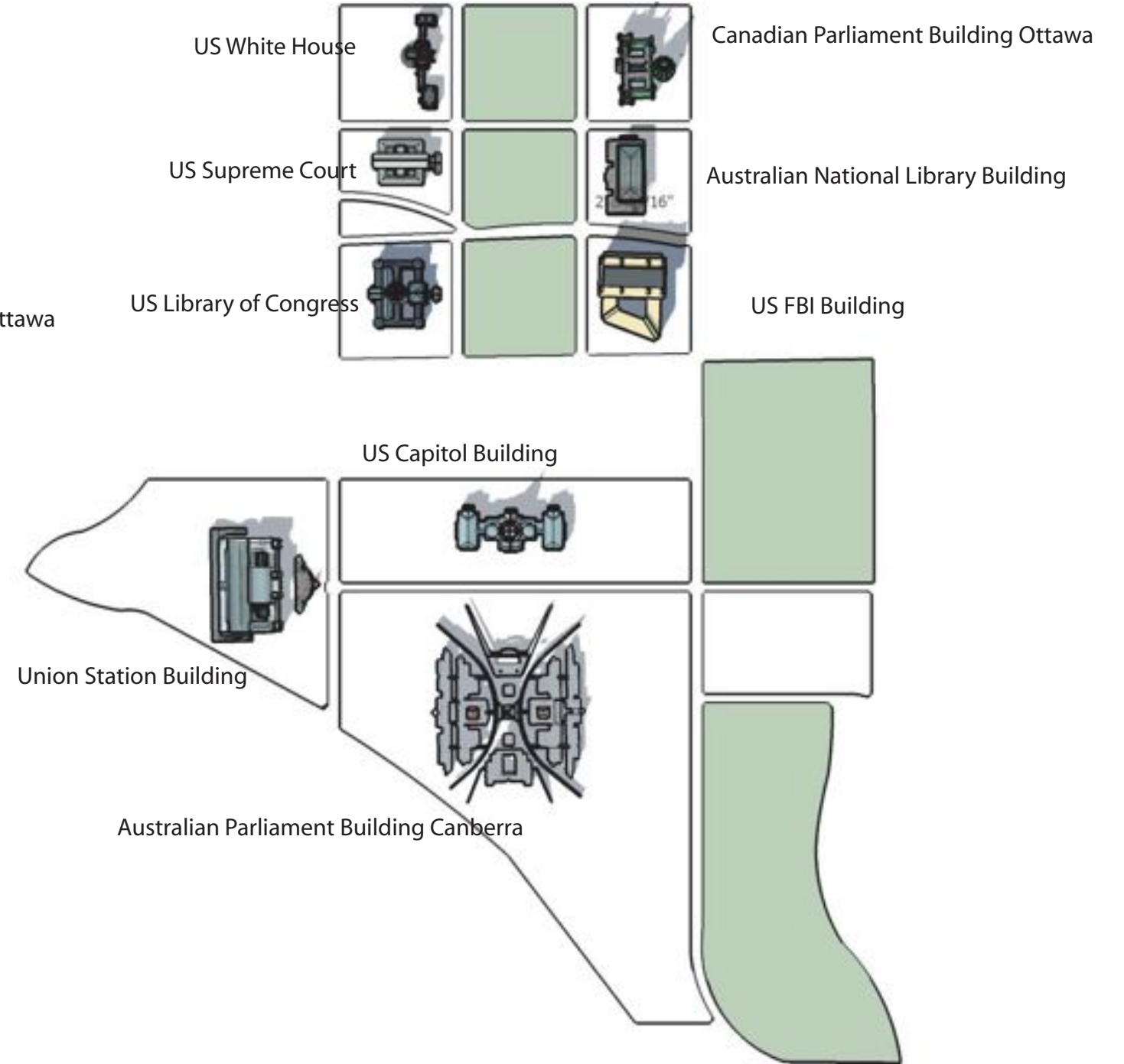
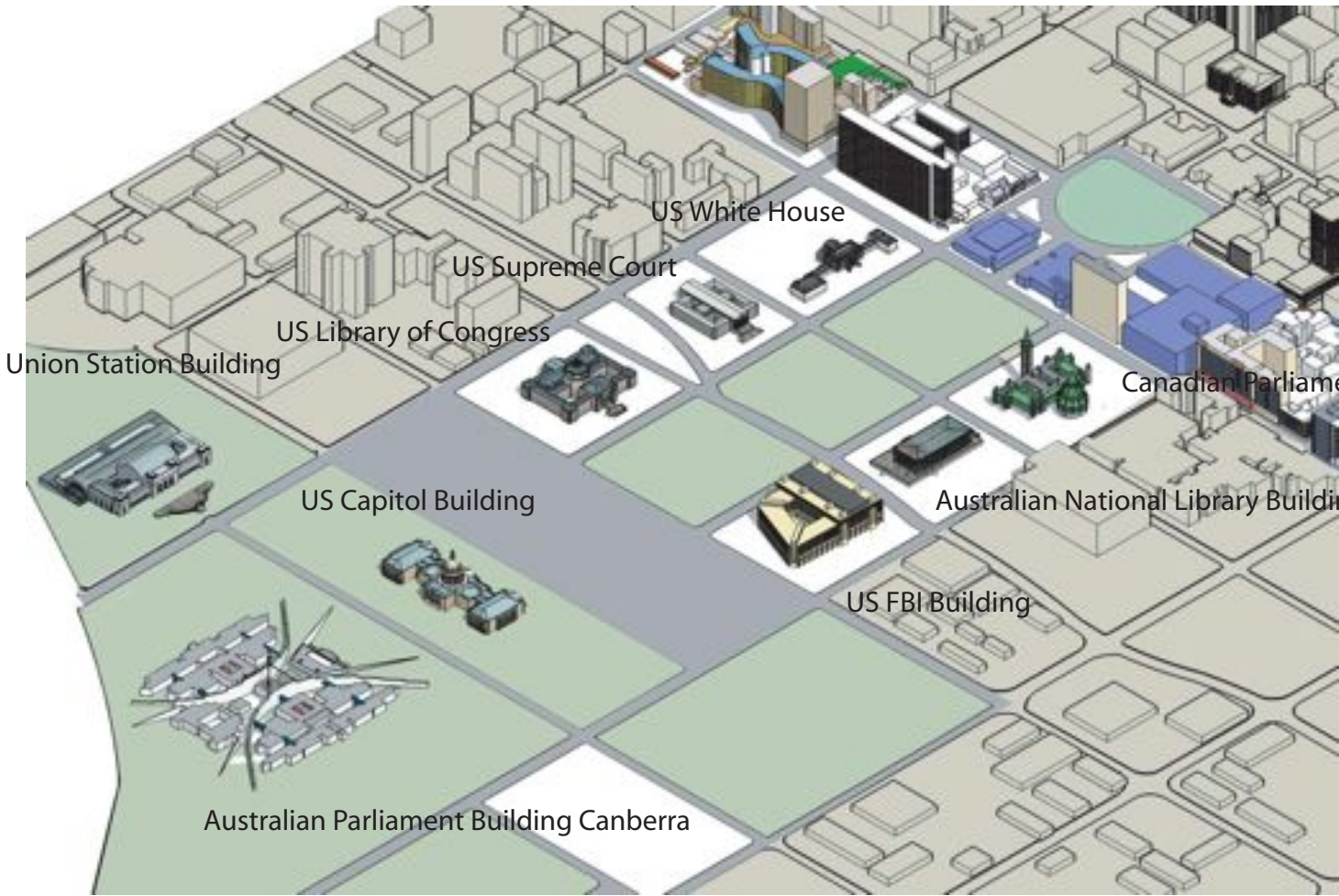
Development Area Massing



