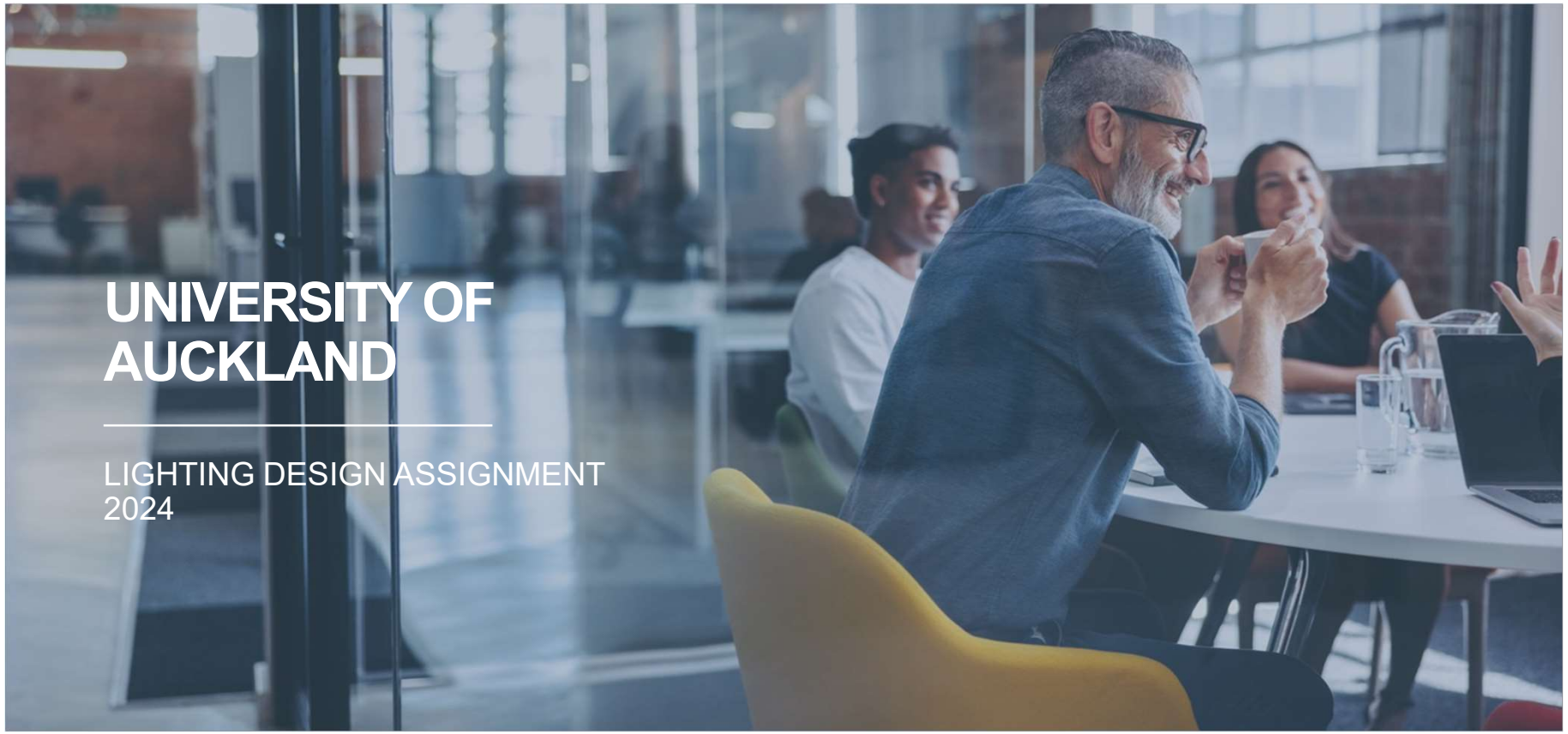


UNIVERSITY OF AUCKLAND

LIGHTING DESIGN ASSIGNMENT
2024

TONY TAVITA – BUSINESS UNIT MANAGER


Why Lighting?
• Digital World
• Thought changers
• Remap Industry
• Connect in ways never intended
legrand®
FIRST NAME / NAME / SERVICE / CONFIDENTIEL
2

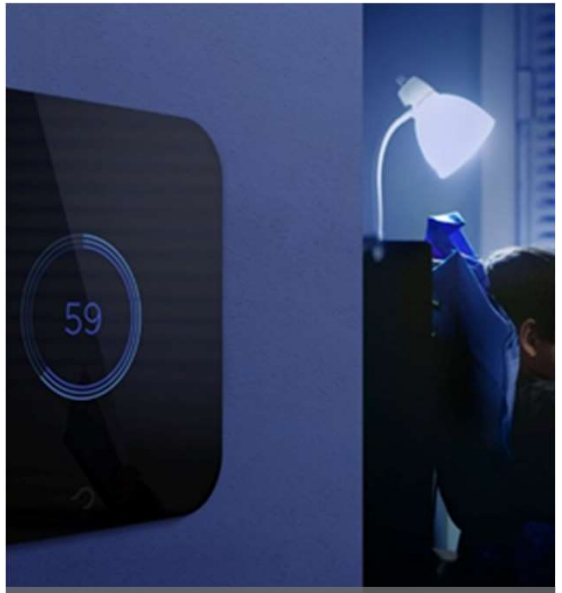
GLASS AGE CORNING 2014

- Forward thinking
- Taking glass to new digital platform
- Engage creative thinking

