Indoor Environment Quality
IEQ-6 Electric Lighting Levels

Points Available	Points Claimed	CIR Submitted
2	2	Y

Credit Criteria
One point is awarded where it is demonstrated that the tenancy lighting achieves a maintained illuminance level of no more than 400 Lux for 95% of the NLA as measured at the working plane.

An additional point is awarded if a Two Component Lighting System (base lighting plus supplementary task lighting) is installed and the general lighting level has an average maintained illuminance of no more than 220 Lux for 80% of the NLA.

Documents Provided

✓	CIR for Boardroom video conferencing lighting setting. IEQ-6: 1
✓	As-installed reflected ceiling plans that show the lighting layout and including all full height fitout partitions AND luminaire schedule. IEQ-6: 2
✓	Information from the sub-contractor demonstrating that the fittings specified and supplied were installed in the tenancy fitout. IEQ-6: 3

✓	A summary document that details the Two Component Lighting System used and demonstrates the lighting calculations for the layout. IEQ-6: 4
✓	As-installed reflected ceiling plans that show the lighting layout and including all full height fitout partitions. Included in IEQ-6: 2
✓	Information from the sub-contractor demonstrating that the Two Component Lighting System specified and supplied was installed in the tenancy fitout. Included in IEQ-6: 3

Discussion

- Please refer to CIR. As the CIR response requires the GBCA to provide evidence that the normal setting of the boardroom lighting is less than 400 lux, an as-built lighting controls document has been provided for the Board Room with confirmation from Dynalite that the default light setting complies with the 400 lux requirement of the CIR response. IEQ-6: 1
- The Two Component Lighting System is explained in extracts from the design intent report and its installation is confirmed by the lighting as-built drawings. These are included in IEQ-6: 4 section. We have included the Luminaire Schedule to confirm fittings used in the fitout.

IEQ-6: 1

Joe Karten

From: Briana Thompson
Sent: Wednesday, 11 February 2009 10:17 AM
To: Joe Karten
Subject: RE: CIR Ruling: IEQ-6 & Eco-5 (GS-421I)

Dear Joe,

Please see below the amended CIR Rulings for the GS-421I project.

IEQ-6 'Electric Lighting Levels'
CIR Ruling: The CIR to exempt the "video-conferencing mode" settings for a particular room from meeting the criteria of this credit is **granted conditionally** on the project's ability to demonstrate that the default setting of the room is less than 400 Lux, and that the lighting controls will reset the room's illumination levels back to the default level when the video-conferencing equipment is not in in operation.

Eco-5 'Shell and Core or Integrated Fitout'
CIR Ruling: The CIR to deem a previously occupied tenancy that has been stripped down to a shell shell and core status be deemed as "shell and core" for purposes of Green Star – Office Interiors v1.1 is **denied**. As specified in the Technical Manual, this credit only applies to tenancy fitouts that are within a new base building construction or are part of an existing building refurbishment. All other building scenarios are considered 'Not Applicable'.

Kind regards,

Briana Thompson

From: Joe Karten
Sent: Wednesday, 11 February 2009 10:07 AM
To: Briana Thompson
Subject: RE: CIR Ruling: IEQ-5 & Eco-5 (GS-421I)

Dear Briana,

It seems you have quoted the wrong credit in responding to our CIR for IEQ-6 Electric Lighting Levels in the Green Star – Office Interiors v1.1 tool. Please amend the CIR response below to reflect the correct credit and re-send the response so that I may use in my submission. Original CIR attached for your review.

Thanks,
Joe

green building council australia

GREEN CITIES09 Valuable Affordable Sustainable 1-4 March 2009 greencities.org.au

Joe Karten
Technical Coordinator
Green Building Council of Australia
Joe.Karten@gbca.org.au

Level 15, 179 Elizabeth St Sydney NSW 2000

IEQ-6: 1

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Direct +612 8239 6221 | Office +612 8239 6200 | Fax +612 8252 8223

http://www.gbca.org.au

For a faster response, please use the direct line.

From: Briana Thompson
Sent: Thursday, 7 February 2008 5:11 PM
To: richard.palmer@lincolnescott.com
Cc: Joe Karten; Sonia DeAlmada
Subject: CIR Ruling: IEQ-5 & Eco-5 (GS-421I)

Dear Richard,

Apologies for the delay in responding. Please find below the CIR Rulings for the GBCA Fitout (GS-421I).

IEQ-5 'High Frequency Ballasts'
CIR Ruling: The CIR to exempt the "video-conferencing mode" settings for a particular room from meeting the criteria of this credit is **granted conditionally** on the project's ability to demonstrate that the default setting of the room is less than 400 Lux, and that the lighting controls will reset the room's illumination levels back to the default level when the video-conferencing equipment is not in in operation.

Eco-5 'Shell and Core or Integrated Fitout'
CIR Ruling: The CIR to deem a previously occupied tenancy that has been stripped down to a shell shell and core status be deemed as "shell and core" for purposes of Green Star – Office Interiors v1.1 is **denied**. As specified in the Technical Manual, this credit only applies to tenancy fitouts that are within a new base building construction or are part of an existing building refurbishment. All other building scenarios are considered 'Not Applicable'.

Please feel free to contact me directly if you have any questions.

Kind regards,

Briana Thompson (nee Eastham) | Technical Coordinator | Green Building Council of Australia
Level 4 249 Pitt Street Sydney NSW 2000 | PO Box Q78 QVB NSW 1230
Phone +612 8252 8222 | Fax +612 8252 8223
Email briana.thompson@gbcaus.org | Website www.gbcaus.org

green building council australia

Green Star Credit Interpretation Request (CIR) Form

Note: If Man-1 Credits are being applied for then this Form must be submitted by a Green Star Accredited Professional for the project.