Development cross section

Site Diagram / Existing Conditions



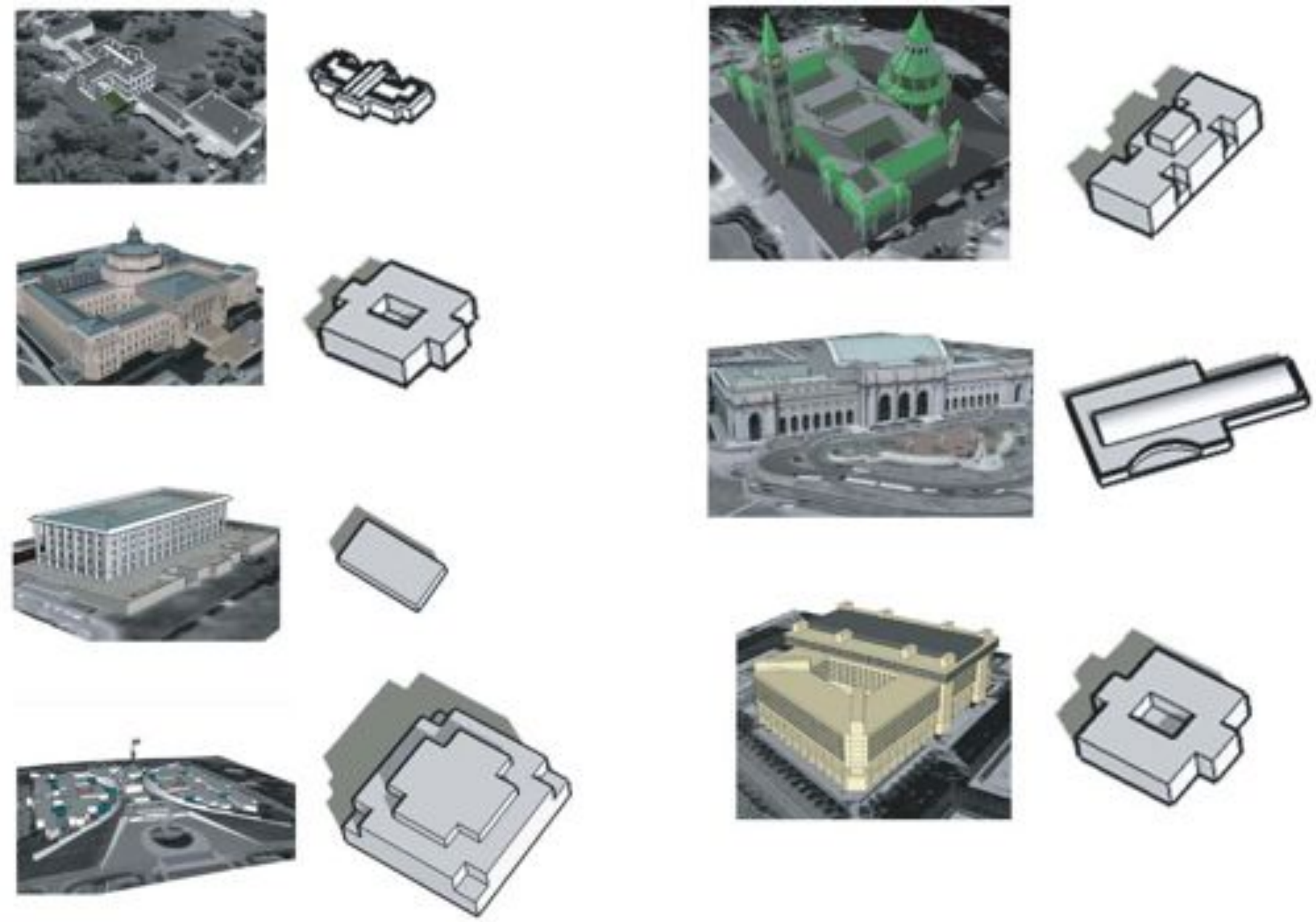


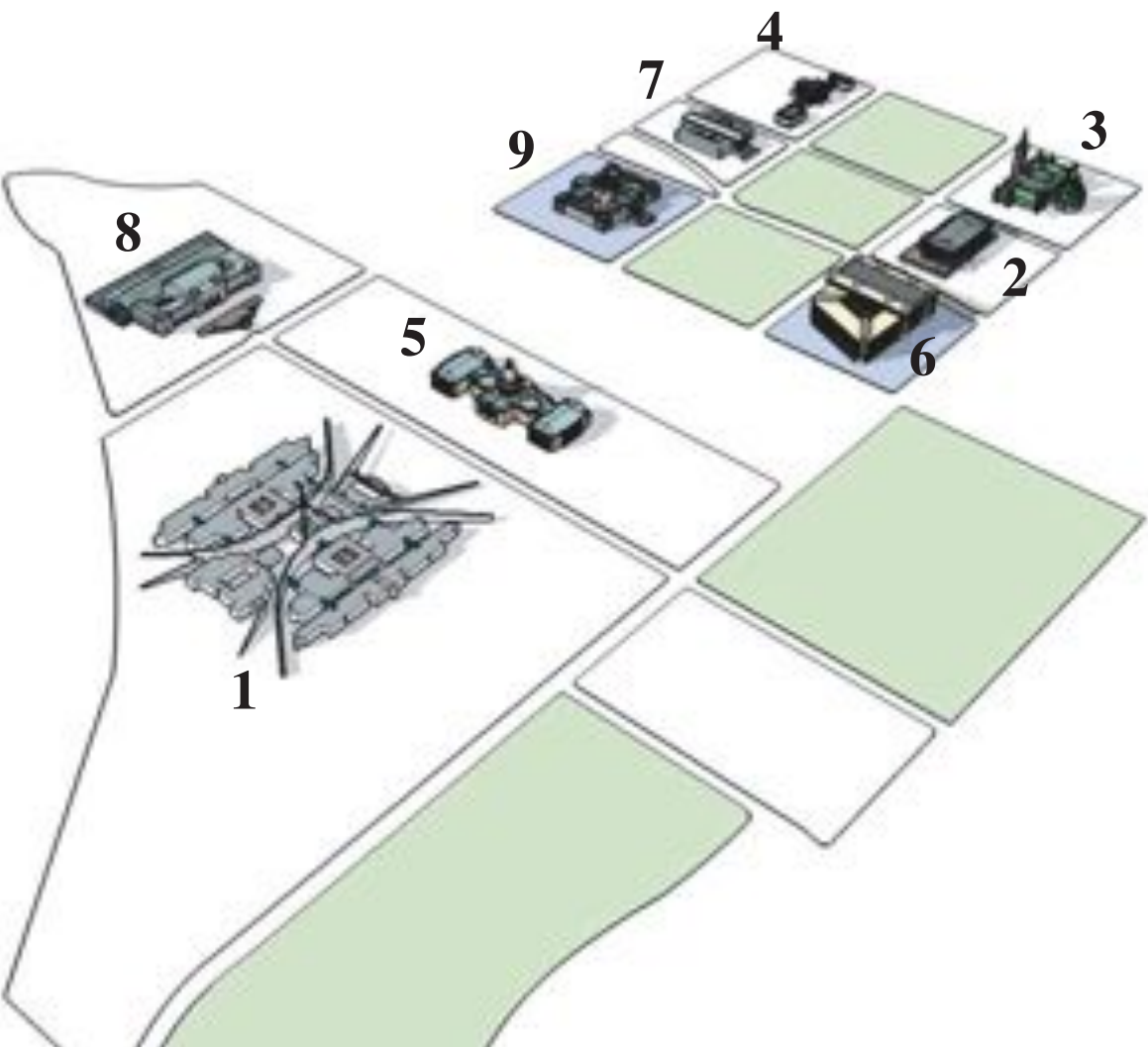
Scale Diagram / Existing National Government Structures