Digital Platform

Connectivity

Communication



Controllability

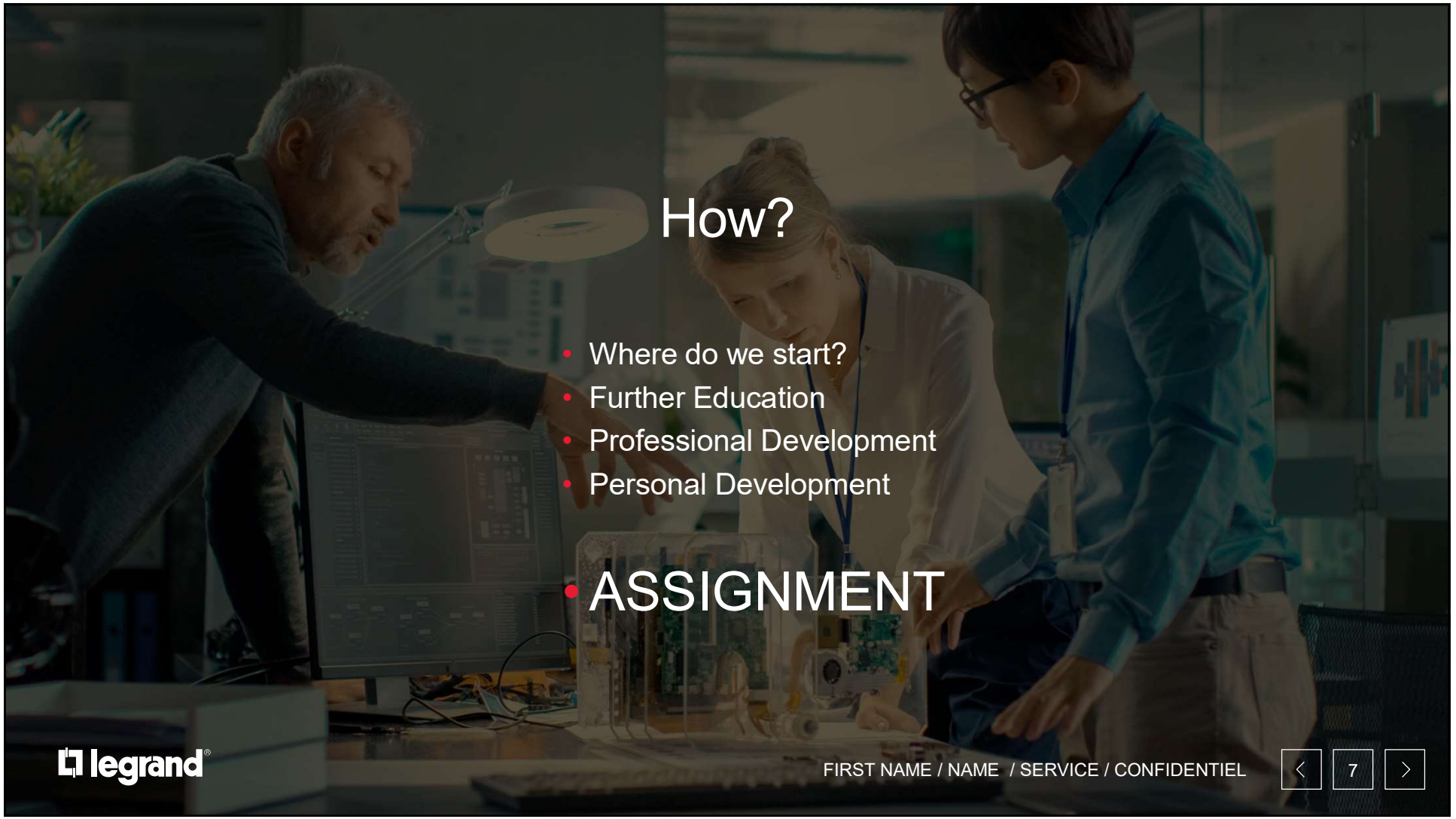
Digital Disruption

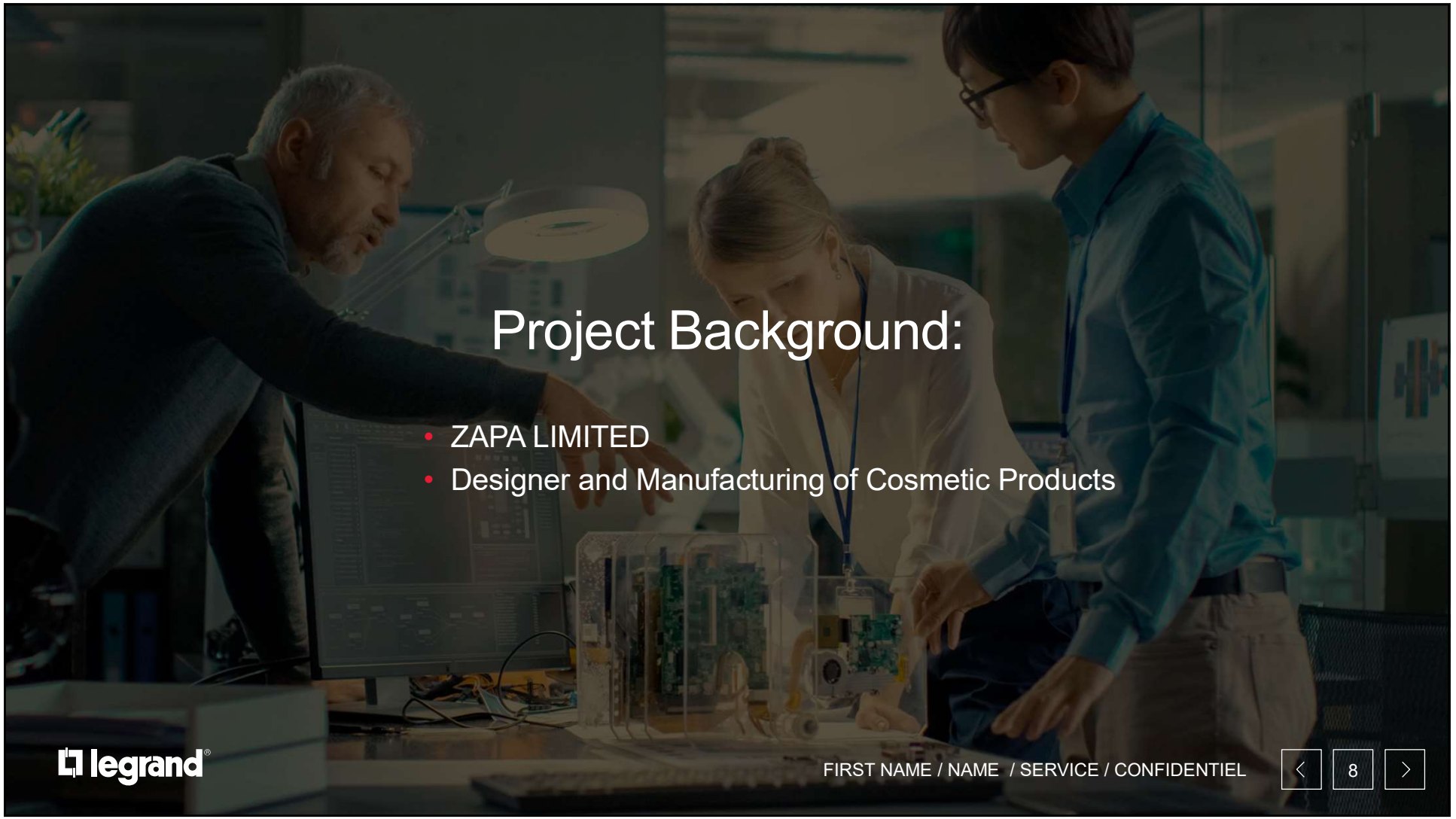
Art and Science of lighting, does it still exist?
Is it still relevant?

- Linking lighting to the digital era that exists in key sectors and developments
- LED revolutionised the traditional lighting terms
- Trusted technology
- Digital components have evolved lighting and no longer rely on coils, glass and gases to produce light
- Lighting is now a plugin to the digital network
- (Un)Smart Systems
- Risks

Where? (career)

- Built Environment – Building Services
- Engineering
- Consultancy
- Advisory
- Architectural
- Construction
- Resource and Manufacturing


How?
Where do we start?
Further Education
Professional Development
Personal Development
ASSIGNMENT



Project Background:

- ZAPA LIMITED
- Designer and Manufacturing of Cosmetic Products

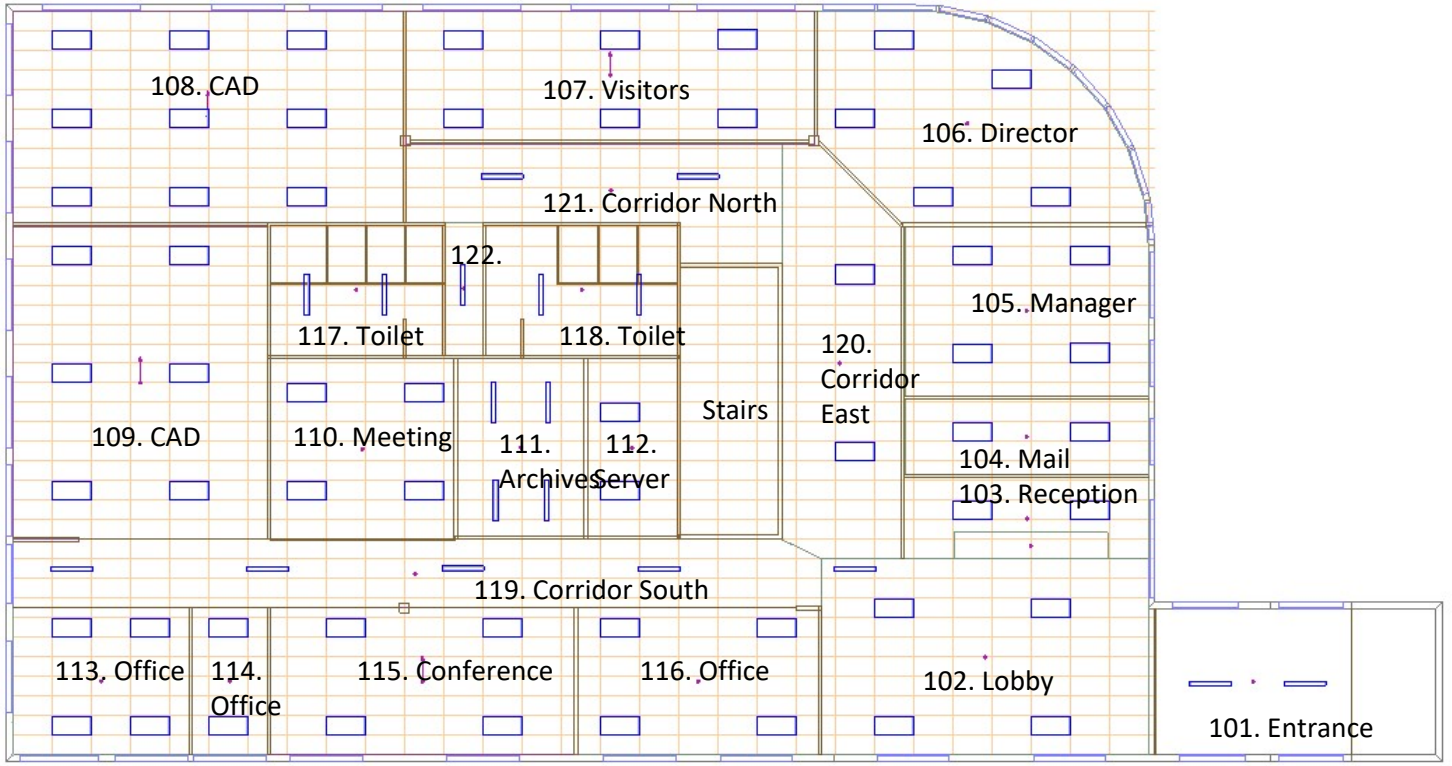
ZAPA LIMITED

- ZAPA Limited **purchased** a two-level building in Thames
- Design engineering team to deliver:
  - Evaluation of the exiting lighting
  - Design new lighting system according to AS/NZS 1680
  - Achieve 10-year payback time
  - Design emergency lighting according to F6/F8 sections of NZ building code
  - Report on annual CO2 Emission

