Option A:
Western Power Standard LED street lighting & galvanised poles

Option B:
Western Power Decorative LED streetlighting & decorative pole

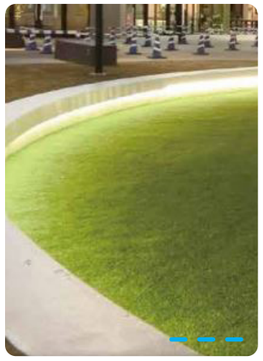
Option C:
Privately owned and operationed decorative smart city street lighting and multifunction pole.

Proposed 9m high multifunction pole with adjustable area lighting luminaires.

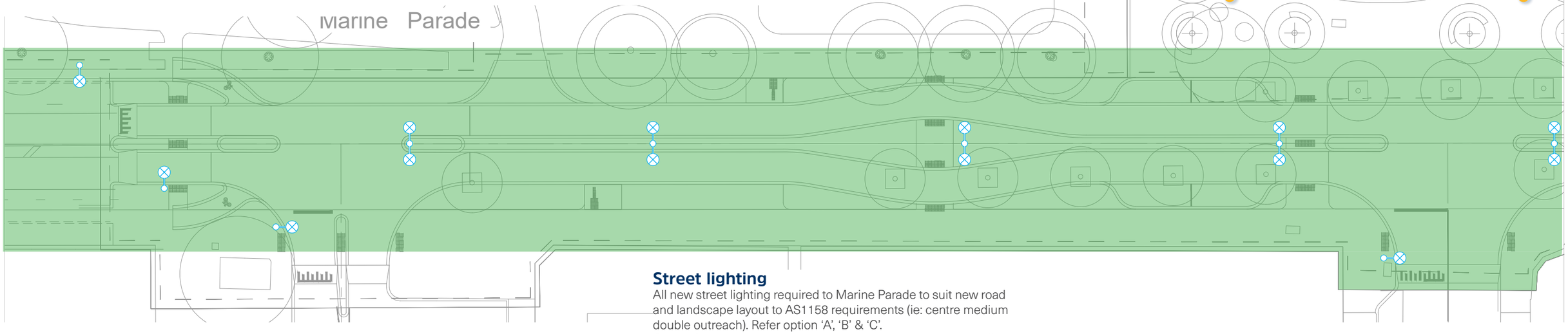
Handrail puck lighting to stairs and ramps

Indicative Pedestrian Lighting
(Pathway & Promenade)

Proposed 5-6m high pedestrian light pole



Linear lighting



Street lighting

All new street lighting required to Marine Parade to suit new road and landscape layout to AS1158 requirements (ie: centre medium double outreach). Refer option 'A', 'B' & 'C'.
Option C will require new private power reticulation but also offers Smart City, communications, wi-fi & CCTV mounting provision.

Legend

- Proposed 5-6m high pedestrian light pole
- Proposed 9m high multihead multifunction pole with adjustable area lighting luminaires.
- Recessed linear strip lighting
- Handrail puck lighting
- New Street lighting (refer to option A,B & C)

Refer to SK2 for continuation

Cottesloe Foreshore
Lighting Concept Design - SK-001

Rev 1 14.07.20 **PRELIMINARY** **1:400@A3**

ETC Engineering Technology Consultants

Indicative Pedestrian Lighting
(Pathway & Promenade)

Proposed 9m high multifunction pole with adjustable area lighting luminaires.

Integrated feature lighting
to structure.