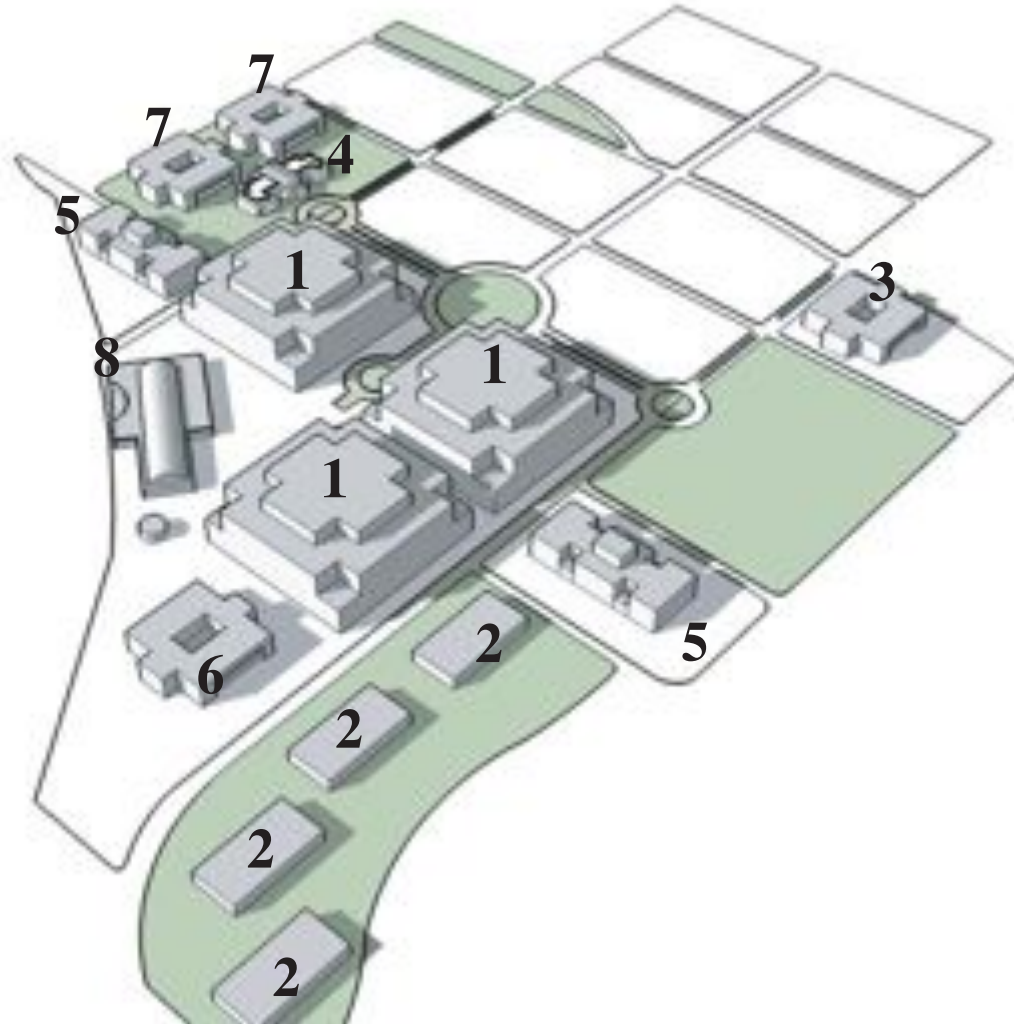
Prototypes / Examples

We have started with a few assumptions about space needs for any capital, and developed some generic square footage numbers to use as a base. Assuming that we would be merging several capital cities into one, a few government functions would be required from the outset. We have taken examples from key government facilities in the US, Canada and Australia; to use as prototypes and examples for the Tshwane case study. The diagrams illustrated here can be used as a starting point in the development of base planning and framework sketches.





