

Arch 463  
ECS  
Fall 2021

Name \_\_\_\_\_

Quiz #4

## "Green Learning?"

For this problem you have the privilege of critiquing the design of the new Learning Centre for the Camley Street Natural Park in King's Cross, London.



Images: Architect's Journal / 24 November 2021

**Climate Context.** London.

### **Architect's Intent.**

This green oasis in the buzz of King's Cross is such an important site for respite and education about wildlife conservation. The history and location of the site is inspirational and infuses the building. Working with the London Wildlife Trust meant sustainability was a joint high priority from the outset, shaping the building and allowing innovative material choices. It will be great to see children and adults alike enjoying building and nature reserve (and hopefully wildlife inhabiting the chimneys, too!).

—Susanne Tutsch, director, Erect Architecture

## The Poop on the Buiding

The building is completed! Erect Architecture has handed over the 233m<sup>2</sup> HLF-funded learning centre to London Wildlife Trust, expanding its visitor engagement at Camley Street Natural Park in King's Cross

Camley Street Natural Park is a protected nature reserve and Site of Interest in Natural Conservation (SINC) in the King's Cross regeneration area. The new centre acts as a gatehouse, greeting visitors to the park, and comprises a large multipurpose learning space, volunteer facilities, small office and café kiosk serving both internal and external areas. The building has also been designed to function for events such as weddings.

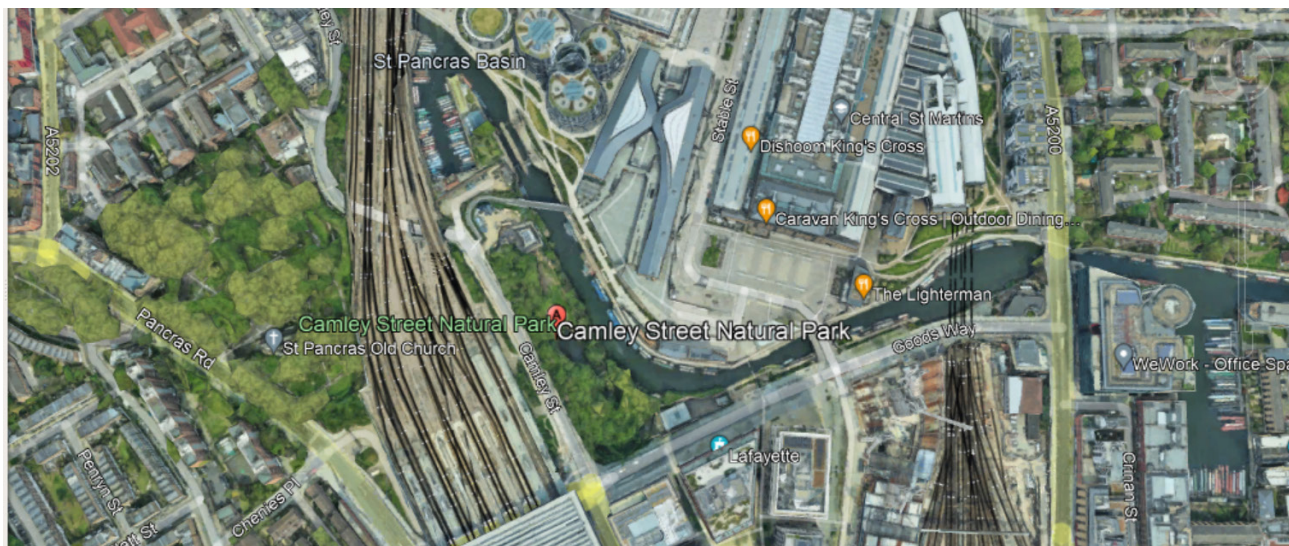
The scheme's roof form of three inverted 'hoppers' takes inspiration from the industrial heritage of the site, which was used as coal drops in Victorian times. These chimney-like structures are also fundamental to its sustainability strategy and provide habitats for nesting birds.