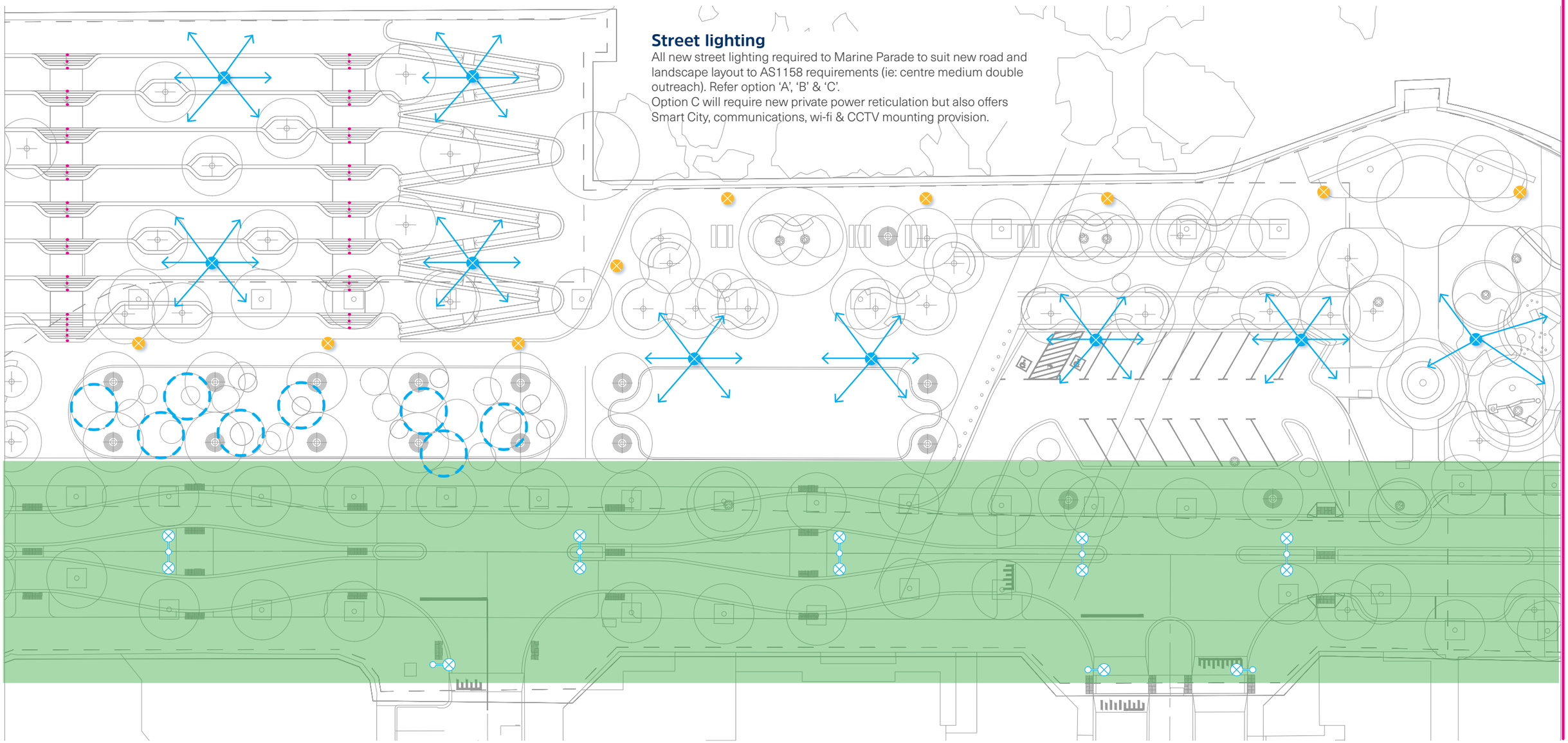
Handrail puck lighting to stairs and ramps

Refer to SK1 for continuation

Refer to SK3 for continuation

Street lighting

All new street lighting required to Marine Parade to suit new road and landscape layout to AS1158 requirements (ie: centre medium double outreach). Refer option 'A', 'B' & 'C'.
Option C will require new private power reticulation but also offers Smart City, communications, wi-fi & CCTV mounting provision.



Legend

- Proposed 6m high pedestrian light pole
- Proposed 9m high multihead multifunction pole with adjustable area lighting luminaires.
- Recessed linear strip lighting to structural art installation
- Handrail puck lighting
- New Street lighting (refer to option A,B & C - SK1)