Project Name: GBCA Fitout	Date: 5 December 2007
☐ Green Star – Office Design v1 ☐ Green Star – Office Design v2 ☐ Green Star – Office As Built v1 ☐ Green Star – Office As Built v2 ☐ Green Star – Office Interiors v1 ☐ Green Star – Office Interiors v1.1 ☐ Other_____	Submitter Name, Organisation and Position: Richard Palmer, Advanced Environmental, Environmental Design Consultant
	Are you an Accredited Professional? Y
	Green Star Credit for which CIR is sought: IEQ-6 Electric Lighting Levels

What precludes the project from meeting the Credit Criteria?

Board room video-conferencing task lighting is greater than 400 lux, but only during video-conferencing. The boardroom account for greater than 5% of the NLA.

Interpretation Requested:

Under the circumstance where the credit criteria are met for all the office spaces in a fit-out, is it acceptable for the first point calculations that the lighting for the express purpose of vide-conferencing in the boardroom be excluded from the calculation for the following reasons:

- The video conferencing requirements of the space require greater than 800lux for the correct operation of the cameras.
- The lighting control system will limit levels to less than 400 lux when video conferencing is not in use.
- PIR detection sensor is to be installed so that the boardroom lighting is switched off when unoccupied.

In this way, lighting levels throughout are maintained below 400 lux for 95% of the NLA.

If this is not the case, can the additional point for the “two component lighting system” still be targeted?

Does the proposed solution meet the Aim of the Credit?	Y
Does the CIR propose alternative yet equivalent compliance with the Aim of the Credit?	Y
Is the proposed solution a building attribute rather than subject to operations?	Y

Documents Attached:

Lighting calculations for the fit-out with excluding the boardroom video-conferencing task lighting. Lighting calculations for the background lighting levels to demonstrate compliance with the second point.

GBCA Technical Manager Use:

Interpretation Number: _____	Does the application fulfil the aim of the credit? Y / N
Date CIR forwarded to the Advisory Panel:	
Date Recommendations are Due:	
Advisory Panel Respondent (initials):	
Conflicts of Interest Declared:	
GBCA Advisory Panel Response:	
Replied to Enquiry (initials):	Date:
Technical Clarifications & CIR Rulings updated on GBCA website:	Y / N GBCA Staff Responsible:
Text of CIR Ruling:	

IEQ-6: 1

dynalite

06 March 2009

Joe Karten
Green Building Council of Australia
Level 15, 179 Elizabeth St
Sydney, NSW 2000

Dear Joe,

Following the final programming and commissioning of all lighting and blinds in the GBCA Sydney Office fitout at 179 Elizabeth Street, I confirm the following:

- Board Room default lighting levels are at a 320-400 LUX average – and lighting controls reset to these levels (or off) when video conferencing equipment is not in operation.
- The lighting has been grouped into the zones called out on the E001 Lighting plan produced by KLM and no zone exceeds 100m^2.
- Switching for task based lighting at workstations is controlled via staff computers at the location. Switching for general lighting is controlled via the touch screen near reception. Switching for circulation lighting controlled via PIR and photo-electric sensors. Switching for meeting room lighting is controlled via PIR and through a manual override switch in each meeting room.
- Window blinds have been programmed for full automation with manual override function controllable from the touch screen near reception and from within the Board Room for Board Room window blinds.

The lighting has been fully programmed and commissioned in accordance with the GBCA Fitout Lighting Control document produced by Vision Design.

Feel free to contact me with any further queries you may have.

Kind regards,

Joseph Gebaily
Technical Leader NSW Commissioning

dynalite

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joe.gebaily@dynalite.com.au • dynalite-online.com

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San Diego Singapore Sydney

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Telephone 61 2 8907 0900
Facsimile 61 2 9957 4127
sydney@lincolnescott.com
lincolnescott.com

Vision Design

Consultant's Advice

To	**GBCA**	CA No	**VD-01**
Attention	**Joe Karten**	Date	**16 February 2009**
From	**Amara Clarke**	Facsimile	
Project	**GBCA HEAD OFFICE FITOUT**	Project No	**SYD0703900**
Contract		No. of pages	**2**
Copies			

This consultant's advice does not constitute or imply a variation.

Joe,

The GBCA open plan office lighting controls must meet the ABGR tenancy protocol for good-control of lighting use. All lighting should have occupancy sensor control of lights as noted below.

The open plan office setup will include the following:

First Person Entry

- PIR near lifts turns on the Type C1 for circulation lighting (refer to 1st Person Entry markup attached)
- Then user goes to touch screen to turn on open plan task lighting (Type T1, F1A & F1B) in their zone (refer to Standard Office Setup Zones markup attached). The design intention was that the touch screen would turn on only the uplight component of the F1A and F1B and then the user would turn on the direct downlight component via their PC.

After Hours Process

- Last person out goes to touch screen which turns off all lights, apart from Type C1 circulation lighting which is on PIR timed switch.

Office Zones

- Zones less than 100m²; as referred to in the Standard Office Setup Zones markup attached.

PIR Switching

- Refer to PIR Switching markup attached.

Amara Clarke		16/02/09
Project Engineer's Name	Signature	Date

PE Switching

- Refer to PE Switching markup attached. It was intended that the West Corridor C1 circulation lighting and East Light Shelf T2 & H1 lighting would be switched on via PE when the light levels fall below 100lux on the floor. There should also be an override on/off on the main touch screen for these areas (refer to Standard Office Setup Zones markup).

Boardroom Scenes

Scene 1: Standard Meeting Mode – all lights on, with Type F3 dimmed to 320lux average (refer to Boardroom Scene 1 markup). This will be the default setting and activated by the PIR.

Scene 2: Video-conferencing Mode – all lights on, with Type F3 at 100%.