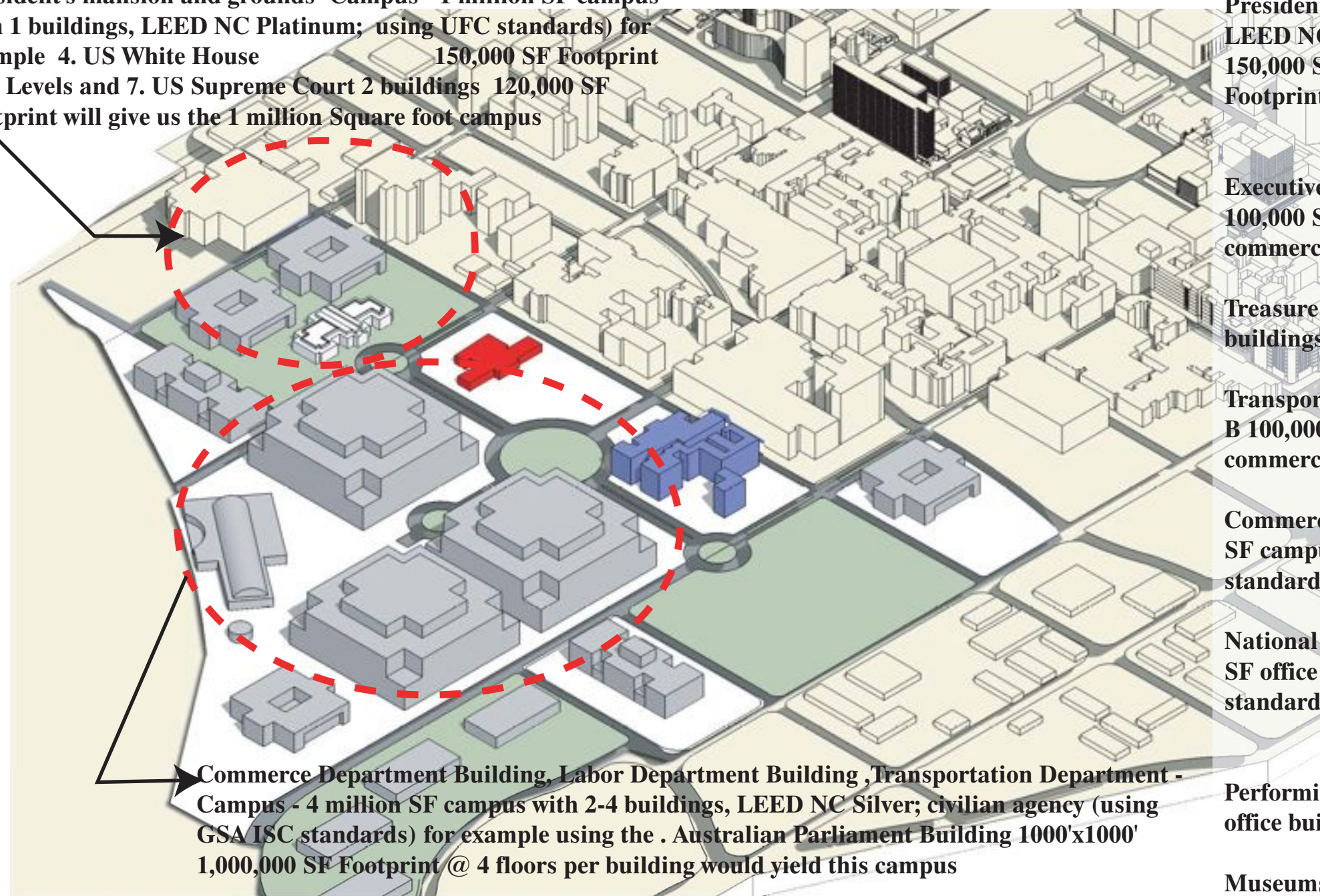
1. Australian Parliament Building	1000'x1000'	1,000,000
SF Footprint		
2. Australian National Library	500'x250'	125,000
SF Footprint		
3. Canadian Parliament Building	450'x400'	180,000
SF Footprint		
4. US White House	600'x250'	150,000
SF Footprint		
5. US Capitol Building	750'x300'	225,000
SF Footprint		
6. US FBI	500'x430'	215,000
SF Footprint		
7. US Supreme Court	300'x400'	120,000
SF Footprint		
8. Union Station	600'x500'	300,000
SF Footprint		
9. Library Of Congress	500'x450'	225,000
SF Footprint		



