THIS UNSOLICITED CONTRIBUTION TO PUBLIC DISCOURSE CREATES AN INTERNATIONAL-LEVEL SHOWCASE OF CANADIAN SAVOIRE-FAIRE, TECHNOLOGIES AND CONSERVATION. IT MAKES BEST USE OF EXISTING RESOURCES, AND, THROUGH ITS NEW INTERVENTIONS, CONSERVATION AND SUSTAINABILITY TREATMENTS, TAKES THE PROPERTY TO A ZERO-CARBON LEVEL OF ENVIRONMENTAL RESPONSIBILITY. IN PRACTICING "LANDMARKS, NOT LANDFILL", THIS PROPOSAL FOR CHANGE TO THIS RECOGNIZED FEDERAL HERITAGE ASSET DEMONSTRATES THAT HERITAGE CONSERVATION IS ALIVE AND WELL IN CANADA AND LIVING AT THE LEADING EDGE OF ECOLOGY PROTECTION. IT IS A MULTIVALENT SCHEME THAT IS AT ONCE PRACTICAL AND IMAGINATIVE..... AND ENHANCES PLACE. VERY CANADIAN...
PRIME MINISTER’S RESIDENCE, 24 SUSSEX REVITILIZATION

CONCEPT: THE HISTORIC PLACE IS TO BE RETURNED TO WHAT IT WAS INTENDED TO BE, EVEN THROUGHOUT ALL ITS CHANGES: A SINGLE-FAMILY RESIDENCE. TO PROVIDE FOR A GROWING LIST OF “OFFICIAL FUNCTIONS”, THE AGING INDOOR SWIMMING POOL BUILDING IS DISASSEMBLED, PARTS REUSED, AND IN ITS PLACE A NEW ADDITION, CONNECTED BY A SHORT BASEMENT LEVEL TUNNEL TO THE HOUSE, PROVIDES FOR THE PM’S “HOME OFFICE” AND OTHER OFFICIAL REQUIREMENTS. WHILE ESSENTIALLY UNSEEN FROM THE ROAD AND THE RIVER ON EACH SIDE OF THE PROPERTY, THE NEW WING INTERPRETS CONTEMPORARY CANADIAN DESIGN IN A SYMPATHETIC WAY TO THE HISTORIC PLACE, THROUGH SCALE, MATERIALS AND FORM. THE EXISTING BUILDING IS CAREFULLY REHABILITATED, PROTECTING CHARACTER-DEFINING ELEMENTS, WHILE INTERJECTING A TRIAD OF NEW INTERVENTIONS AT FRONT THAT REPLACE/REINTERPRET PREVIOUS LOST OR DEGRADED ELEMENTS. THESE ELEMENTS HELP THE BUILDING TO COMFORTABLY “TALK” TO THE COMPLEMENTARY NEW STRUCTURE BUILT NEARBY. OFFICIAL WING: CEREMONIAL ENTRY AND SPIRIT-PLACE GUIDE ONE TO THE PRINCIPAL RECEPTION ROOMS. CANADIAN MATERIALS (PRIMARILY LOCAL) ARE USED THROUGHOUT. IN SHORT, A DUAL EMPHASIS ON BOTH NATURAL AND CULTURAL CONSERVATION.
PRIME MINISTER’S RESIDENCE, 24 SUSSEX REVITALIZATION

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THE PRIME MINISTER’S RESIDENCE IS A NATIONAL MODEL OF LEADERSHIP, ASSERTING AN ECONOMICAL, LOGICAL, ENVIRONMENTAL, AND CULTURAL MANDATE FOR SUSTAINABLE CONSERVATION AND NET POSITIVE DESIGN. REHABILITATION OF THE HISTORIC HOME AND A NEW OFFICIAL WING WILL FEATURE A “WHOLE-BUILDING ECOLOGY” APPROACH, GUIDING A SELECTION OF STRATEGIES WHICH WORK TOGETHER TO REGENERATE THE NATURAL ENVIRONMENT AND ENHANCE THE HERITAGE VALUES. THESE SUSTAINABLE STRATEGIES MAKE IT A SHOWCASE FOR ENVIRONMENTAL STEWARDSHIP AND ACHIEVING ZERO NET CARBON PERFORMANCE.

**SUSTAINABLE MATERIALS**
Maintenance and design criteria for existing materials, and new materials are selected based on low/no VOC, local sourcing, cradle to cradle, renewable, durable/reparable.

**GREEN ROOF**
Reduces urban heat island, summer cooling loads, winter heating loads, cleans rainwater and maximizes biodiversity with local plants. Improves photosynthetic system efficiency by cooling.