Scene 3: Presentation/Low Light Level Mode- Only Type L1 on

Scene 4: All off

Regards

Amara Clarke
Lighting Designer

Phone +61 2 8907 0900
Direct +61 2 8907 0911
amara.clarke@lincolnescott.com

Amara Clarke		16/02/09
Project Engineer's Name	Signature	Date

IEQ-6: 1

Meeting RM
scene (1)

1) all on
2) F3
3) LL
4) F4B's

F3 Dimmed to 320 lux average

CASTLEREAGH STREET

ELIZABETH STREET

SW CH 2
SW CH 3
SW CH 7
DSI CH 4
DSI CH 3
DSI CH 5
SW CH 8
SW CH 1
SW CH 9
SW CH 10
SW CH 11
SW CH 12
SW CH 13
SW CH 14
DSI CH 6
SW CH 15
SW CH 16
DALI
DALI
DALI
PE
PE
PE

MALE
FEMALE
PLANT
CHW
DA
SE
PLAN
RISERS
TATTERSALLS CLUBRISER
FIRE STAIR
FIRE STAIR
LIFT 18
LIFT19
LIFT20
TELECOM PLUMBING FH/FHR
SMOKE SPILL SHAFT

NOTE
PROVIDE GPS ON WALL.
PROVIDE ROUND EARTH PIN FOR "LIGHTING ONLY"

GBCA OFFICE FITOUT
LIGHTING CHANNEL DIAGRAM REV E
SCALE 1:150 @ A3
DATE ISSUED: 29/11/07

IEQ-6: 1

Meeting Rm
scene (2)

1) all on
2) F3
3) LL
4) F4B's

CASTLEREAGH STREET

SW CH 2
SW CH 3
SW CH 7
DALI
DSI CH 4
DSI CH 3
DSI CH 5
SW CH 8
SW CH 1
SW CH 16
SW CH 15
SW CH 9
DSI CH 6
SW CH 14
SW CH 11
SW CH 12
SW CH 13
SW CH 10

MALE
FEMALE
PLANT
CHW
DA
RISERS
TATTERSALLS CLUBRISER
FIRE STAIR
LIFT 18
LIFT19
LIFT20
FIRE STAIR
TELECOM PLUMBING FH/FHR
SMOKE SPILL SHAFT

NOTE
PROVIDE GPS ON WALL.
PROVIDE ROUND EARTH PIN FOR "LIGHTING ONLY"

ELIZABETH STREET

[redacted] Vision Design

GBCA OFFICE FITOUT
LIGHTING CHANNEL DIAGRAM REV E
SCALE 1:150 @ A3
DATE ISSUED: 29/11/07

IEQ-6: 1

Meeting Rm
scene 3

1) all on
2) F3
3) L1
4) F4B's

CASTLEREAGH STREET

SW CH 2
SW CH 3
SW CH 7
DSI CH 4
DSI CH 3
DSI CH 5
SW CH 8
SW CH 1
DALI
SW CH 16
DALI
SW CH 15
SW CH 9
DSI CH 6
SW CH 14
SW CH 11
SW CH 12
SW CH 13
SW CH 10

MALE
CHW
PLANT
DA
FEMALE
SE
RISERS
PLAN
TATTERSALLS CLUBRISER
FIRE STAIR
LIFT 18
LIFT19
LIFT20
FIRE STAIR
TELECOM PLUMBING FH/FHR
SMOKE SPILL SHAFT

NOTE
PROVIDE GPS ON WALL.
PROVIDE ROUND EARTH PIN FOR "LIGHTING ONLY"

ELIZABETH STREET

[redacted] Vision Design

GBCA OFFICE FITOUT
LIGHTING CHANNEL DIAGRAM REV E
SCALE 1:150 @ A3
DATE ISSUED: 29/11/07

IEQ-6: 1

Mating Rm
scene (4)

1) all on
2) F3
3) LL
4) F4B's

CASTLEREAGH STREET

ELIZABETH STREET

SW CH 2 | SW CH 3 | SW CH 7 | DSI CH 4 | DSI CH 3 | DSI CH 5 | SW CH 8 | SW CH 1 | DALI | SW CH 16 | DALI | SW CH 15 | SW CH 9 | DSI CH 6 | SW CH 14 | SW CH 11 | SW CH 12 | SW CH 13 | SW CH 10

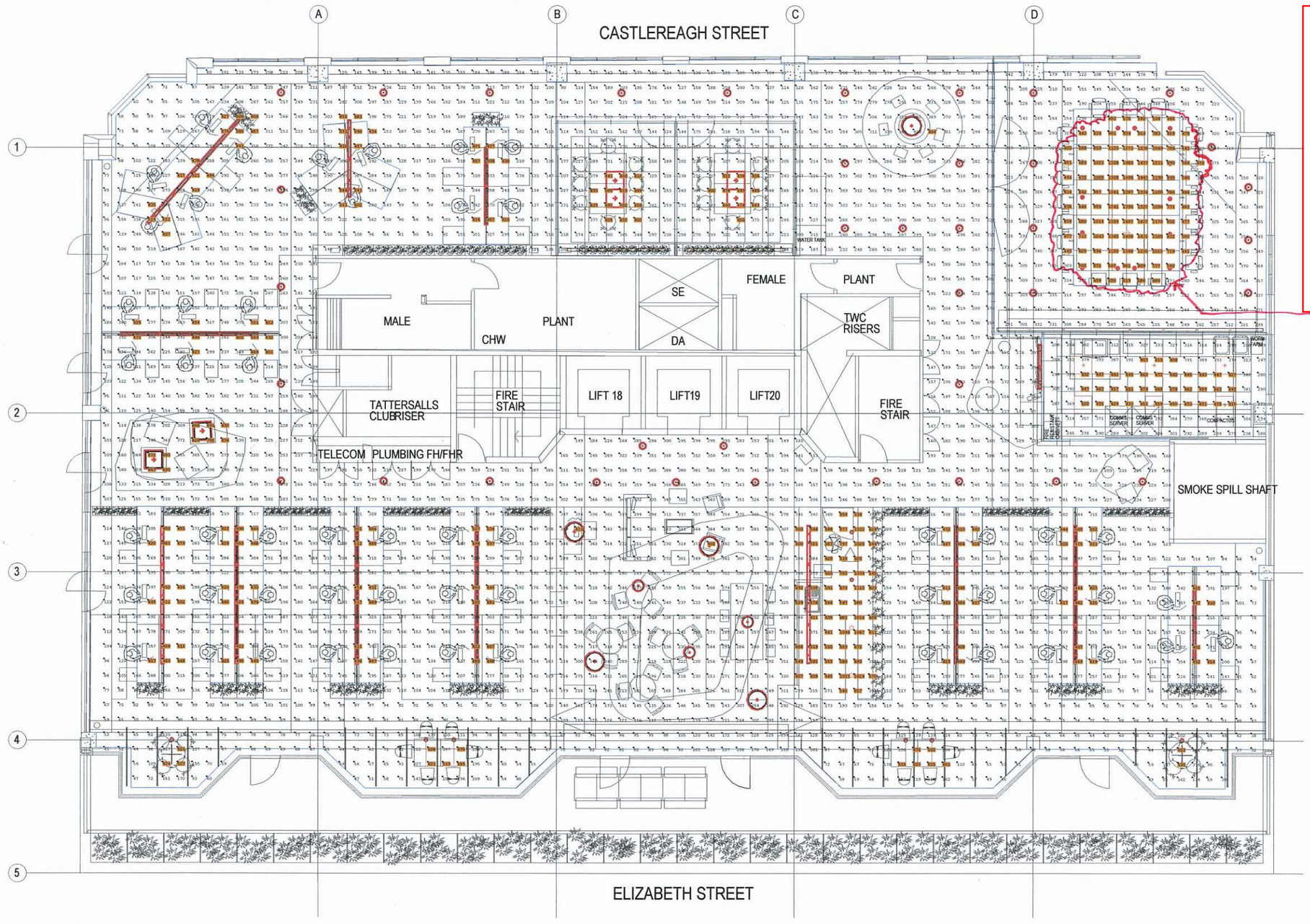
MALE | PLANT | CHW | DA | SE | FEMALE | PLAN | RISERS | FIRE STAIR | LIFT 18 | LIFT19 | LIFT20 | FIRE STAIR | TATTERSALLS CLUBRISER | TELECOM PLUMBING FH/FHR | SMOKE SPILL SHAFT