Scale Diagram Elements on Scheme A / Program Blocking on Scheme B



President's mansion and grounds- Campus - 1 million SF campus with 1 buildings, LEED NC Platinum; using UFC standards) for example 4. US White House 150,000 SF Footprint @ 4 Levels and 7. US Supreme Court 2 buildings 120,000 SF Footprint will give us the 1 million Square foot campus



Commerce Department Building, Labor Department Building, Transportation Department - Campus - 4 million SF campus with 2-4 buildings, LEED NC Silver; civilian agency (using GSA ISC standards) for example using the . Australian Parliament Building 1000'x1000' 1,000,000 SF Footprint @ 4 floors per building would yield this campus

Proposed Program

President's mansion and grounds- Campus - 1 million SF campus with 1 buildings, LEED NC Platinum; using UFC standards) for example 4. US White House 150,000 SF Footprint @ 4 Levels and 7. US Supreme Court 2 buildings 120,000 SF Footprint will give us the 1 million Square foot campus

Executive office buildings 2 or 3, Single Buildings, 3-5 story Commercial Class B 100,000 SF office building, LEED NC Silver; mixed office and retail (using commercial standards)

Treasure Building Campus - 1/4 million SF campus with 2(office- Public banking) buildings, LEED NC Silver; Banking institution (using commercial standards)

Transportation Department - , lets use Single Building, 3-5 story Commercial Class B 100,000 SF office building, LEED NC Silver; mixed office and retail (using commercial standards)

Commerce Department Building, Labor Department Building- Campus - 4 million SF campus with 2-4 buildings, LEED NC Silver; civilian agency (using GSA ISC standards)

National Archive Building- Single Building, 3-5 story Commercial Class B 350,000 SF office building, LEED CS and CI Silver; mixed office (using commercial standards)

Performing Arts Center- Single or Multi Building, Commercial Class A 750,000 SF office building, LEED NC Gold; civilian federal agency (using GSA ISC standards)