Cottesloe Foreshore
Lighting Concept Design - SK-002

Rev 1 14.07.20 **PRELIMINARY** **1:400@A3**

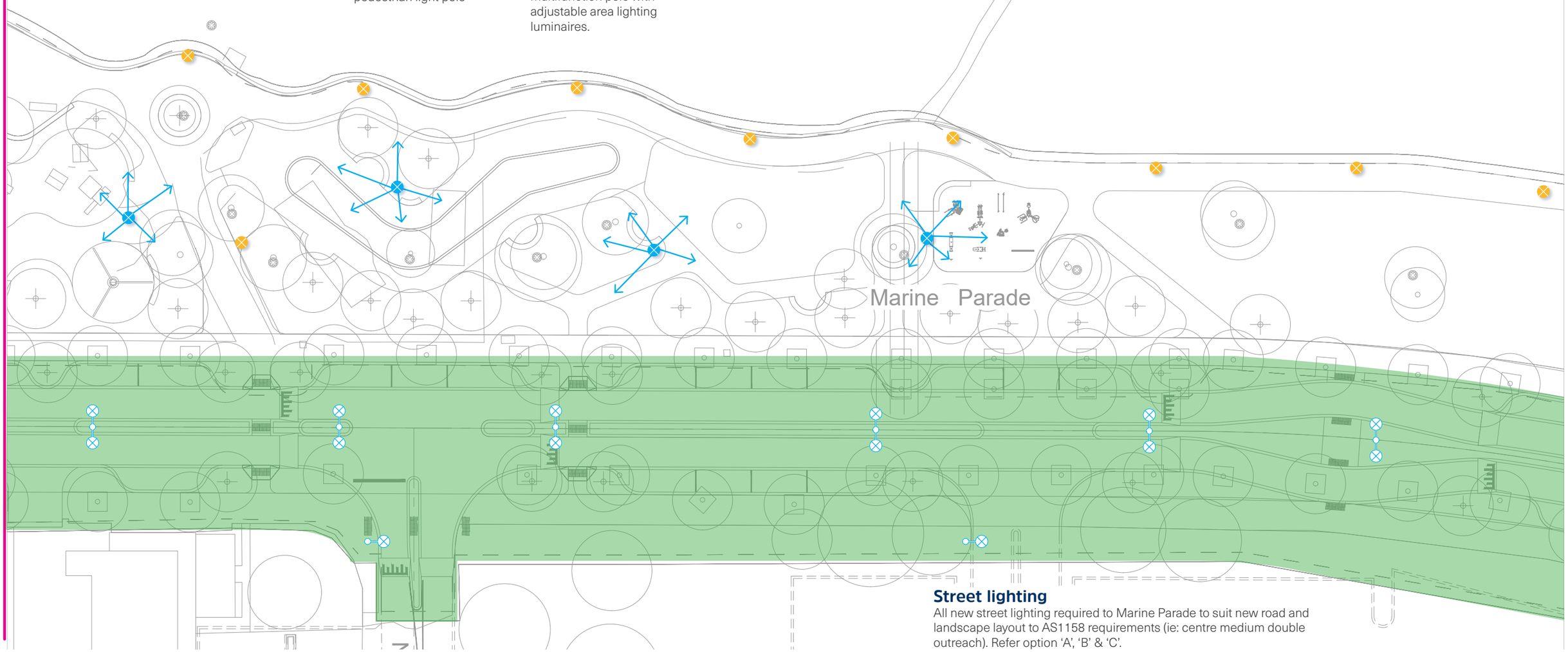
ETC Engineering Technology Consultants / etc

Refer to SK2 for continuation

Indicative Pedestrian Lighting
(Pathway & Promenade)

Proposed 5-6m high
pedestrian light pole

Proposed 9m high
multifunction pole with
adjustable area lighting
luminaires.



Street lighting

All new street lighting required to Marine Parade to suit new road and landscape layout to AS1158 requirements (ie: centre medium double outreach). Refer option ‘A’, ‘B’ & ‘C’.
Option C will require new private power reticulation but also offers Smart City, communications, wi-fi & CCTV mounting provision.