**SOLAR THERMAL**
Solar thermal collectors use solar radiation to generate 50%-90% of heat required for domestic hot water. A 400 L tank for a household of 6 people requires 8.8 m² of area.

**PERMEABLE PAVING**
The benefits of permeable paving are numerous. It allows for stormwater management, prevents runoff and associated pollution, and replenishes groundwater supply.

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**GREYWATER RECYCLING**
Existing, new-build systems will reside in the basement. These systems will reside in the 2 basements.

**BIOMASS**
High efficiency, home burn pellets made from waste sawdust or rice hulls to generate supplementary heat. Wood pellets are carbon neutral, renewable and burn cleanly.

**BIKE SHELTER**
An electric car charging station is provided at each of the three parking areas on the property.

**ELECTRIC CAR CHARGING STATION**
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**SHADING DEVICES**
Roof overhangs and deciduous trees control solar radiation and heat entering the building to keep it cool in the summer and warm in the winter.

**BIOSWALES**
Collect, filter and infiltrate contaminated stormwater and excess greywater to replenish groundwater and eliminate surface runoff.

**VEGETATION**
Mature trees protect the building cool in the day and warm in the night.

**WIND TURBINES**
The “energy ball” wind turbine is well suited for this site due to its quiet operation and high efficiency at low wind speeds. Six turbines annually produce approximately 600 kWh net.

**SOLAR PHOTOVOLTAIC**
Photovoltaic solar panels capture radiation from the sun to generate electricity. A combination of spinel and thin film solar modules provide 30%-40% of electricity requirements.

**SUSSEX DR.**
The neighbourhood is designed to encourage family to cycle. Bicycle parking is provided at each of the three parking areas on the property.
PRIME MINISTER’S RESIDENCE, 24 SUSSEX REVITALIZATION

UNDERSTANDING THE BUILDING AS AN INTERCONNECTED ENVIRONMENTAL SYSTEM HELPS IDENTIFY THE OPTIMAL CHANGES AND INTERVENTIONS THAT HAVE THE LEAST IMPACT UPON HERITAGE VALUE AND THE MOST IMPACT UPON SUSTAINABLE PERFORMANCE. THIS “WHOLE BUILDING ECOLOGY” APPROACH GUIDES THE SELECTION OF STRATEGIES WHICH WORK TOGETHER TO REGENERATE THE NATURAL ENVIRONMENT WHILE SIMULTANEOUSLY PRESERVING AND ENHANCING THE HERITAGE VALUES OF THE HISTORIC HOME. THESE “SUSTAINABLE REHABILITATION” HERITAGE CONSERVATION STRATEGIES MAKE IT A SHOWCASE FOR CULTURAL CONSERVATION STEWARDSHIP WHILE FOLLOWING THE STANDARDS AND GUIDELINES FOR THE CONSERVATION OF HISTORIC PLACES IN CANADA.

24 SUSSEX CONSERVATION STRATEGIES

1. **SUSTAINABLE REHABILITATION - A** Retrofit, the existing building reduces, controls, and manages emissions better and smarter. It is rehabilitated according to the “Whole Building Ecology” approach which aligns and integrates new interventions with the existing building fabric.

2. **MINIMAL INTERVENTION** The rehabilitation emphasis is placed on the “minimum intervention” approach which reduces the risk of intervention disruption to the existing building fabric.

3. **INHERENTLY SUSTAINABLE FEATURES** Inherently sustainable design focuses on systems that are evaluated and where possible new interventions work with the historic design intent.

4. **PRESERVE CHARACTER** A fully integrated design strategy is aligned with historic and architectural character which respects the exterior form and is compatible with the heritage character of the site.

5. **PAST INTERVENTIONS** Previous interventions, successes, failures, and performance impacts are evaluated for opportunities to work with new and hybrid solutions to optimize sustainable upgrades and help achieve minimal intervention.

6. **SUSTAINABLE MATERIALS** Existing materials are maintained and reused to the maximum extent. New materials are selected based on low embodied energy (cradle to cradle, renewable, durable/repairable).

7. **RENEWING MISSISSIPPI MISSISSIPPI WINDOW** Historic windows are repaired and upgraded with low-e glass, weather stripping and storm windows for energy and cost saving exceeding new double glazed windows.

8. **RENOVATION WOOD WINDOWS** The new addition is separated from the historic building and is scaled and modelled to be like another house on Sussex. Massing, distance, material harmony and design keep new elements compatible.

9. **THERMAL MASS** Large scale landscape elements which shade the building, moderate climate impact, and absorb and store solar heat, keeping the building cool in the day and releasing heat for warmth at night.

10. **MAINTAIN LANDSCAPE** Large scale landscape elements which shade the building, moderate climate impact, and absorb and store solar heat, keeping the building cool in the day and releasing heat for warmth at night.