NOTE
PROVIDE GPS ON WALL.
PROVIDE ROUND EARTH PIN FOR "LIGHTING ONLY"

GBCA OFFICE FITOUT
LIGHTING CHANNEL DIAGRAM REV E
SCALE 1:150 @ A3
DATE ISSUED: 29/11/07

[redacted] Vision Design

IEQ-6 ELECTRIC LIGHTING LEVELS - CREDIT POINT 1



NOTE: ILLUMINATION CALCULATION POINTS ABOVE 400 LUX HIGHLIGHTED ORANGE.

REFLECTANCES:
CEILING: 50%
WALLS: 50%
FLOOR: 20%
OBJECTS: 50%

THE FOLLOWING AREA ABOVE 400 LUX HAS BEEN EXCLUDED FROM THE TOTAL FOR THE FOLLOWING REASON;
Note 1: Video Conferencing requirements of > 800 lux. Lighting control system will limit levels to 320 lux average when video conferencing not in use. PIR detection sensor to be installed so that the boardroom lighting is only switched on when occupied.

ILLUMINATION RESULTS
Scale= 1: 150

Total area of fitout where the maintained workplane illuminance @ 0.7M AFL is not above 400lux (0.5M GRID)	770 sq/m
Total NLA of fitout	804 sq/m
% of the NLA area where the maintained workplane illuminance @ 0.7M AFL is not above 400lux (0.5M GRID)	95.7%

GBCA HEAD OFFICE FITOUT :Project

SYD0703900 :Proj. No.

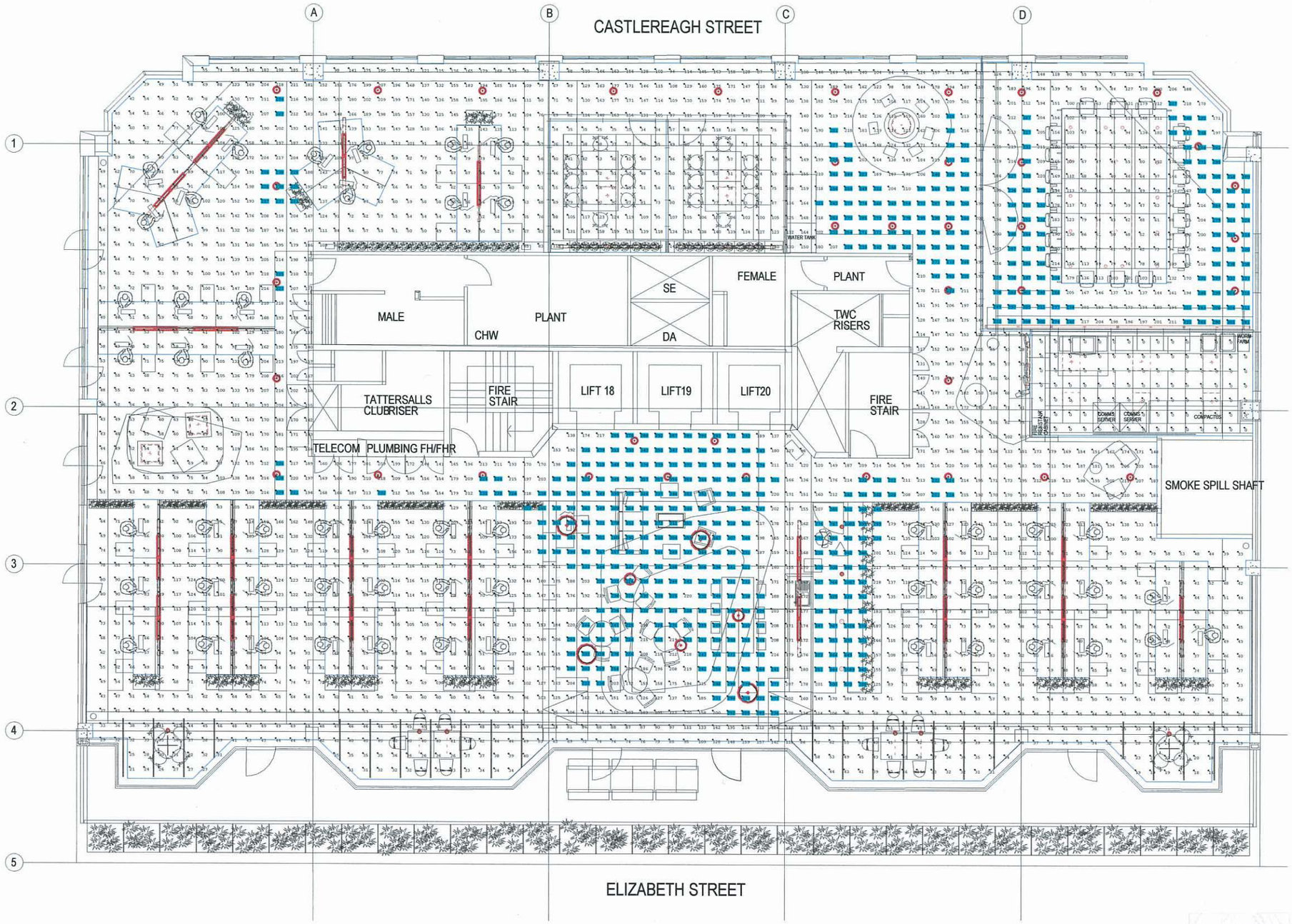
IEQ-6 ELECTRIC LIGHTING LEVELS – CREDIT POINT 1 :Title