Legend

- Proposed 6m high pedestrian light pole
- Proposed 9m high multihead multifunction pole with adjustable area lighting luminaires.
- New Street lighting (refer to option A,B & C - SK1)

Cottesloe Foreshore
Lighting Concept Design - SK-003

Rev 1 14.07.20 **PRELIMINARY** **1:400@A3**

ETC Engineering Technology Consultants / etc

Refer to SK4 for continuation

Refer to SK3 for continuation

Indicative Pedestrian Lighting
(Pathway & Promenade)

Proposed 5-6m high
pedestrian light pole

Bryan Way

Marine Parade

Street lighting

All new street lighting required to Marine Parade to suit new road and landscape layout to AS1158 requirements (ie: centre medium double outreach). Refer option 'A', 'B' & 'C'.
Option C will require new private power reticulation but also offers Smart City, communications, wi-fi & CCTV mounting provision.

Legend

- Proposed 6m high pedestrian light pole
- New Street lighting (refer to option A,B & C - SK1)

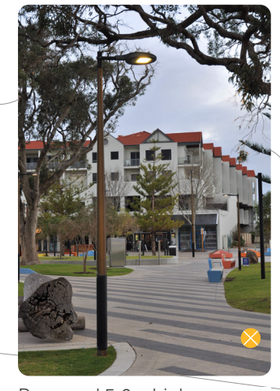
Cottesloe Foreshore
Lighting Concept Design - SK-004

Rev 1 14.07.20 **PRELIMINARY** **1:400@A3**

ETC Engineering Technology Consultants

Refer to SK5 for continuation

Indicative Pedestrian Lighting
(Pathway & Promenade)



Proposed 5-6m high
pedestrian light pole

Refer to SK4 for continuation

Marine Parade

Eric St

Street lighting

All new street lighting required to Marine Parade to suit new road and landscape layout to AS1158 requirements (ie: centre medium double outreach). Refer option ‘A’, ‘B’ & ‘C’.
Option C will require new private power reticulation but also offers Smart City, communications, wi-fi & CCTV mounting provision.

Legend

- Proposed 6m high pedestrian light pole
- New Street lighting (refer to option A,B & C - SK1)

Cottesloe Foreshore
Lighting Concept Design - SK-005

Rev 1 14.07.20 **PRELIMINARY** **1:400@A3**

ETC Engineering Technology Consultants

Wind Meter/Generator

CITY OF COTTESLOE DB-C ELECTRICAL ZONE

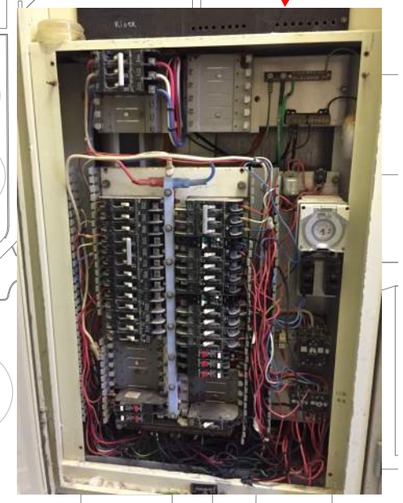
EXISTING SITE MAIN SWITCHBOARD
- KIOSK DB K1 (63A)
- KIOSK DB K2 (63A)
- BEACH KIOSK (63A)
- TOWN OF COTTESLOE DB-C (63A)
- SURF CLUB DB (32A)
- RESTAURANT DB-R (200A)

Refer to site survey photos

EXISTING ToC DB-C
(TOILETS/EXTERNAL SERVICES)

SL
SL
FP
FP
FP
PL
PL
~150mm² 4x1c XLPE

WESTERN POWER UNIVERSAL PILLAR



LEGEND

- ELECTRICAL SWITCHBOARD
- FP — FLOODLIGHT POLE
- PL — POLE TOP PEDESTRIAN LIGHT
- SL — SOLAR LIGHT
- ELECTRICAL PILLAR/JOINT
- WESTERN POWER PILLAR
- CCTV — CCTV POLE
- POLE LIGHT DOUBLE OUTREACH
- POLE LIGHT SINGLE OUTREACH

EXISTING ELECTRICAL

(VISUAL OBSERVATION ONLY)

1.

