

Liaison Group #49 – SO Update

24 October 2018



SO Update - Agenda

- General Updates – Non-ECP
- ECP-1 2018 Batch
 - Current Status
 - Offer scheduling and next steps
 - Constraints modelling – EirGrid
- Planning Standard Update & Progression – ESBN
- Generator Standard Charges - ESBN

General Updates – Non-ECP

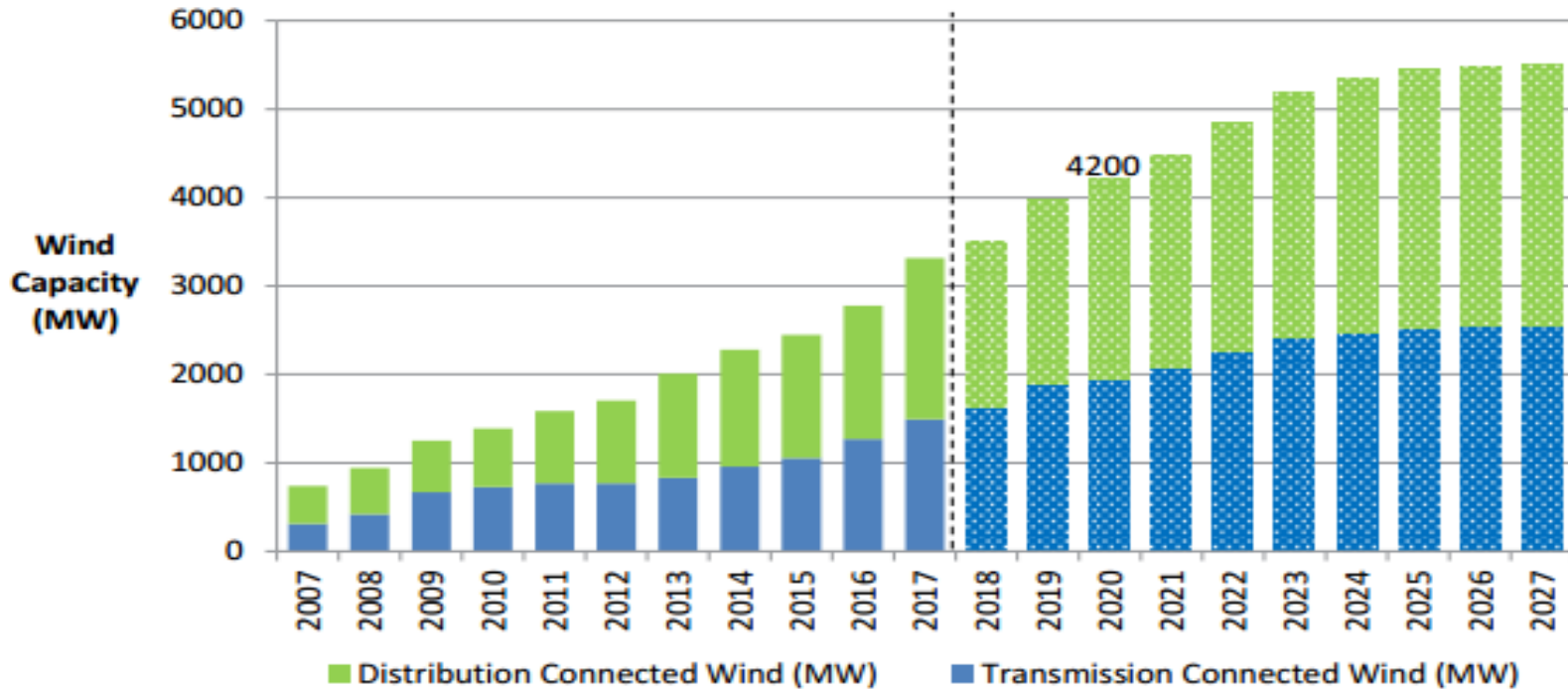
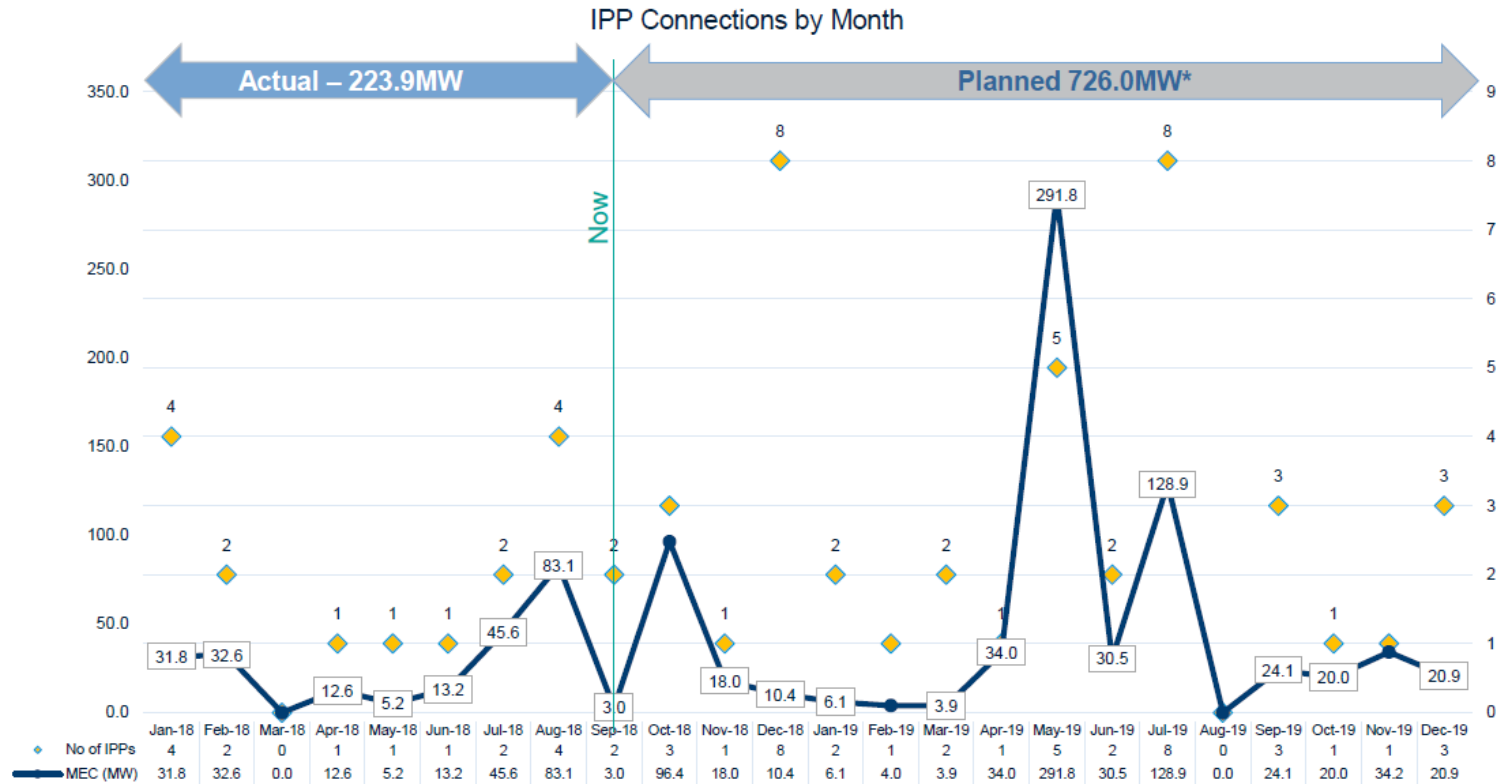


Figure 3-5 Historical and assumed growth of wind capacity in Ireland. The target of 40% RES is met by 2020, and sustained beyond.