04/12/07 :Date

ACC :By

Vision Design
Level 1, 41 McLaren Street, North Sydney NSW Australia
PH: 61 2 9907 0900 FAX: 61 2 9957 4127
Vision Design is a specialist service of Lincoln Scott

IEQ-6 ELECTRIC LIGHTING LEVELS - CREDIT POINT 2



NOTE: ILLUMINATION CALCULATION POINTS ABOVE 220 LUX HIGHLIGHTED CYAN.

REFLECTANCES:
CEILING: 50%
WALLS: 50%
FLOOR: 20%
OBJECTS: 50%

ILLUMINATION RESULTS SHOW GENERAL LIGHTING LEVEL WITH ALL TASK LIGHTING SWITCHED OFF. TASK LIGHTING SWITCHED OFF INCLUDES;

- TASK LIGHTING ABOVE EASTERN BAY WINDOW MEETING TABLES
- TASK LIGHTING ABOVE WORKSTATIONS IN OPEN PLAN OFFICE AREA
- TASK LIGHTING IN QUIET ZONES
- TASK LIGHTING ABOVE RECEPTION DESK
- TASK LIGHTING ABOVE MEMBERS LOUNGE KITCHEN PANTRY
- TASK LIGHTING ABOVE BREAKOUT MEETING TABLE
- TASK LIGHTING IN MEETING ROOMS ABOVE MEETING TABLES
- TASK LIGHTING IN BOARDROOM ABOVE MEETING TABLE
- TASK LIGHTING IN COPY ROOM

ILLUMINATION RESULTS
Scale= 1: 150

Total area of fitout where the maintained workplane illuminance @ 0.7M AFL is not above 220lux (0.5M GRID)	682.8 sq/m
Total NLA	804 sq/m
% of NLA area where the maintained workplane illuminance is not above 220lux	85%

GBCA HEAD OFFICE FITOUT :Project

SYD0703900 :Proj. No.