ETC
Engineering Technology Consultants / ETC

ETC 9113 SK-006
17.07.20

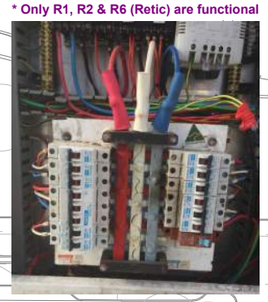
MINI PILLAR
(SERVICE UNKNOWN)

ELECTRICAL
PILLAR/JOINT

PLAYGROUND DB
INDICATIVE ELECTRICAL
ZONE

WESTERN POWER
PILLAR

Playground DB
* Poor Condition
* W and B meter fuses blown
* Only R1, R2 & R6 (Retic) are functional



INDICATIVE ELECTRICAL
ZONE
NOTE: SUPPLY AND SWITCHBOARD
LOCATION NOT IDENTIFIED

FP

FP

CCTV

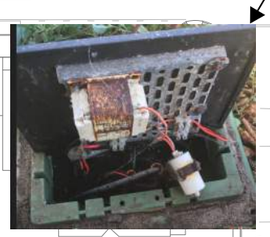
CCTV

ELECTRICAL
PILLAR/JOINT

6mm² 2C+E

2.5mm² 2C+E

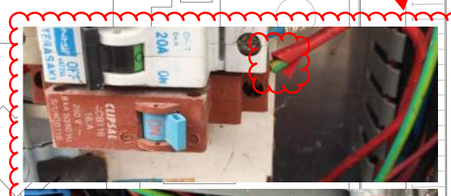
CITY OF
COTTESLOE DB-C
ELECTRICAL ZONE



WESTERN POWER
TRANSFORMER /
SUBSTATION

CCTV

Irrigation Switchboard:
* 2x1C 6mm² EARTH submain via 16A CB
* Submain cables non-compliant as they are two 6mm² EARTH cables sleeved with red and black electrical tape.
* Possible U/G joint as submain cables at irrigation board are compliant white & black building wire conductors.



EXISTING ELECTRICAL

(VISUAL OBSERVATION ONLY)

2.

ETC
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ETC 9113 SK-007
17.07.20

INDICATIVE ELECTRICAL ZONE
NOTE: SUPPLY AND SWITCHBOARD LOCATION NOT IDENTIFIED

DB-H ELECTRICAL ZONE

PRIVATE MINI PILLARS

WP Light
216365

CCTV

CAFE SWITCHBOARD
SPD set to 128A
50mm² XLPE
Max demand (logged): 88A

DB-H SWITCHBOARD
* No lighting fed from this board
* 6mm² 4C+E submain
* 60A fuses installed
* Lighting timeclock fault and no lighting loads remaining on this board

WESTERN POWER PILLAR

EXISTING ELECTRICAL

(VISUAL OBSERVATION ONLY)

3.