Lit by two pyramidal rooflights, the learning space has been designed to cater for the needs of London Wildlife Trust's learning programme as well as to be rented for conferences and events. The chimneys are a key part of the stack ventilation strategy. Manually operated vents within the external walls can be left securely open for nighttime air purges.

All the rentable spaces enjoy views across the canal and nature reserve as well as direct access to the outdoors. A large roof overhang provides additional outdoor learning and gathering space with external sinks to allow users to wash off after their outdoor activities. A northern arrival space was designed so that a large marquee can be erected alongside the building for additional event capacity.

The building's sustainability credentials are based on simple passive principles. Measures include a timber frame, wood fibre insulation, a timber-clad super-insulated building envelope, naturally daylight spaces, natural ventilation, low-flow taps, rainwater collection and high air-tightness. The natural stain applied to the larch cladding cures and darkens through exposure to weather, reducing the need for maintenance.

— Fran Williams, *Architect's Journal*



Here's the Camley Street Natural Park in the context of London King's Cross. The learning centre is under construction at the north end of the site in this 2020 view.





*Above. View from the northeast.*

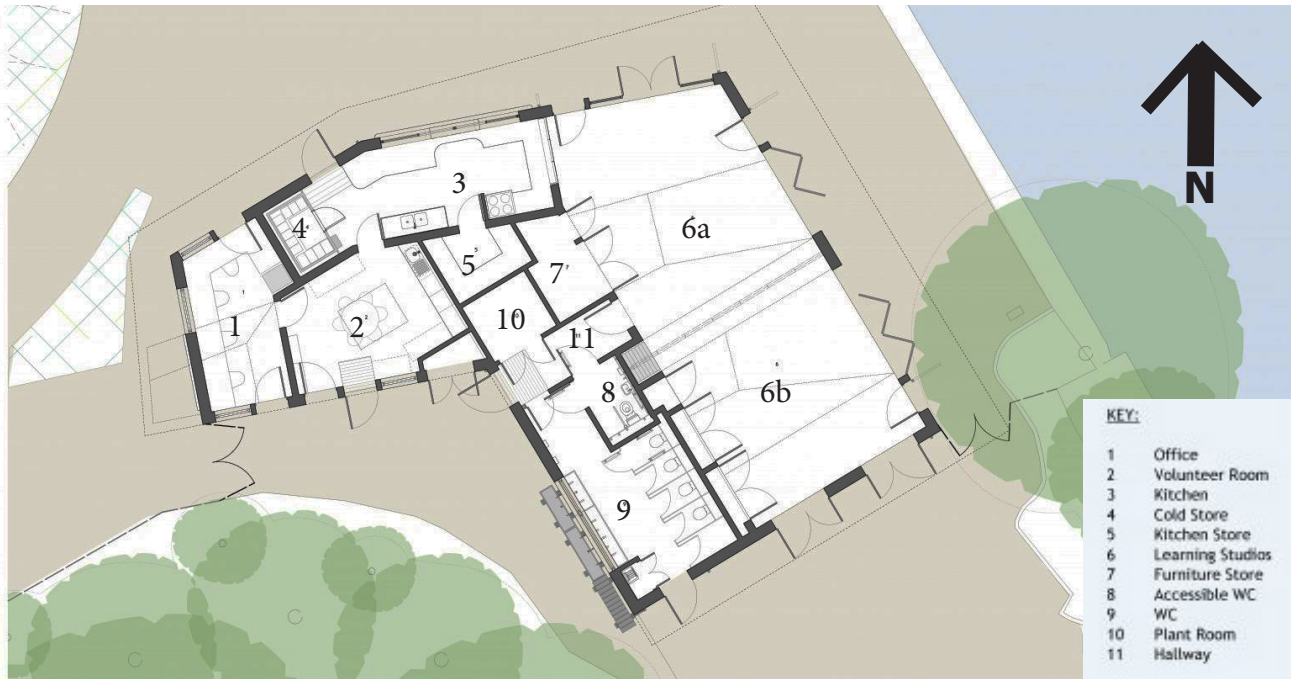
*Right. Event room interior.*

*Below. South façades.*



## Thermal Efficiency

4 points  
1. Propose a mini users' manual for sailing the building's two learning studios (6a & 6b) to take advantage of the natural thermal resources on the site.