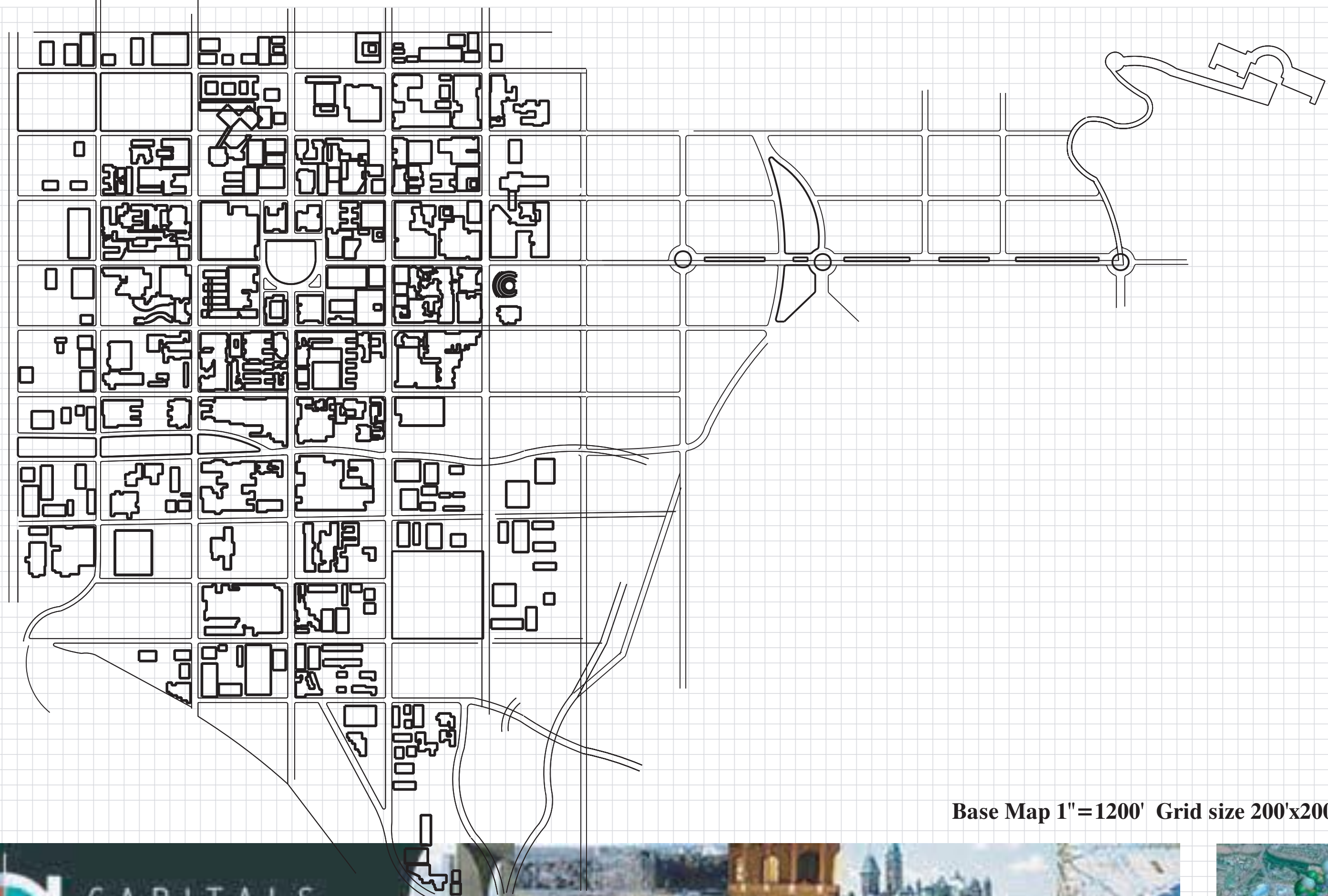
Museums (four)- Campus - 1 million SF campus with 4 buildings, LEED NC Silver; educational institution (using commercial standards)

State Protection Service- Single or Multi Building, Commercial Class A 750,000 SF office building, LEED NC Gold; civilian federal agency (using GSA ISC standards)

Department of Justice- Single or Multi Building, Commercial Class A 750,000 SF office building, LEED NC Gold; civilian federal agency (using GSA ISC standards)

Programming Prototypes Applied





Base Map 1" = 1200' Grid size 200'x200'



Tshwane BIMstorm Sustainability Guidelines



	PLANNING GOALS	CONSTRUCTION	PARKS OPEN SPACE	NATURAL & RIPARIAN AREAS	COURTS Basketball Volleyball	LANDSCAPED AREAS	TRAILS	BUILDINGS / PUBLIC FACILITIES / PARKING	COMMEMORATIVE / PUBLIC ART
Environmental Issues to address	noise	stormwater runoff dewatering waste generation	pesticide use irrigation /stormwater runoff lighting garbage generation excess noise	Habitat disruption Stormwater runoff invasives	Impervious surface Lighting Garbage generation Excess noise	exotic plants . invasives pesticide use irrigation	Lighting Impervious surfaces Garbage generation	Lighting Impervious surfaces / stormwater runoff	Lighting Impervious surfaces
MATERIALS SELECTION / SITE FURNITURE & EQUIPMENT	Use recycled content materials and products made from environmentally-responsible forest management to increase demand for these products and decrease demand for materials with a detrimental impact on the environment. Use local materials to increase the demand for local materials and decrease the transportation impacts Promote recycling for waste generated on-site to decrease the amount of waste sent to the landfill.	Recycle asphalt from parking lots	Consider artificial turf vs. natural turf for multi-purpose fields	N/A	Nike has a program to reuse sneaker soles as basket ball court surfaces	N/A			
Standards	<ol style="list-style-type: none"> 1. Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of pre-consumer content constitutes at least 20% based on cost of the total value of materials in the project. LEED NC Version 2.2 MR Credit 4.2 2. Use building materials or products that have been extracted, harvested, manufactured, or recovered within 500 miles of the project site for at least 10% (based on cost) of the total materials value. LEED NC Version 2.2 MR Credit 5.1 3. Use a minimum of 50% of wood-based materials and products, which are certified in accordance with the Forest Stewardship Council's (FSC) Principles and Criteria, for wood building components. These components include, but are not limited to, structural framing and general dimensional framing, flooring, sub-flooring, wood doors and finishes. Only include materials permanently installed in the project. Furniture may be included, providing it is included consistently in MR Credits 3–7." – LEED NC Version 2.2 MR Credit 7 4. Provide numerous and well-located recycling areas that are dedicated to the collection and storage of materials for recycling including at a minimum paper, cardboard, glass, plastics, and metals. LEED NC Version 2.2 MR Prerequisite 1 5. Use artificial turf on multi-purpose recreation fields whenever possible. 								