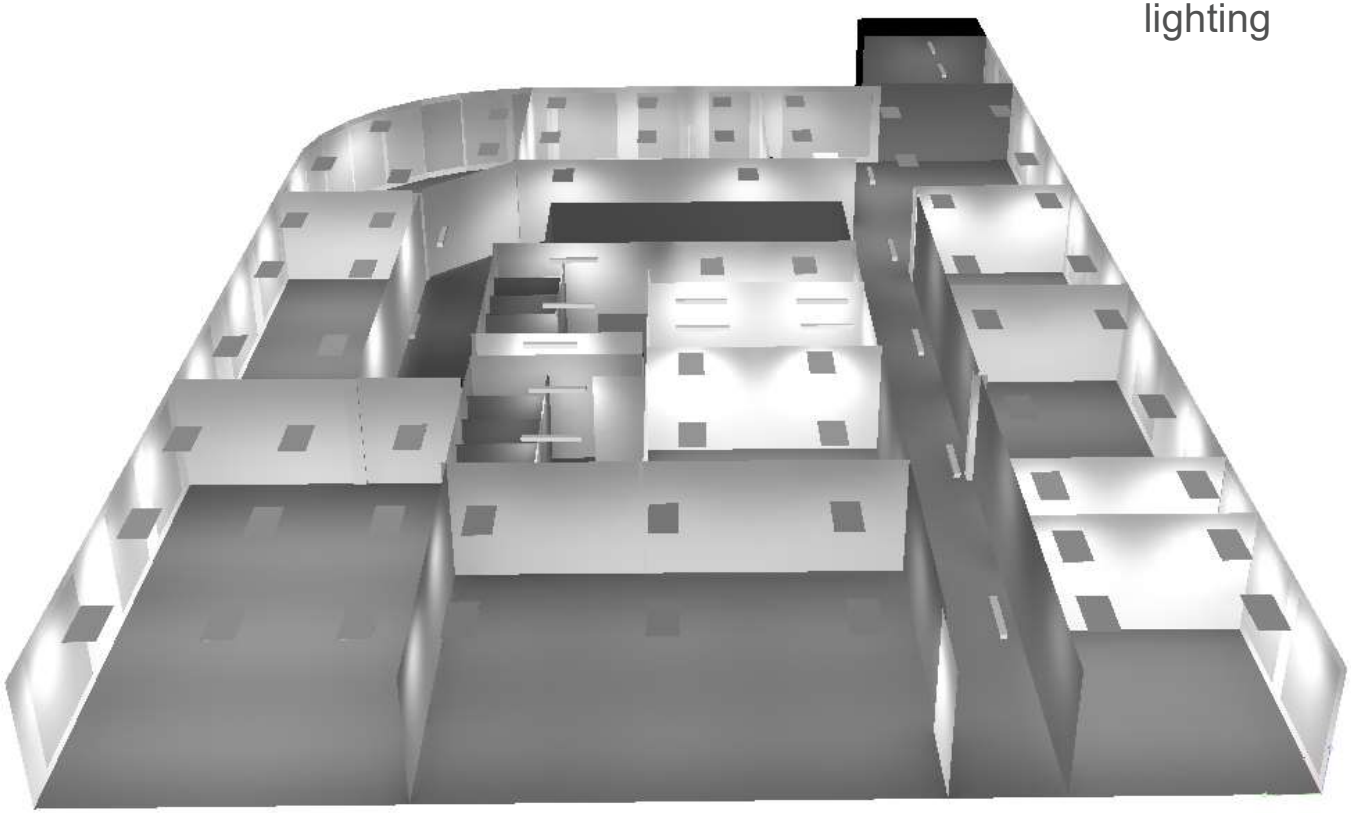

Evaluate Existing Lighting
LEVEL 1

Level 1 Reflected Ceiling Plan

Evaluate the existing lighting



- Evaluate the exiting lighting



Level 1 – 3D view

- Evaluate the exiting lighting

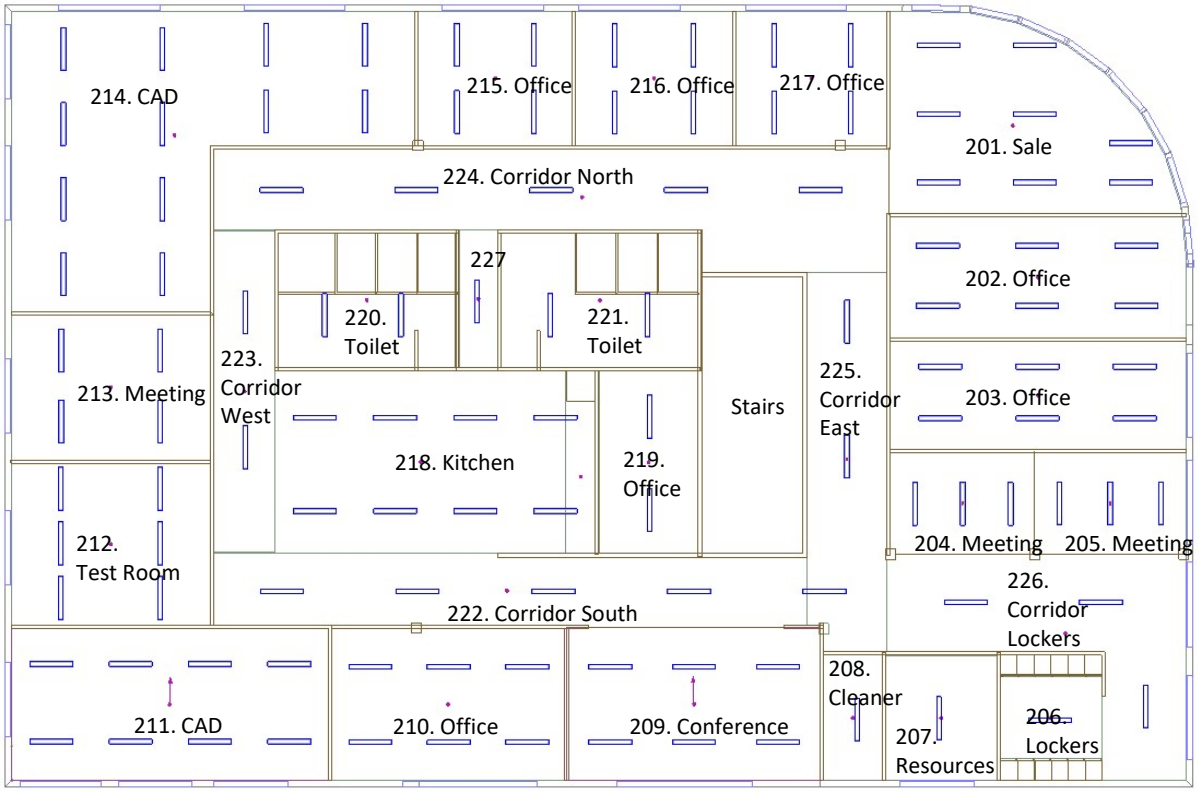
Troffer 4 × 36W

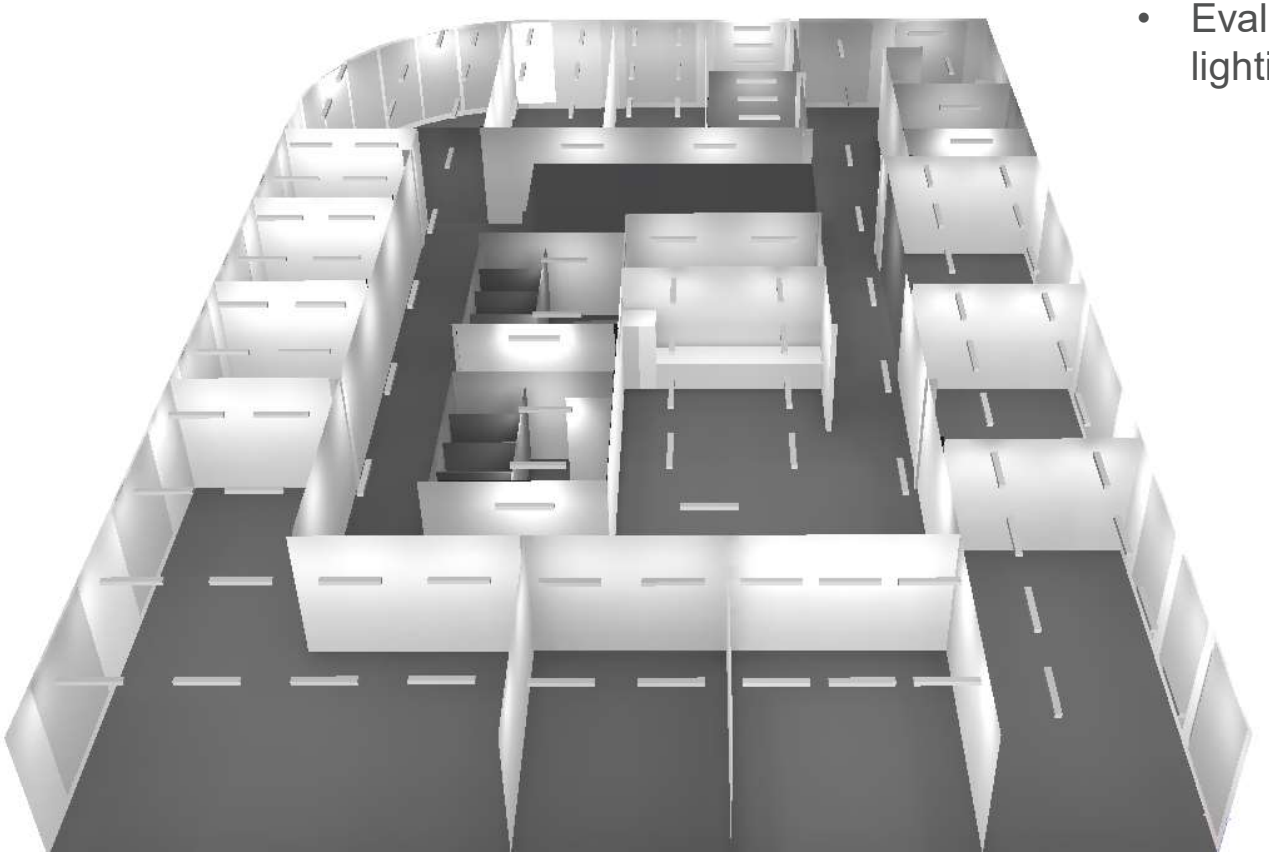
Batten 2 × 36W


Evaluate Existing Lighting
LEVEL 2

Level 2 Reflected ceiling plan

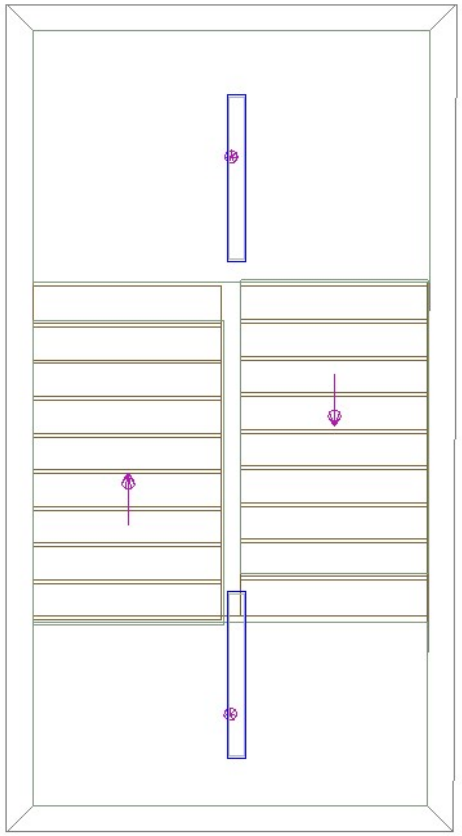
Evaluate the existing lighting





- Evaluate the exiting lighting

Level 2 – 3D view



Stairs


Concept Design Workshop

Design Thinking

Requirements for cylindrical illuminance
Good visual communication and recognition requires a sufficient level of brightness on objects and, above all, on people's faces.