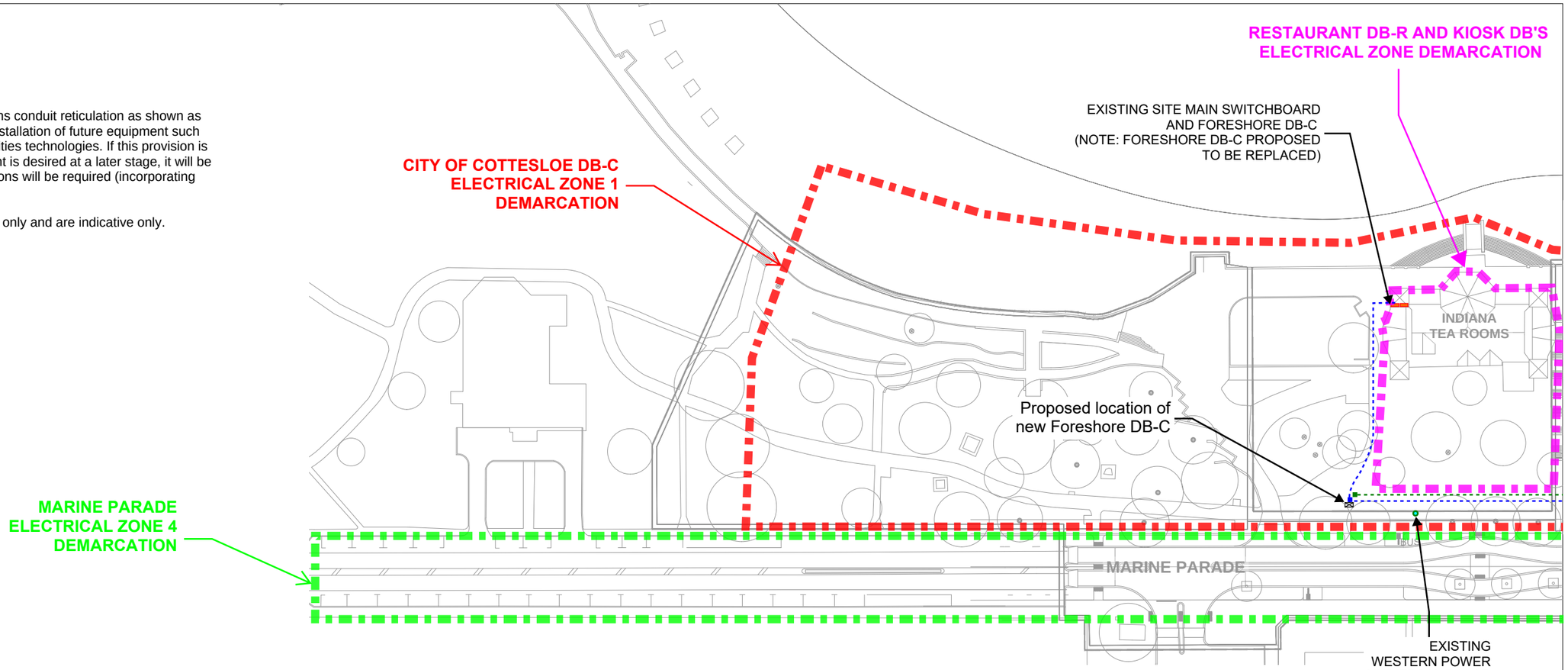
ETC
Engineering Technology Consultants / ETC

ETC 9113 SK-008
17.07.20

NOTES:

1. **COMMUNICATIONS PROVISIONING**
   ETC recommend the provisioning of communications conduit reticulation as shown as well as into each multifunction pole to enable the installation of future equipment such as CCTV, AV, Wifi, communication and/or Smart Cities technologies. If this provision is not included during this project, and such equipment is desired at a later stage, it will be at a much greater expense as significant modifications will be required (incorporating reinstatement works and service alterations).