Tshwane BIMstorm Sustainability Guidelines



	PLANNING GOALS / Standard	CONSTRUCTION	RECREATION FIELDS	NATURAL AREAS	COURTS	RIVERFRONT AREAS	LANDSCAPED AREAS	TRAILS	BUILDINGS / PUBLIC FACILITIES	COMMEMORATIVE / PUBLIC ART
ENERGY	Minimize the energy demand of the park.		Also see Lighting section	N/A	Also see Lighting section <i>Are there court surfaces that have better reflectivity?</i>	N/A N/A		Also see Lighting section Provide shade along 50% trails within 5 years of inauguration ⁴	Also see Lighting section Orient and locate buildings to reduce energy loads and minimize / maximize prevailing wind impact Maximize passive solar opportunities Optimize use of daylight <i>Do we want to encourage onsite energy generation?</i>	Also see Lighting section
Standards	<ol style="list-style-type: none"> 1. Comply with prescriptive measures of the ASHRAE Advanced Energy Design Guide for small office buildings or small retail buildings, as appropriate to building type 2. Use roofing materials with a SRI of 78 for a low-sloped roof and 29 for a steep-sloped roof (if not green roof) 3. Use paving materials with a Solar Reflectance Index (SRI) of at least 29 or an open grid paving system⁵ 									

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TRANSPORTATION IMPACTS	<p>Provide neighborhood, community, visitor, commuter pedestrian access and facilitate pedestrian access to and through site.</p> <p>Promote strong connections to adjacent communities</p> <p>Support and increase pedestrian accessibility, transit use, and bicycle access to reduce motor vehicle use.</p>		Provide bike racks		Provide bike racks	Provide boat docking facilities	Provide	<p>direct and safe connections from park trails to existing street grid and off-site trails</p> <p>Trails should meet ADA design guidelines</p> <p>Provide on-site bike rental</p>	<p>Explore alternative transit services, such as ferries, shuttles, during peak use periods</p> <p>Provide ample bicycle parking</p> <p>Provide car sharing parking facilities</p>	
Standard / Guidelines	<ol style="list-style-type: none"> 1. Expand or establish dedicated pedestrian routes to the park from nearby bus stops, schools, and other important pedestrian nodes. 2. Expand or establish dedicated bicycle lanes and pathways to the park. 3. Implement traffic calming measures on all streets surrounding the park. 									

Tshwane BIMstorm Sustainability Guidelines



	PLANNING GOALS / Standard	CONSTRUCTION	PARKS OPEN SPACE	NATURAL AREAS	COURTS	RIVERFRONT AREAS	LANDSCAPED AREAS	TRAILS	BUILDINGS / PUBLIC FACILITIES / PARKING	COMMEMORATIVE / PUBLIC ART
WATER QUALITY / STORMWATER MANAGEMENT**	<p>Eliminate stormwater from leaving the site via pipes.</p> <p>Eliminate stormwater pollutants from flowing into the Anacostia</p> <p>Reduce impervious cover to promote infiltration unless site contamination requires that infiltration be avoided.</p> <p>Retain runoff onsite for reuse</p>	<p>All construction activities must meet DDOE erosion and sedimentation regulations</p> <p>Consider onsite retention of water from dewatering activities necessary for construction</p>	<p>Use vegetated swales around recreation fields to manage stormwater on-site</p> <p>Aerate and add soil amendments (compost, sand) to relieve field compaction</p> <p>Dethatch when turf is too thick</p> <p>Fertilize only as needed</p>	<p>Use planted buffers to direct drainage</p> <p>Use Soil bioengineering (SB) system of live plant materials to provide erosion control, slope and stream bank stabilization, landscape restoration, and wildlife habitat</p>	<p>Use vegetated swales around courts to manage stormwater on-site</p>	<p>Use Soil bioengineering (SB) system of live plant materials to provide erosion control, slope and stream bank stabilization, landscape restoration, and wildlife habitat</p>	<p>Rain gardens incorporated into landscaped areas</p> <p>Use Soil bioengineering (SB) system of live plant materials to provide erosion control, slope and stream bank stabilization, landscape restoration, and wildlife habitat</p>	<p>Use porous materials for trail construction</p>	<p>Buildings will use green roofs, cisterns, and rain barrels</p> <p>Bio-retention cells near impervious surfaces</p> <p>Design buildings to divert at least 50% of the wastewater generated to be reused and replace the use of potable water</p> <p>Use alternative surfaces and non-structural techniques to reduce imperviousness and promote infiltration</p>	<p>Use alternative surfaces and non-structural techniques to reduce imperviousness and promote infiltration</p>
Standard	<ol style="list-style-type: none"> Buildings and facilities must not be located within 100-year floodplain All stormwater must be filtered to remove sediments and pollutants, with vegetated systems preferred over all others. Retention and onsite reuse required for the one-inch in 24-hour storm following 48 hours of dry conditions² All paved surfaces and building areas shall have adjacent vegetated swales and buffers to increase tree cover and shade, mitigate noise, minimize stormwater and emissions. Use alternative surfaces such as pervious pavement or grid pavers to reduce imperviousness and promote infiltration. <ol style="list-style-type: none"> IPM is required for site maintenance and plant management. The Sustainable Sites Initiative, Nov. 2007. Encourage IPM training for all site managers. The Sustainable Sites Initiative, Nov. 2007. 									