•Facial recognition
•Express emotions
•Inspire
•Collaboration
•Perspective on environment

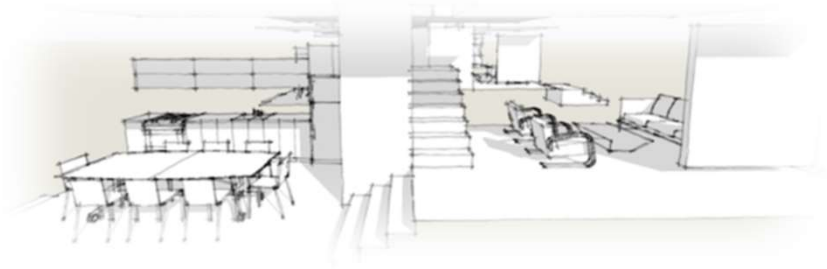
Requirements for contrast lighting

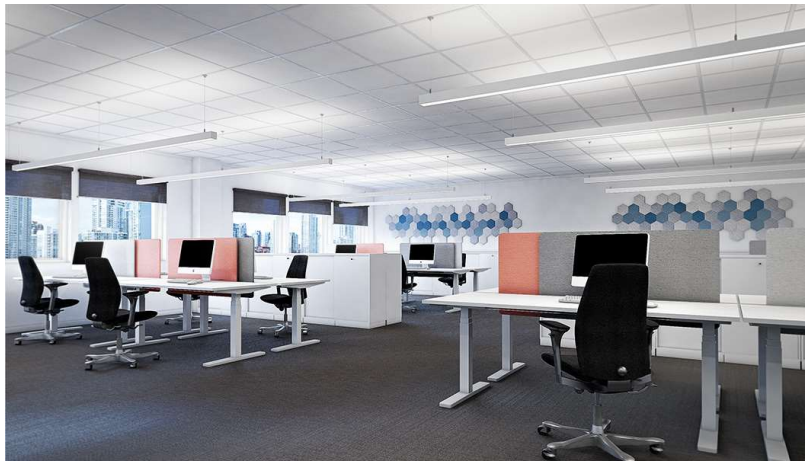
•For visual comfort
•Assist with focal points

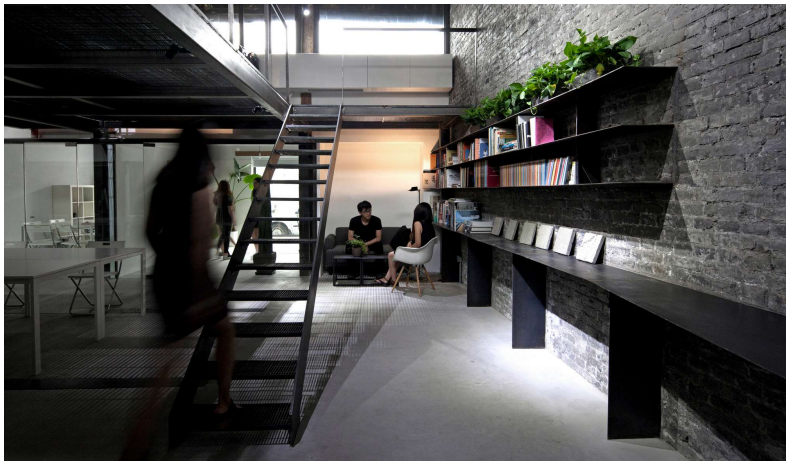
Requirements for good colour rendering

•For visual experience
•performing a visual task and assessing colours
•colours on surfaces, objects and skin should be reproduced in a natural and accurate way.
•affects our safety and well-being
•colour rendering Ra index work task under EN 12464-1

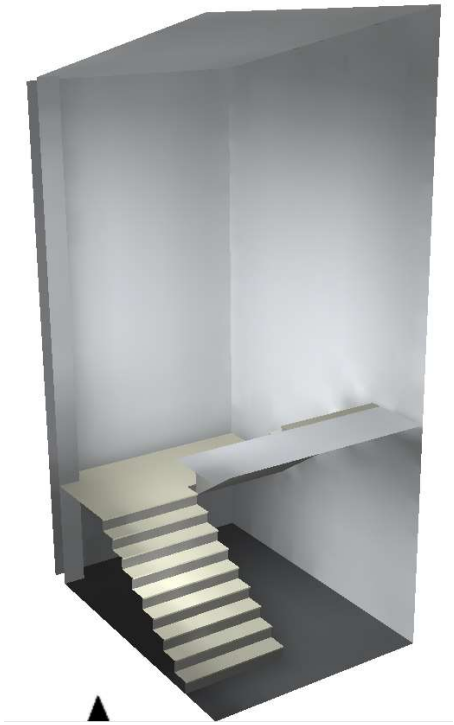
Concept

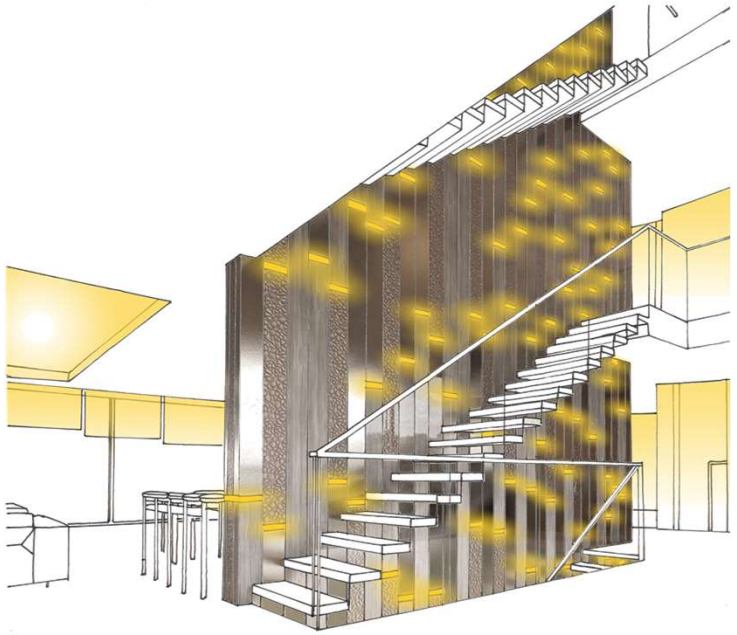


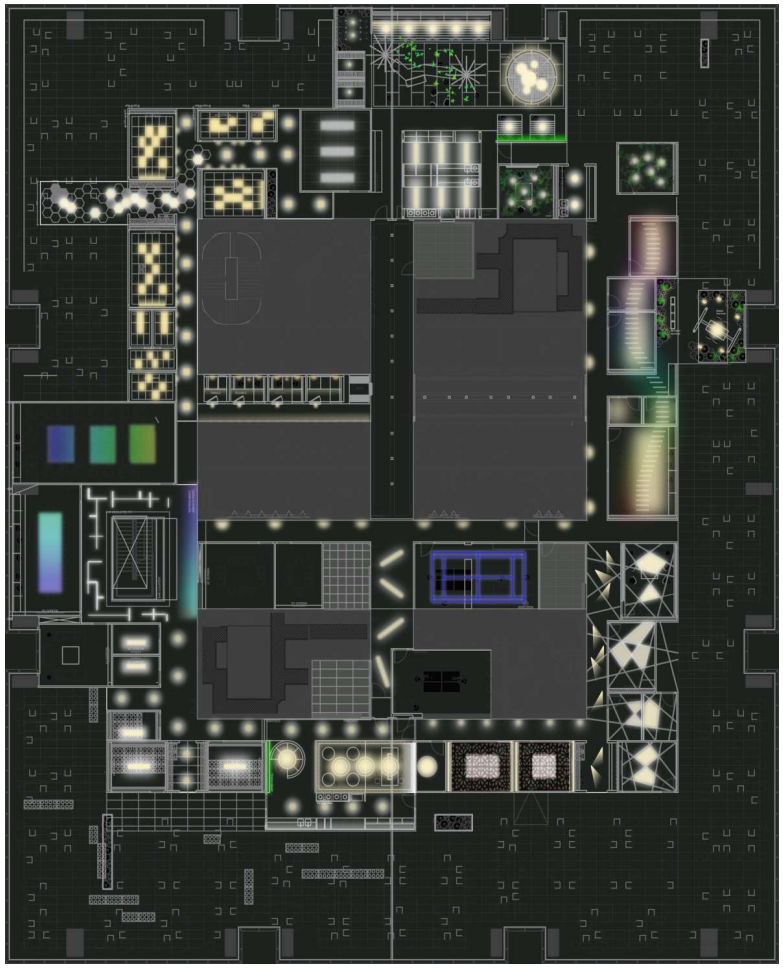


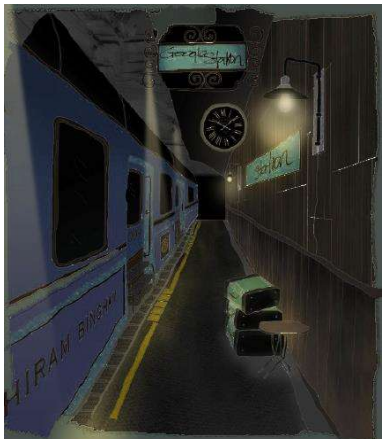


Stairs:









Design Parameters

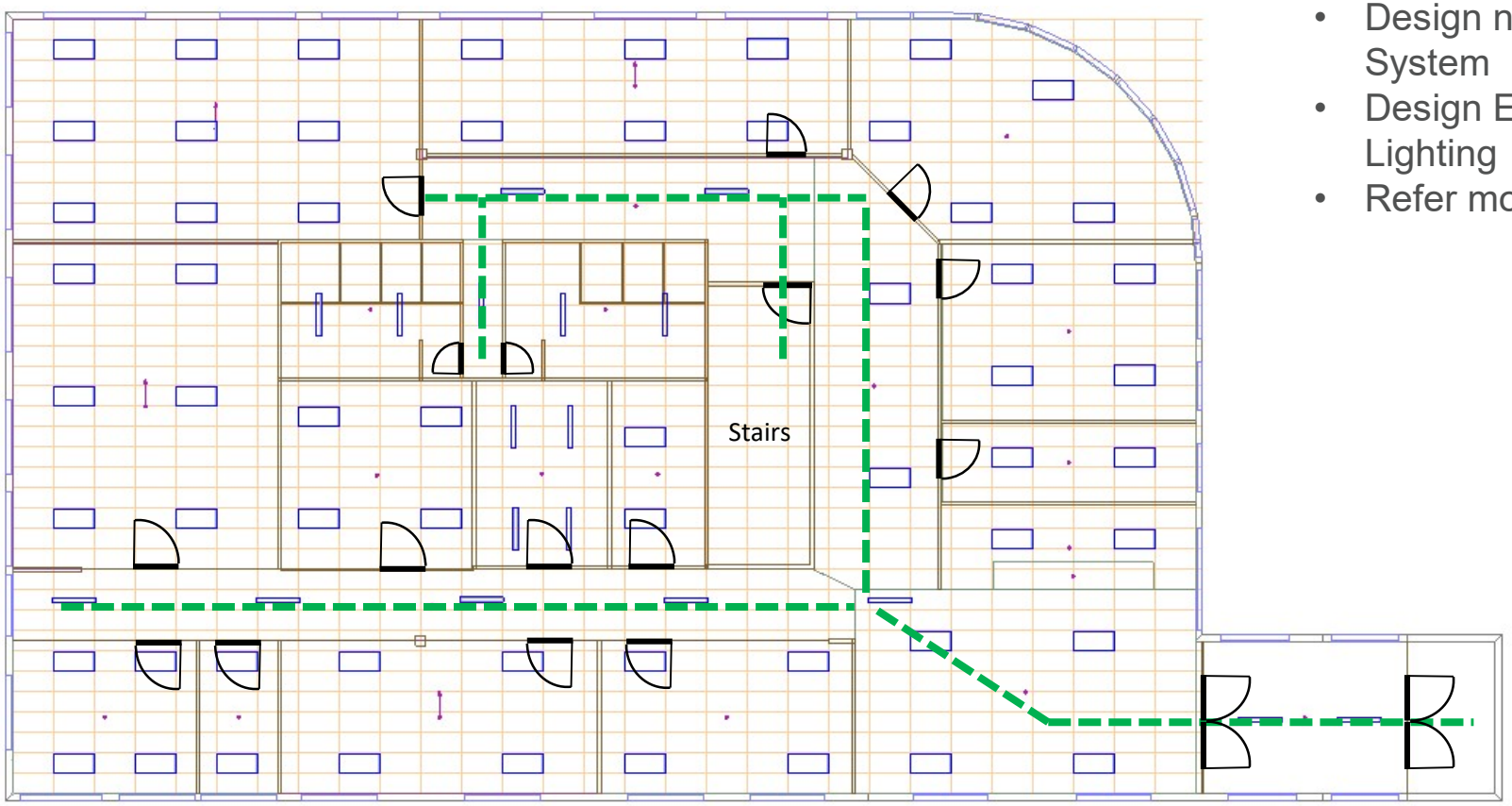
- Maintained Illuminance as per Table D1 of AS/NZS 1680.2.1, and Table E1 of AS/NZS 1680.2.2.
- Light Loss Factor (LLF) as recommended by the manufacturer. Otherwise refer to AS/NZS 1680.4.
- Minimum uniformity to be as per Table 3.2 of AS/NZS 1680.1.
- Surfaces reflectance: ceiling 70%, walls 50%, floor 20%, windows 10%.