11. **PASSIVE VENTILATION** Opportunities to locally ventilate systems with central overrides ensures the building is the “right size.”

12. **LOCALIZED CONTROLS** Building envelope and systems behave together, thermal insulation can be installed in non-character-defining spaces (e.g., attic), without adversely affecting the building envelope (e.g., stained glass bridge, new downspouts).

13. **INSULATION** Building envelope and systems behave together, thermal insulation can be installed in non-character-defining spaces (e.g., attic), without adversely affecting the building envelope (e.g., stained glass bridge, new downspouts).

14. **ACTIVE HEATING AND COOLING** More efficient heating/cooling systems which remove the same dual circuits, controls and/or piping maintain efficiency and or designated space containing systems.

15. **WATER EFFICIENCY** Water and waste efficiency is improved with minimally invasive means such as flow rate regulation, greywater and more efficient non-character-defining fixtures.

16. **DURABLE MASONRY** Full rehabilitation of the stone masonry walls and an ongoing maintenance program ensures optimal performance and durability.

17. **MAINTAIN ROOF ELEMENTS** Roof elements which have a functional use and contribute to character-defining are maintained. This includes cupolas, domes, chimneys and dormers.

18. **PROTECT WALLS** Maintenance and/or reinstatement of elements which shield exterior walls and openings, including walls, gutters and downspouts, which limits material degradation.

19. **REINTERPRETING FEATURES** Elements such as operable windows, landscape features are maintained to good operating condition or installed to conserve energy. Interiors are maintained to maintain appearance of original windows.

20. **LOCAL MATERIALS** Locally sourced durable materials are used which are compatible with the local climate and are also considered to be locally appropriate and sustainable (low to no embodied energy).
**PRIME MINISTER’S RESIDENCE, 24 SUSSEX REVITILIZATION**

The Prime Minister’s Residence will be a national model of cultural conservation and net positive design. Revitalization of the historic home is designed and executed according to the “Standards and Guidelines for the Conservation of Historic Places in Canada” (SGCHPC) and with respect for the statement of heritage value. The conservation approach includes an emphasis on the building’s colourful evolution; the proposal is the latest chapter in its history. Specific applicable standards and their conservation/design response are outlined here.

**ADOPT AN APPROACH OF MINIMAL INTERVENTION (STANDARD 3)**

Most of the historic building is simply repaired and preserved with no other intervention.

**NEW WORK IS REVERSIBLE (STANDARD 12)**

Interventions are not destructive to the historic house so that in the event that the new work is removed in the future, the historic form and integrity will be preserved.

**NEW WORK SHOULD BE PHYSICALLY AND VISUALLY COMPATIBLE WITH, SUBORDINATE TO AND DISTINGUISHABLE FROM THE HISTORIC PLACE (STANDARD 13)**

Only three new exterior interventions are incorporated, all of which reference and interpret previous elements of the historic building such as the bow window, oriel window and porte cochere. These contemporary interventions are compatible through proportion, scale, massing, “light touch,” and materials palette. They visually connect with the new Official Wing, harmonizing the two.

**MAINTAIN AND REPAIR CHARACTER-DEFINING ELEMENTS (STANDARD 8)**

The vast majority of the house’s fabric and character-defining elements are preserved. Rigorous maintenance reduces long term costs and the frequency of major interventions. Prioritizing maintenance and repair ensures maximum retention of historic materials and character-defining elements. This is critical to the sustainability strategy because it conserves the embodied energy/carbon of existing materials.

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**CONSERVE CHANGES THAT OVER TIME HAVE BECOME CHARACTER-DEFINING IN THEIR OWN RIGHT (STANDARD 2)**

The evolutionary nature of the house—from Gothic Revival to “chateauesque” to a formal and restrained design—is one of its key character-defining features. Although the 1949 changes are typically associated with a significant loss of heritage character, features from this era such as the grand staircase and front entrance tympanum have become associated with the identity of 24 Sussex and are preserved in the proposed design.

**FIND A COMPATIBLE USE WHICH REQUIRES MINIMAL CHANGE TO ITS CHARACTER-DEFINING ELEMENTS (STANDARD 5)**

24 Sussex was originally a single family home, first for the lumber barons, and then for the Prime Ministers. Rather than forcing the ever-expanding functional requirements of the Prime Minister’s Residence into the historic house, a new Official Wing (1600 m2) is proposed, allowing the house to revert to a purely residential function and retain maximal heritage character. Due to a variety of factors, the existing pool house is in poor condition and a candidate for dismantling. This helps to further minimize disturbance to the historic landscape, and in fact, the contemporary grows out of the landscape.

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