IEQ-6 ELECTRIC LIGHTING LEVELS – CREDIT POINT 2 :Title

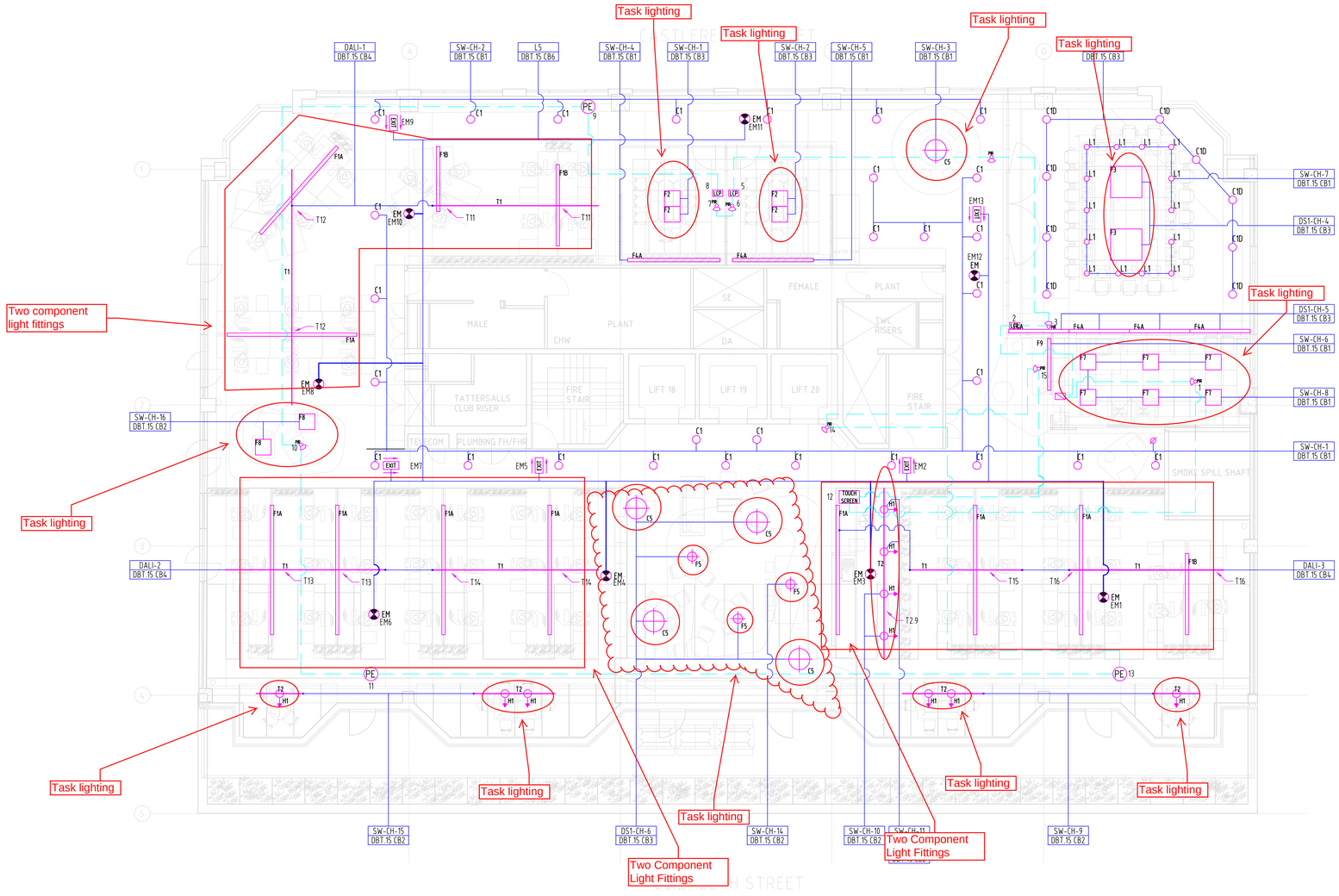
04/12/07 :Date

ACC :By

Vision Design
Level 1, 41 McLaren Street, North Sydney NSW Australia
PH: 61 2 9907 0900 FAX: 61 2 9957 4127
Vision Design is a specialist service of Lincolne Scott

IEQ-6: 2

DATE	REV	AMENDMENT	BY	CHKD
19.10.07	A	TENDER	MPB	ASD
12.11.07	B	CONSTRUCTION ISSUE	MPB	ASD
27.02.08	C	AS INSTALLED ISSUE	TC	



NOTES

1. DYNALITE CONTROL 'LOOP' CCT

2.

COMPONENT	SERIAL NO.
1	430746
2	426490
3	424664
4	430678
5	426489
6	424663
7	418157
8	426488
9	428148
10	430745
11	430745
12	
13	428147
14	430679
15	424665

2.

CIRCUIT	...	...	CHANNEL	
DBT.15 CB1	L1	8.8A	SW-CH-1	4.76A
			SW-CH-2	1.5A
			SW-CH-3	0.3A
			SW-CH-4	0.35A
			SW-CH-5	0.35A
			SW-CH-6	0.3A
			SW-CH-7	0.175A
			SW-CH-8	1.05A
DBT.15 CB2	L2	2.08A	SW-CH-9	0.43A
			SW-CH-10	0.3A
			SW-CH-11	0.10A
			SW-CH-12	0.10A
			SW-CH-13	0.10A
			SW-CH-14	0.16A
			SW-CH-15	0.43A
			SW-CH-16	0.46A
DBT.15 CB3	L3	9.8A	DS1-CH-1	1A
			DS1-CH-2	1A
			DS1-CH-3	3A
			DS1-CH-4	2A
			DS1-CH-5	1A
			DS1-CH-6	1.6A
DBT.15 CB4	L4	12A	DALI-1	4A
			DALI-2	4A
			DALI-3	4A
DBT.15 CB6	L5			

0mm 10 20 30 40 50 60 70mm

KLM GROUP
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PROJECT
LEVEL 15
179 ELIZABETH STREET
SYDNEY NSW 2000

CLIENT
GBCA

DATE	04.10.07	DRAWN	EWM
SCALE	1:100	CHECKED	
SHEET SIZE	A1	APPROVED	
CAD FILE			

TITLE
ELECTRICAL SERVIES
LIGHTING LAYOUT

PROJECT NO.	DRAWING NO.	REVISION
SYD 0703900	E001	C

Lincoln Scott

Vision Design

SYD0703900 GBCA -NEW HEAD OFFICE FITOUT

Date: 29/11/2007

Luminaire Schedule

Revision: J

TYPE	IMAGE	DESCRIPTION	MANUFACTURER	CAT NO.	LAMP(s)				DIMENSIONS (approx. only)	FINISH	IP RATING	CONTROL GEAR	MOUNTING DETAILS	QTY
					Number	Wattage per Lamp	Type	Colour Temp						
C1		2x26W PLC surface mounted downlight with matt optic reflector	Zumtobel	Panos-A HM 200 60810727	2	26W	Osram TC-DEL, G24q-2	4000K	230mm Dia. x 200mmH	Matt white	N/A	Electronic	Surface	29
C1D		2x26W PLC surface mounted downlight with matt optic reflector, DSI dimmable	Zumtobel	Panos-A HM 200 62902022.DSI	2	26W	Osram TC-DEL, G24q-2	4000K	230mm Dia. x 200mmH	Matt white	N/A	Electronic DSI dimmable	Surface	9
C5		2/40W TC-L fluorescent direct/indirect suspended diffuser luminaire with plastic seal, DSI dimmable	Zumtobel	Chiaro FTR680 42157266.DSI	2	40W	Osram	4000K	680mm Dia. x 142mmH	TBC	N/A	Electronic DSI dimmable	Suspended	5
F1A		2x1/49W + 3x2/28W T5 fluorescent suspended direct/indirect luminaire, matt bivergent louvre, seperately switchable, DALI dimmable, with track adapter	Zumtobel	42913075.77A	2x1/49W up 3x2/14W down	49W/14W	OsramT5 Fluorescent Tri-phosphor	4000K	98mmW x 4700mmL x 62mmH	TBC	N/A	Electronic DALI dimmable	Wire suspended at 1650mm AFFL (confirm height)	9
F1B		1/49W + 2x2/28W T5 fluorescent suspended direct/indirect luminaire, matt bivergent louvre, seperately switchable, DALI dimmable, with track adapter	Zumtobel	42913075.77B	1x1/49W up 2x2/14W + down	49W/14W	OsramT5 Fluorescent Tri-phosphor	4000K	98mmW x 2736mmL x 62mmH	TBC	N/A	Electronic DALI dimmable	Wire suspended at 1650mm AFFL (confirm height)	3