Design Emergency Lighting System
Calculate payback time

LEVEL 1 and LEVEL 2

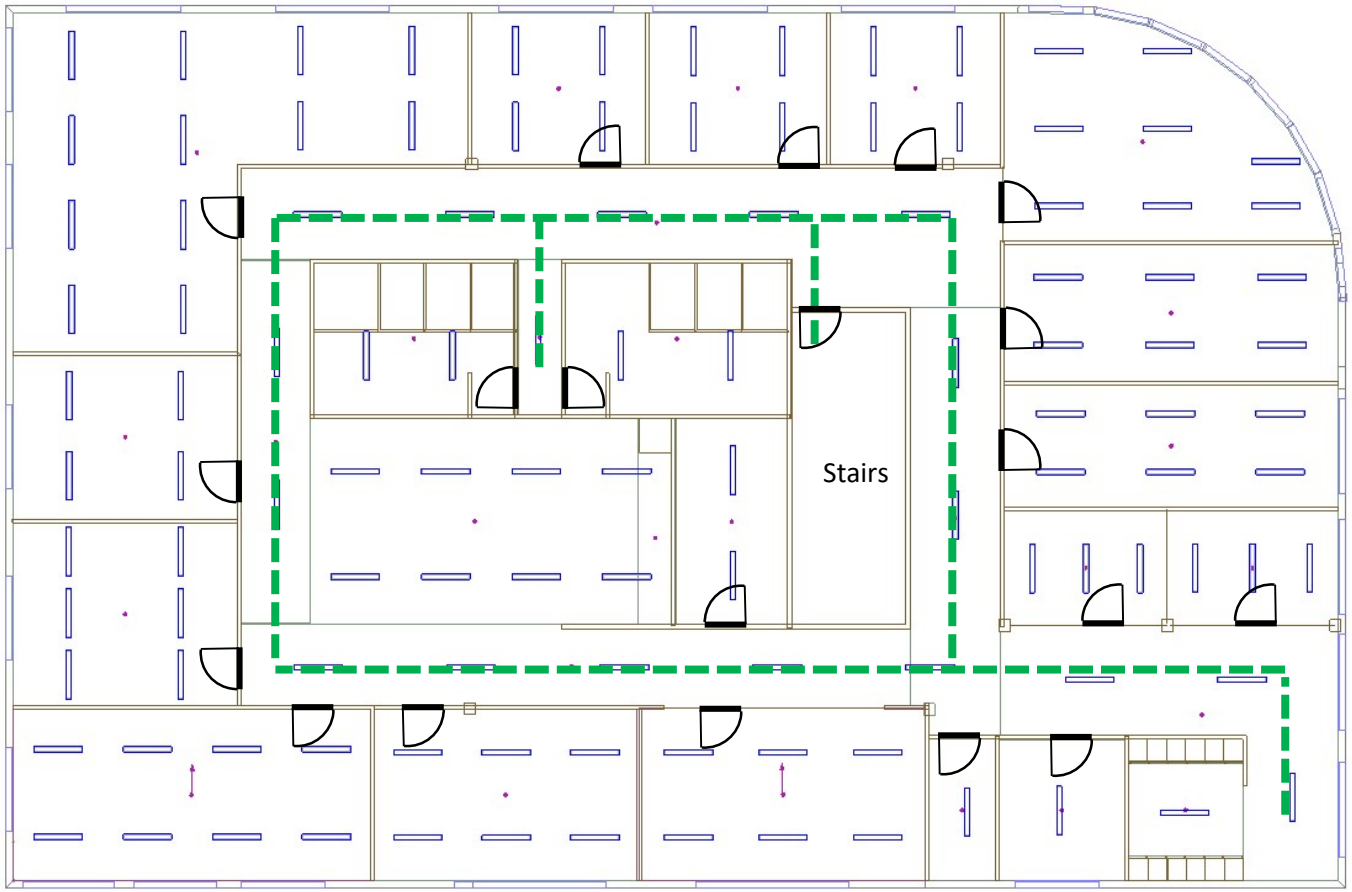
Emergency Lighting System
LEVEL 1

Design emergency lighting according to F6/F8 sections of NZ building code



- Design new Lighting System
- Design Emergency Lighting
- Refer model

Level 1



- Design new Lighting System
- Design Emergency Lighting
- Refer model

Level 2


Emergency Lighting System

AS/NZS 2293.1:2018
Incorporating Amendment No. 1

Australian/New Zealand Standard

Emergency lighting and exit signs for buildings

Part 1: System design, installation and operation

AS/NZS 2293.2:2019

Australian/New Zealand Standard

Emergency lighting and exit signs for buildings

Part 2: Routine service and maintenance

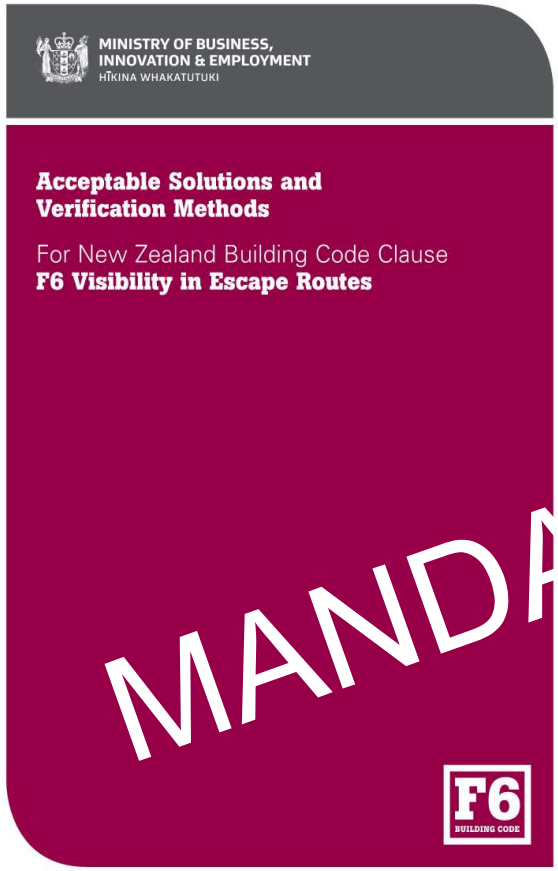
AS/NZS 2293.3:2018
Incorporating Amendment No. 1

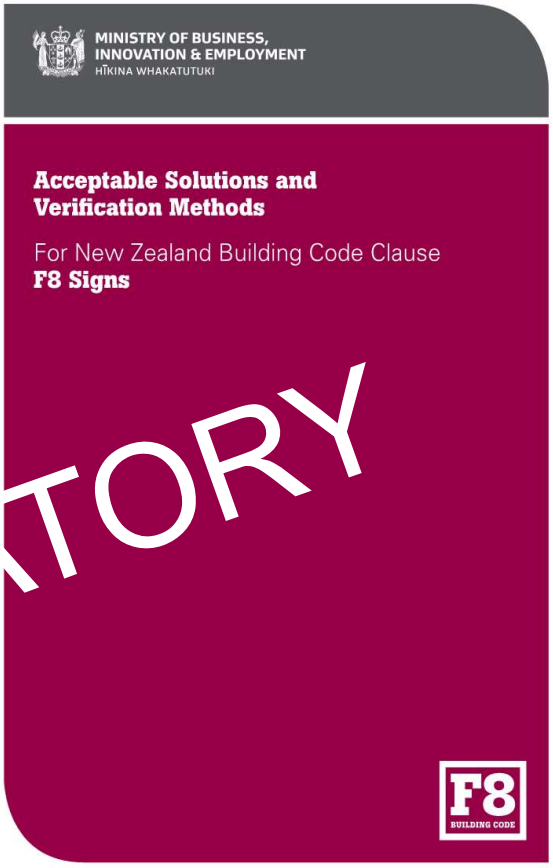
Australian/New Zealand Standard

Emergency lighting and exit signs for buildings

Part 3: Emergency luminaires and exit signs

- Minimum requirements
- Guideline





MANDATORY

	Specified System & Performance Standard (Performance standard required if new or altered)		Inspection, maintenance & reporting procedures (Tick relevant-standard)	Existing system No change	New	Altered	Removed
4	Emergency lighting systems		☒ AS/NZS 2293.2:1995 ☐ NZS 6104:1981 ☐	☐	☒	☐	☐
	Performance Standard:	Acceptable Solution F6/AS1 (Amendment 4: 1 January 2017) Clauses 1.3.1, 1.5.1 (b-c) & 1.6.1(c).					

Specified System	Emergency lighting systems
Description:	SS 4 Emergency lighting systems
Type	Non maintained LED Emergency Exit Signs & Recessed LED Emergency Satellites
Make/Model:	Legrad G2 LED Slide Connect & Legrad 685102LI
Location	Exit signs on exit doors to both levels, Emergency Satellites to ground floor and safe path stairs (refer emergency plans recorded on building consent BCO10234567)
Performance Standard:	Acceptable Solution F6/AS1 (Amendment 4: 1 January 2017) Clauses 1.3.1, 1.5.1 (b-c) & 1.6.1(c).
Inspections Procedure:	In accordance with AS/NZS 2293.2:1995 Emergency evacuation lighting for buildings – Part 2: Inspection and maintenance Six Monthly by competent and qualified personnel Annual inspections by Independent Qualified Persons (IQP)
Interface testing	The emergency lighting system is not interfaced with any other specified system.
Maintenance Procedure:	Planned preventative maintenance and responsive maintenance should be carried out in accordance with AS/NZS 2293.2:1995 Emergency evacuation lighting for buildings – Part 2: Inspection and maintenance By competent and qualified personnel
Reporting:	All (Hard/Soft Copy) records must be kept and maintained confirming inspections and maintenance, as applicable to this Specified System, have been carried out by the individuals responsible for inspecting and maintaining the systems or features (including but not limited to Owners, Service Technicians and Independent Qualified Persons) for a period of 2 years.

Risk Management

- **FIRE REPORT**
- Fire engineer
- Escape paths
- Egress routes
- Final exits
- *Compliance schedule*
- *Risk Category*

- **EVACUATION PLAN**
- *Fire engineer*
- *Client H&S*
- *Induction*
- *Assembly points*

Producer Statement
Council Authority

- PS 1 – Design
- PS 2 – Design review
- PS 3 – Construction (often used by the installers of proprietary systems)
- PS 4 – Construction review.