*Learning Centre plan. Notes on British English: Cold Store = Refrigerated Storage; Kitchen Store = Pantry; Furniture Store = Furniture Storage; WC = Unisex Bathroom; Plant Room = Mechanical Room.*

## Cooling Days Strategy

## Heating Days Strategy



## Pyramidal Rooflight Operation

4 points

2. Use the section below to help explain how the rooflight should be used to reduce energy use for the learning spaces below. Add a written explanation.



2 points

3. Recommend glazing for the rooflight aperture, based on the glass' role and its visual and thermal characteristics. Explain/defend your choice.

## Green Architecture Strategies

*8 points* 4. Describe four green architecture strategies that have been implemented successfully in the building. Explain why they are successful.

1.

2.

3.

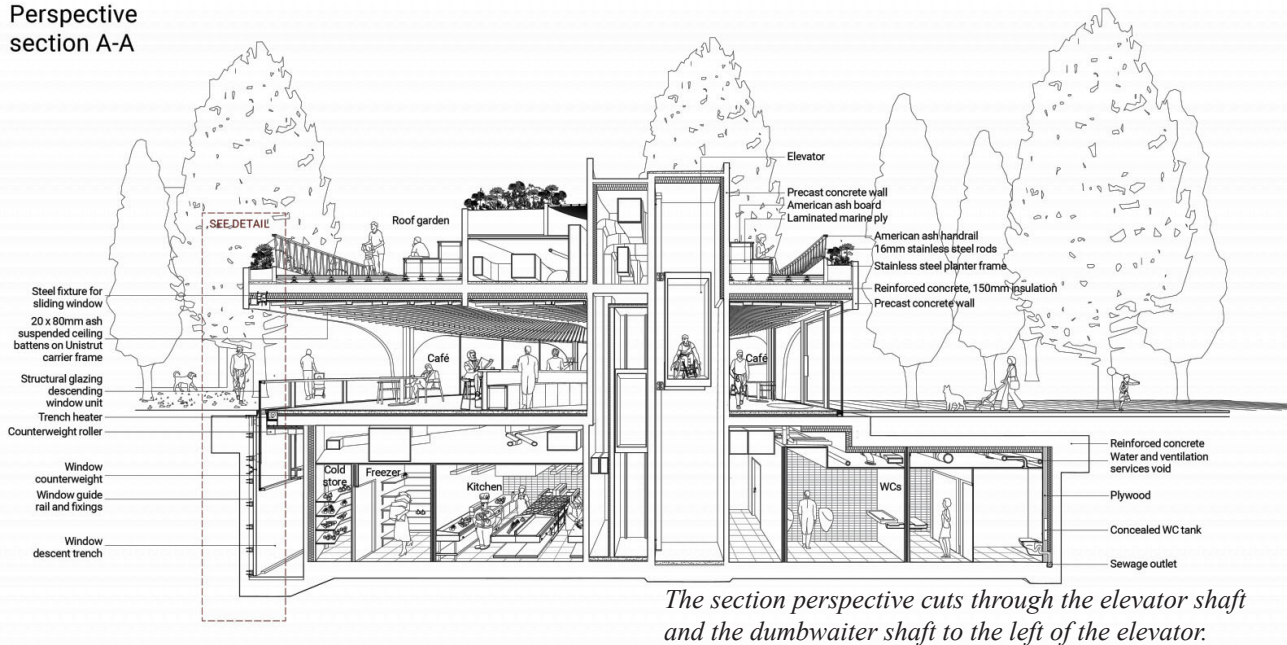
4.

# Elevator Selection

4 points

5. There are two vertical transportation systems in the Duke of York Café, one for people (elevator) and one for food (dumbwaiter). Explain why each of the elevator types below is or is not suitable for each of the building's two lifts.

Perspective section A-A



## 1. Traction Elevator

## 2. Hydraulic Elevator

## 3. Rack and Pinion Elevator

## 4. Mag-Lev