2. The conduit routes shown are for major truncations only and are indicative only.



ESTIMATED POWER PROVISIONING AND RECOMMENDATIONS

		Existing Supply Capacity	Proposed New Supply Capacity
GENERAL:	The proposed redevelopment master plan, as currently shown, does not include a major events or function space (typically for large concerts, community events, farmers markets etc.). ETC propose to limit the existing supply upgrades by: - Diversifying electrical loads across all the existing power supplies - Replacing and upgrading non-compliant services where required. - Limiting demand upgrades to avoid (where possible) to trigger a new Western Power Transformer to be installed on site. Should a larger event be planned requiring in excess of the new supply capacity then portable temporary power may be hired for such events.	–	–
ZONE 1: (Terrace, Plaza)	The existing Foreshore DB-C located at the Indiana Tea Room is in poor condition due to asset age and extent of corrosion rendering it unsuitable for re-use. ETC recommend that a new foreshore DB-C be established outside of the existing Indiana room switchroom (to create a clear demarcation) and that the Town of Cottesloe consider negotiating an increased demand capacity from 63A 2-phase (current) to upgrade in supply to 100-120A 3-phase to service additional lighting and power to servve the proposed upgrade to external spaces. The proposed redevelopment of the Indiana Tea Room is expected to increase the overall power demand to the existing site considerably. This will likely exceed the existing supply demand to more than 250A 3-phase necessitating the installation of a new Western Power transformer substation. Therefore, an understanding of the Indiana Tea Room development power requirements and programme should be determined so that any required power upgrades of both developments are coordinated. How the costs of any power upgrades are apportioned between the two projects should also be considered. ETC are unaware of the service agreement/s between the leasee and the Town of Cottesloe and this may affect the outcome and any negotations.	63A 3-phase	100-120A 3-phase
ZONE 2: (Playground, Fitness)	The playground external switchboard was found to be in poor condition due to ingress, corrosion and an electrical fault which has blown two phases of the supply. Additionally, the supply capacity of this switchboard (based on the cable size) is insufficient to serve proposed new lighting and to provide additional power for events and place activation (e.g. outlets for food vans or bands or other events). Hence this will require an application to Western Power to upgrade this supply to the requested capacity (to be determined pending Detail Design). The cost of this new supply will be dependent upon the demand (pending Detail Design) and may take as long as 3-4 months to initiate via application to Western Power.	32A 3-Phase (Estimated, and supply only has one operational phase)	100A 3-phase
ZONE 3: (Coastal Gardens)	The Coastal Gardens DB-H is in good condition (as it was recently installed) aside from the timeclock being faulty which can be replaced easily. The switchboard has capacity to serve the proposed new pedestrian lighting. The extent of civil & landscaping redevelopment will result in the existing Western Power street lighting becoming non-compliant (even with LED luminaire replacement as has commenced in some sections of Marine Parade). The proposed introduction of centre medians, traffic management devices, multiple pedestrian crossings and landscape planting will necessitate a complete redesign of the existing streetlighting. Refer to ETC's concept lighting plan and Concept report for more details.	60A 3-Phase	No change
ZONE 4: (Marine Parade)	The extent of civil & landscaping redevelopment will result in the existing Western Power street lighting becoming non-compliant (even with LED luminaire replacement as has commenced in some sections of Marine Parade). The proposed introduction of centre medians, traffic management devices, multiple pedestrian crossings and landscape planting will necessitate a complete redesign of the existing streetlighting. Refer to ETC's concept lighting plan and Concept report for more details.	Assumed as unmetered street lighting supply	No change
ZONE 5: (Carpark)	The point of connection to the carpark towards the North-East of the site has not been determined but the electrical site survey suggest that an unmetered supply has been taken from the adjacent Western Power substation. Assuming this is the case, a Western Power application will be required to isolate/remove this supply. Ideally, ETC recommend to relocate the point of connection to the existing irrigation switchboard. The supply to the irrigation switchboard was found to be non-compliant so this cabling must be replaced. However, as this supply crosses multiple property boundaries, this new supply will require Western Power to review and approve. If Western Power reject this proposal, it will require an application to WP for a new supply. The opinion of probable cost is around $5,000 as minimum (to supply existing lighting and irrigation pump only) and may take as long as 13 weeks to install after payment.	Assumed as unmetered lighting supply	Propose to resupply from the irrigation switchboard
ZONE 6: (Barchetta Cafe)	The circuits within this switchboard are all internal the Barchatta Cafe building and ETC are not proposing to make any modification to this switchboard.	125A 3-Phase	No change

LEGEND

- LV POWER MAJOR TRUNK SERVICES
- COMMS MAJOR TRUNK SERVICES (NOTE 1)
- POWER PIT
- COMMUNICATIONS PIT
- PROPOSED NEW ELECTRICAL SWITCHBOARD
- EXISTING ELECTRICAL SWITCHBOARD

PRELIMINARY ISSUE
CURRENTLY UNDER REVISION

ETC
Engineering Technology Consultants / ETC

Cottesloe Foreshore
Power & Comms Concept Plan

Designed:	ME	Scale:	1:1000 @ A3
Checked:	KMc	Date:	17-July-2020

ETC Ref	Drawing	Rev
9113	SK-009	B

PROPOSED FORESHORE DB-C ELECTRICAL ZONE 1 DEMARCATION

PROPOSED NEW MARINE PARADE DB ELECTRICAL ZONE 2 DEMARCATION

EXISTING WESTERN POWER MINI PILLAR

SUNSET BOWL

SUNSET TERRACES

LOOKOUT

SUNSET PLAZA

GRASS AREA

PARKING PLAZA

JUNIOR PLAYGROUND

PLAYGROUND

OUTDOOR FITNESS & GYM

MARINE PARADE

MARINE PARADE ELECTRICAL ZONE 4 DEMARCATION

Playground DB
(NOTE: Proposed to be replaced)

WESTERN POWER TRANSFORMER / SUBSTATION

Existing Irrigation Switchboard
(NOTE: Proposed to be upgraded and combined with existing carpark lighting supply)