Task lighting

Two component light fitting

IEQ-6: 2

Lincolne Scott

Vision Design

SYD0703900 GBCA -NEW HEAD OFFICE FITOUT

Date: 29/11/2007

Luminaire Schedule

Revision: J

TYPE	IMAGE	DESCRIPTION	MANUFACTURER	CAT NO.	LAMP(s)				DIMENSIONS (approx. only)	FINISH	IP RATING	CONTROL GEAR	MOUNTING DETAILS	QTY
					~~Number~~	Wattage per Lamp	~~Type~~	~~Colour Temp~~						
F2		2x24W T5 fluorescent downlight with microprismatic optic , DSI dimmable	Zumtobel	Mellowlight IV EM 42174798	2	24W	Osram T5 Fluorescent Tri-phosphor	4000K	598mmW x 598mmL x 102mmH	TBC	N/A	Electronic DSI dimmable	Recessed	4
F3		4x4/14W T5 fluorescent downlight with micro-pyramidal structure, DSI dimmable	Zumtobel	Light Fields E 42157312	4x4/14W	14W	Osram T5 Fluorescent Tri-phosphor	4000K	1198mmW x 1198mmL x 63mmH	TBC	N/A	Electronic DSI dimmable	Recessed	2
F4A		3x1/28W T5 fluorescent recessed continuous extrusion with PMMA diffuser	Zumtobel	Slotlight 3-length 42160016	3	28W	Osram T5 Fluorescent Tri-phosphor	4000K	68mmW x 3362mmL x 100mmH	TBC	N/A	Electronic	Recessed	2
F4B		2x1/28W T5 fluorescent recessed continuous extrusion with PMMA diffuser, DSI dimmable	Zumtobel	Slotlight 2-length 42160030	2	28W	Osram T5 Fluorescent Tri-phosphor	4000K	68mmW x 2268mmL x 100mmH	TBC	N/A	Electronic DSI dimmable	Recessed	4
F5		1/40W T5 fluorescent direct/indirect suspended diffuser luminaire, DSI dimmable	Zumtobel	Chiaro FTR390 42157260.DSI	1	40W	Osram T5 Fluorescent Tri-phosphor	4000K	390mm Dia. x 125mmH	TBC	N/A	Electronic DSI dimmable	Suspended	3
F7		3x14W T5 fluorescent recessed downlight, prismatic diffuser			3	14W	Osram T5 Fluorescent Tri-phosphor	4000K	590mmW x 590mmL x 95mmH	TBC	N/A	Electronic	Recessed	6

Task lighting

Task lighting

Lincoln Scott

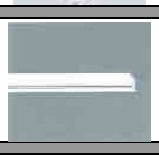
Vision Design

SYD0703900 GBCA -NEW HEAD OFFICE FITOUT

Date: 29/11/2007

Luminaire Schedule

Revision: J

TYPE	IMAGE	DESCRIPTION	MANUFACTURER	CAT NO.	LAMP(s)				DIMENSIONS (approx. only)	FINISH	IP RATING	CONTROL GEAR	MOUNTING DETAILS	QTY
					Number	Wattage per Lamp	Type	Colour Temp						
F8		4/14W T5 fluorescent suspended direct/indirect luminaire with micro-pyramidal structure	Zumtobel	Light Fields A-ID 42174314	4	14W	Osram T5 Fluorescent Tri-phosphor	4000K	623mmW x 623mmL x 61mmH	TBC	N/A	Electronic	Suspended	2
F9		1/80W T5 fluorescent direct/indirect surface mounted wall light, graphite finish	Zumtobel	Bega 4413	1	80W	Osram T5 Fluorescent Tri-phosphor	4000K	105mmW x 1515mmL x 120mmH	TBC	N/A	Electronic	Surface mounted	1
H1		35W track mounted ceramic metal halide adjustable spotlight with flood distribution, electronic control gear	Zumtobel	Vivo M	1	35W	Osram HCI-TC-CE G8.5	4000K		TBC	N/A	Electronic	Track mounted	10
L1		3/1W LED recessed adjustable downlight, 30° beam angle	Zumtobel	Panos S LED 60811837	3	1W	Osram	3000K	113mm dia. x 102mmH	TBC	N/A	Electronic	Recessed	14
T1		3-phrase DALI surface mounted track, live feed, dead end	Zumtobel	3-phase DALI track 60280045	N/A	N/A	N/A	N/A	Length to suit	White	N/A	N/A	Surface	40m
T2		3-circuit surface mounted track, live feed, dead end	Zumtobel	3-circuit track 2801270	N/A	N/A	N/A	N/A	Length to suit	White	N/A	N/A	Surface	19m

Task lighting

Task lighting

IEQ-6: 3

KLMGROUP

INTEGRITY STRENGTH QUALITY 25 YEARS

19-05-08

Joe Karten
Green Building Council of Australia
PO Box Q78
QVB NSW 1230

Dear Joe,

This letter confirms that the lighting has been installed, as designed and specified in the lighting specification and drawings, to ensure that at least 95% of the NLA at the GBCA Tenancy Fitout at Level 15, 179 Elizabeth Street, is served by luminaries which use high frequency ballasts.

Also, please note that the lighting fittings, including the two component lighting system, specified and supplied were installed in the above fitout.

Kind regards,

Darren Manoliu
KLM Group Ltd

KLM Group Limited
Unit 1, 9-11 Chaplin Drive
Lane Cove NSW 2066

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ABN 66 089 479 676
DFT 144451C

The components are fixed equipment with circuit breakers rated at 8000 cycles operations per devise. The rated life for the circuit breakers is approximately in excess of 20 years, therefore the life time maintenance of the circuit breakers after defects liability period is unlikely.