Dealing with PANIC

- Predicting how people will react
- Visual impairment
- Obstruction
- Guidelines based on system failure
- Predicting infrastructure
- Assuming reaction

SUMMARY:

- ZAPA Limited **purchased** a two-level building in Thames
- Design engineering team to deliver:
  - Evaluation of the exiting lighting
  - Design new lighting system according to AS/NZS 1680
  - Achieve 10-year payback time
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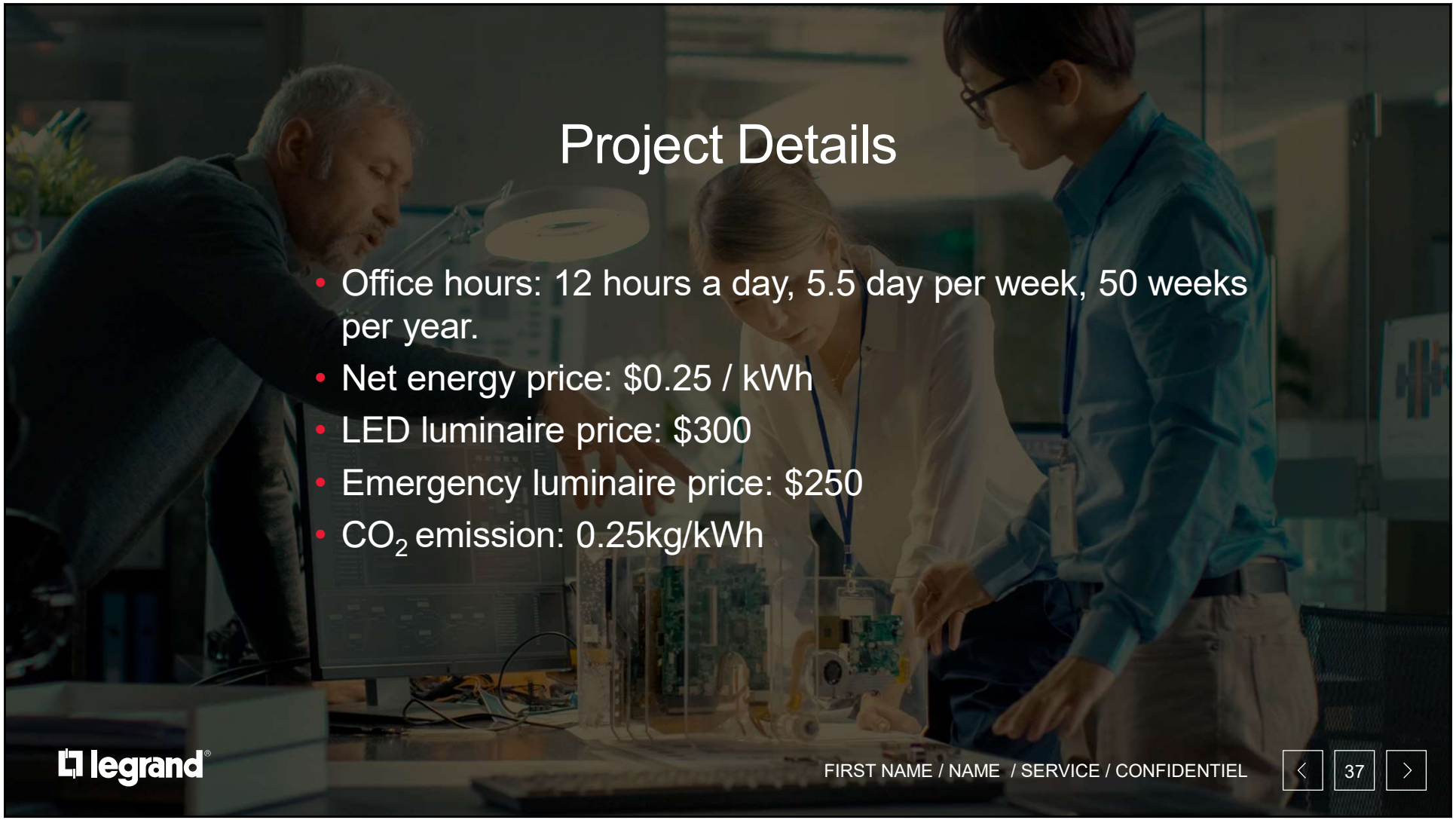


Project Details

- Office hours: 12 hours a day, 5.5 day per week, 50 weeks per year.
- Net energy price: $0.25 / kWh
- LED luminaire price: $300
- Emergency luminaire price: $250
- CO_2 emission: 0.25kg/kWh

CIC Guidelines

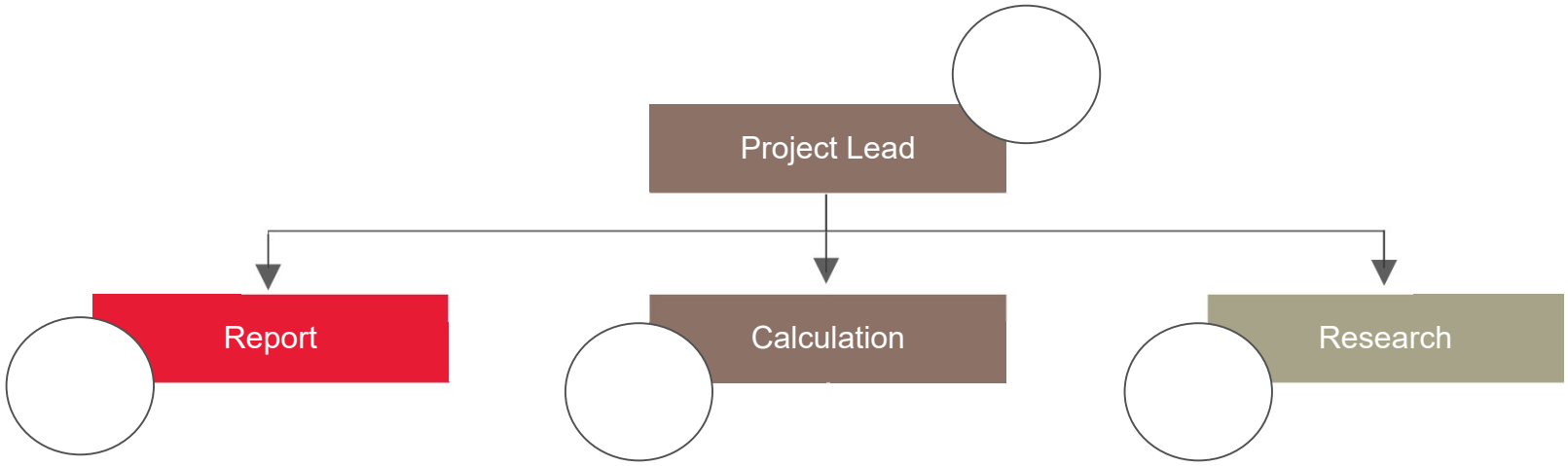
Concept Phase	Developed Design Phase	Detailed Design Phase	Tender Documentation Phase	Tender Construction
• User requirements (individual/project) • Budget estimate • Ease of maintenance • Codes and compliance	• Finalisation of concept design • Baseline lighting layout • Lighting calculations • Preliminary energy consumption calculations • Emergency Lighting	• Refinement of documentation • Lighting details • Customisation of luminaires if necessary • Coordination with other building services • Confirm budget and code compliance	• Finalisation of all aspects of design • Finalisation of lighting control • Extensive coordination with other building services • Submission of illumination level calculations for review	• Clarification and evaluation • Review of submittals to preserve integrity of the design • Site visits • RFIs • Commissioning of system

Suppliers

- ETAP
  http://www.etaplighting.com

- Legrand
  http://www.legrand.co.nz

Project Team



Thank you
for your attention

Q&A

GOOD LUCK