Existing underground cable to irrigation switchboard is non-compliant and must be removed

CARPARK

PROPOSED NEW CARPARK DB ELECTRICAL ZONE 5 DEMARCATION

LEGEND

- LV POWER MAJOR TRUNK SERVICES
- COMMS MAJOR TRUNK SERVICES
- POWER PIT
- COMMUNICATIONS PIT
- PROPOSED NEW ELECTRICAL SWITCHBOARD
- EXISTING ELECTRICAL SWITCHBOARD

PRELIMINARY ISSUE
CURRENTLY UNDER REVISION

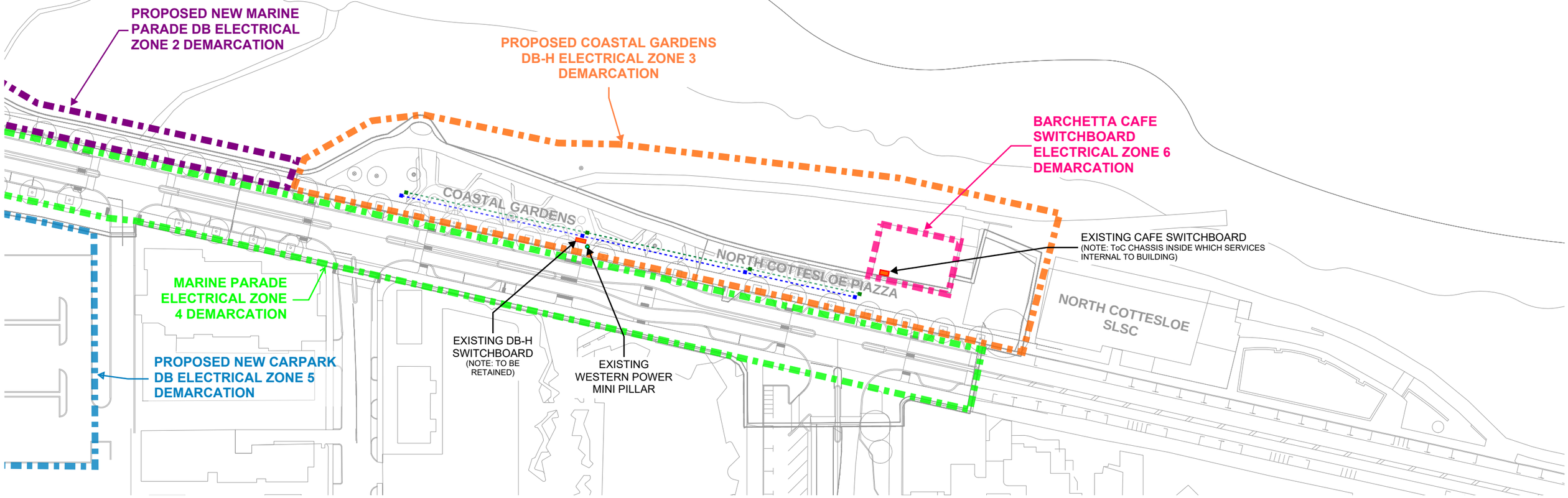
ETC
Engineering Technology Consultants / ETC

Cottesloe Foreshore

Power & Comms Concept Plan

Designed:	ME	Scale:	1:1000 @ A3
Checked:	KMc	Date:	17-July-2020

ETC Ref	Drawing	Rev
9113	SK-010	B



LEGEND

- LV POWER MAJOR TRUNK SERVICES
- COMMS MAJOR TRUNK SERVICES
- POWER PIT
- COMMUNICATIONS PIT
- PROPOSED NEW ELECTRICAL SWITCHBOARD
- EXISTING ELECTRICAL SWITCHBOARD

PRELIMINARY ISSUE
CURRENTLY UNDER REVISION

ETC
Engineering Technology Consultants / ETC

Cottesloe Foreshore

Power & Comms Concept Plan

Designed:	ME	Scale:	1:1000 @ A3
Checked:	KMc	Date:	17-July-2020

ETC Ref	Drawing	Rev
9113	SK-011	B