Tshwane BIMstorm Sustainability Guidelines



	PLANNING GOALS / <i>Standard</i>	CONSTRUCTION	RECREATION FIELDS / COURTS / TRAILS	NATURAL AREAS	RIVERFRONT AREAS	LANDSCAPED AREAS	BUILDINGS / PUBLIC FACILITIES	COMMEMORATIVE / PUBLIC ART
LIGHTING	<p>Light areas only when necessary and minimize light trespass from the site.</p> <p>Reduce sky-glow to increase night sky access</p> <p>Use minimal-impact lighting techniques.</p> <p>Improve nighttime visibility through glare reduction</p> <p>Reduce impact on nocturnal environments⁸</p>	N/A	<p>Use metal-halide lights</p> <p>To avoid visual clutter, strive for fewest number of luminaires on fewest number of poles, with thinnest poles possible</p>	<p>Avoid lighting in and around natural areas to eliminate light trespass to maximum extent possible.</p>	<p><i>Do we have the same standard as natural areas or are there reasons to illuminate the riverfront?</i></p>	<p>Tall shrubs and trees should be considered as screens to reduce glare and spill light.</p>	<p>All lights on automatic shut-ff with manual override for after hours use.</p>	<p><i>Do we allow uplighting of art or commemorative works?</i></p> <p>For consideration: <i>Prohibit outside illumination of any building and/or surrounding landscape within the park for esthetic or decorative purposes between 11:00 p.m. and sunrise</i>⁹</p>
Standard	<ol style="list-style-type: none"> No outdoor recreation shall be illuminated between 11:00 p.m. and sunrise except to complete a specific organized recreational event, in progress and under illumination in conformance with this ordinance at 11:00 p.m.¹⁰ Contain light trespass to 0.1 footcandle from any plane across private property lines¹¹ Brightness and glare should be contained with aiming angles and shielding and hooding (use of visors) of luminaires such that the brightness from any luminaire is not objectionable off site.¹² Skyglow (upward light trespass) should be contained to the greatest extent possible. A rough estimate of upward light trespass should be measured with a point-by-point readout of a black ceiling at approximately the mounting height of the luminaries.¹³ To ensure maximal containment of light, design lighting systems for a single type of sport (for either bi-directional sports like soccer/football/rugby or multi-directional sports like baseball/softball). All non-emergency interior lighting shall be automatically controlled to turn off during non-park business hours. LEED for New Construction SS Credit 8. 							

Tshwane BIMstorm Sustainability Guidelines



PLANNING GOALS / Standard	CONSTRUCTION	PARKS OPEN SPACE	NATURAL AREAS	COURTS	RIVERFRONT AREAS	LANDSCAPED AREAS	TRAILS	BUILDINGS / PUBLIC FACILITIES / PARKING	COMMEMORATIVE / PUBLIC ART
WATER CONSERVATION Minimize potable water use in buildings to reduce the impact on natural water resources Maximize water harvesting by using only captured rainwater, recycled wastewater, recycled graywater for irrigation	Use only non-potable water for construction purposes.	Use only captured rainwater, recycled wastewater, recycled graywater for irrigation Mow high - up to 3 inches - and often - cut no more than a third of blade length	No irrigation systems		Must comply with NPS Clean Marina Guidebooks for any new marina facilities	Use native plants Use only captured rainwater, recycled wastewater, recycled graywater for irrigation		water use with proven water savings strategies	All fountains must recirculate water, be waterproofed, use of a sucking-in cleaning system, use of ultrasounds to eliminate algae, and flow regulating valves. ¹
Standards	1. Employ strategies that use 30% less water than the water use baseline calculated for the building after meeting the 1992 Energy Policy Act fixture performance requirements. Calculations shall include water closets, urinals, lavatory faucets, showers, and kitchen faucets. LEED for Neighborhood Development Pilot GCT Credit 3 2. Install landscaping that does not require permanent irrigation systems. Temporary irrigation systems must be removed within two years of installation. LEED for Neighborhood Development Pilot GCT Credit 3								

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PLANNING GOALS / Standard	CONSTRUCTION	RECREATION FIELDS	NATURAL AREAS	COURTS	RIVERFRONT AREAS	LANDSCAPED AREAS	TRAILS	BUILDINGS / PUBLIC FACILITIES	COMMEMORATIVE / PUBLIC ART
SITE CONTAMINATION	<p>Minimize the environmental and human risks from onsite hazardous materials by adequately addressing the soil contamination.</p> <p>Minimize the creation of dust on the site</p> <p>Protect workers from exposure to contamination</p> <p>Control erosion and runoff that could transport contamination</p> <p>Remove soil and ?? dispose off-site</p>								
Standards	<p>ISSUES: <i>LEED does not provide credit for capping or translocation only clean-up that treats, reduces or eliminates the toxicity of contaminated material - -This may not be achievable, and we would not know until further analysis is complete. Alternatively, we can suggest a remediation goal as if the site was to be residential, for all of site, including parking areas?</i></p>								

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WASTE MINIMIZATION	<p>Follow the hierarchy of eliminate, reduce, reuse, recycle, recover, and dispose.</p> <p>Reduce waste hauled to and disposed in landfills</p>	Divert Construction and demolition debris from landfills ³	Provide garbage bins that allow for recycling of paper, corrugated cardboard, glass, plastics, and metals along the trails	Provide	garbage bins that allow for recycling of paper, corrugated cardboard, glass, plastics, and metals along the trails	Impose a "Plastics-free buffer" 200 feet from river?	Landscape waste should be composted	Provide garbage bins that allow for recycling of at least glass and plastics along the trails	<p>Include at least one recycling station for each building or facility</p> <p><i>Would providing drinking fountains help minimize plastic bottles?</i></p>	
Standards	<ol style="list-style-type: none"> 1. Provide a main facility dedicated for the separation, collection, and storage of materials for recycling, including at a minimum paper, corrugated cardboard, glass, plastics, and metals. LEED for New Construction Version 2.2 MR Prerequisite 1. 2. Provide recycling vessels at frequent intervals within the park to encourage recycling. 3. Provide potable water at regular intervals to encourage reduction and reuse of water bottles. 4. All landscape waste should be composted on-site for re-use in landscaping applications. 									