The Tenant switchboard should have a route annual thermographic scan for maintenance to identify any 'hotspots' for potential loose wiring connections and to prevent any electrical failure to the system.

Automatic switches will reduce energy consumption through unnecessary lighting.

Occupancy sensors will be installed to automatically switch off lights in unoccupied zones. Sensors will be installed throughout the building in association with the lighting zones, which will not exceed 100m^2

Daylight sensors will be installed in perimeter zones to switch off lights when the natural lighting illuminance is sufficient.

Electrical energy consumption is the biggest contributor of greenhouse gas emissions from commercial office buildings. To effectively manage electrical consumption, it is essential for building managers to have sufficient data to monitor consumption and compare it to historical values.

Electrical metering will allow effective energy monitoring of the building. This will allow building managers to fine tune operational procedures and link tenant facilities charges to consumption.

4.3 Lighting

The fit-out lighting design proposes the following:

- **Direct/indirect lighting** where a proportion of the lighting is directed toward the ceiling. Incorporating an indirect component to the lighting system improves the sense of space in the building volume. A 70/30 direct/indirect split is reflected in many applications setting world benchmark approaches to the lit environment. The use of suspended fittings with a direct/indirect component is one of the easiest ways to implement a direct/indirect solution

- **Vertical Plane lighting** increases the perceived apparent brightness of the space and provides areas of focus and contrast in the occupant's line of vision.

- **Reduced ambient levels**: Current lighting designs provide a minimum average of 320 lux at the working plane, regardless of whether a desk is present or not. Circulation space lighting requires significantly less illuminance, and lighting this area to 320 lux represents wasted energy. Reducing the ambient illuminance over the general area to circulation illuminance levels and specifically illuminating desks, allows light to be provided where it is needed.

- **Direct/indirect task lighting** with suspended direct/indirect luminaries positioned above workstations to ensure lighting is provided where it is needed and allows sufficient illumination to the working plane in a solution with reduced ambient levels.

- **Individual user control** for the direct component of the direct/indirect task lighting, allows lights to be switched off or dimmed down when the workstation is not occupied.

- **Daylight harvesting** will be utilized in conjunction with dimmers or switches in perimeter zones to maximize the use of natural light in preference to artificial light.

The fit-out interior design should be co-ordinated with the lighting design to deliver an optimal solution with particular attention given to the choice of surface finishes and colours used as this will have a substantial impact on the effect and efficiency of the lighting system.

Benefits of the lighting strategy proposed include:

- Lighting required for desk tasks is provided where it is needed, reducing energy losses through wasted light.
- Individual user control of the direct component of the direct/indirect task lighting gives occupants control over their personal lit environment. In previous applications of such a system, it has been found that the majority of task lights go unused, reducing energy.
- Reduced ambient lighting levels in circulation areas, minimises energy losses through wasted light.
- Ceiling illumination raises perceived brightness of the space and is ideal for physical communicative environments (reduced harsh features typical with direct illumination) and improves occupant amenity.
- Increased potential for enhanced energy savings through a combination of daylight harvesting used in conjunction with dimmers and switching.
- Vertical illumination assists visual comfort and amenity
- Ease of co-ordination with other services within and on the ceiling

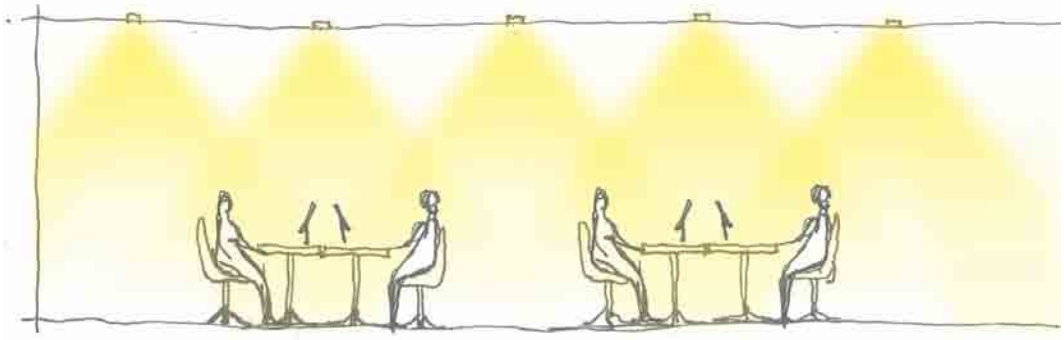

Figure 4: Typical office down lighting solution demonstrating unlit ceiling and wasted illumination in circulation spaces

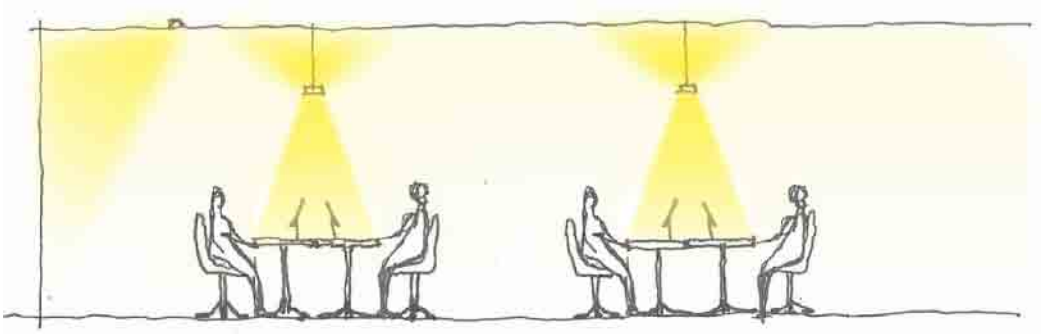

Figure 5: Direct/indirect solution with task desk lighting integration

4.4 Domestic Hot Water

The design intent of the tenancy hydraulic servicing is to reduce the hot water demand of the tenancy.

As part of the hydraulic initiatives no hot water is to be supplied to kitchen sink and hand basins.