General Updates – Non-ECP

◆ 58 IPPs — 949.9MW



* Planned connections as of 19 Sept 2018 – Subject to change

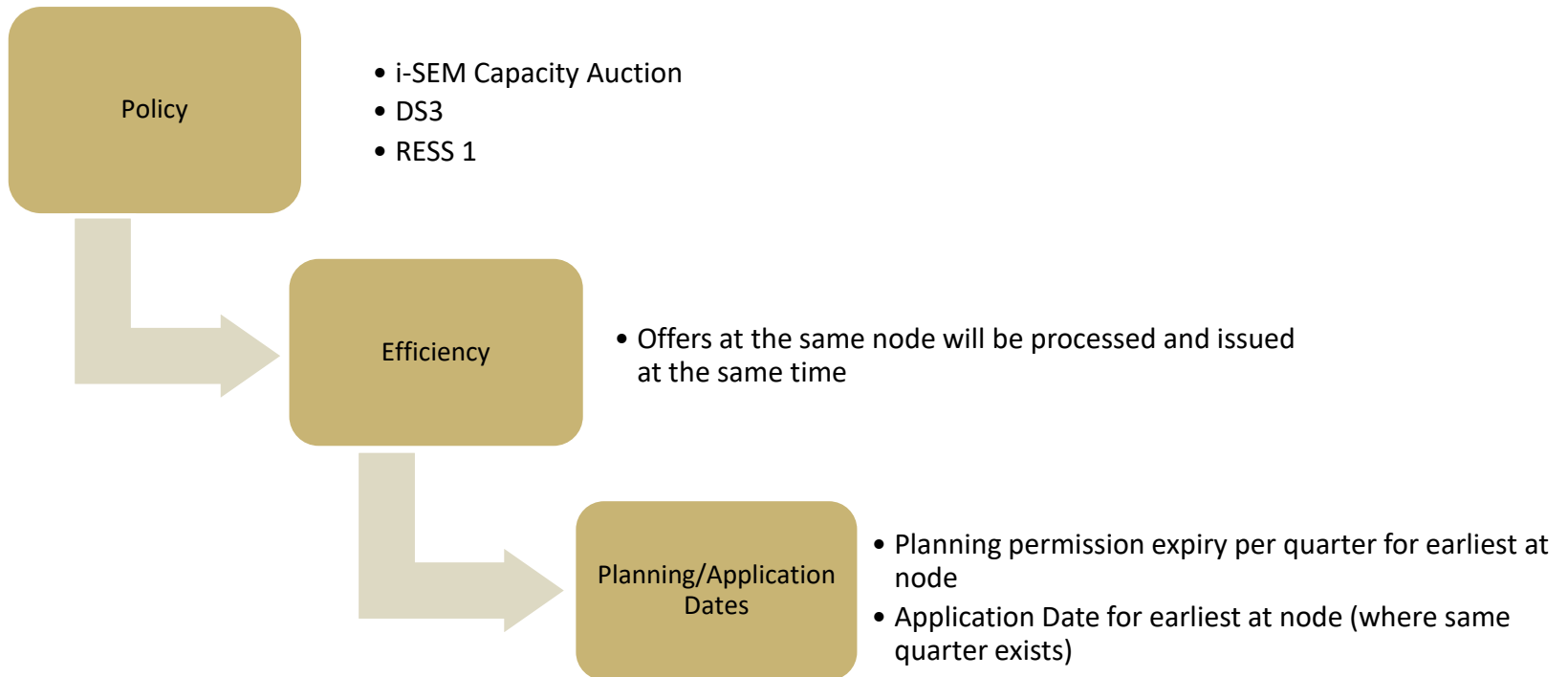
ECP-1 2018 Batch

Current Status

- ECP-1 2018 Batch –140 applications: Finalising of numbers progressing is ongoing
 - 963MW, 85 offers of new applications;
 - 843MW, 21 offers of Non-GPA fold in; and
 - 436MW, 34 offers of relocations
- Offers will be issued from December 2018, to be completed in 2020
- SO's priority when scheduling ECP-1 2018 batch offers are:
 - ✓ Best meets policy objectives
 - ✓ Fairness
 - ✓ Offers are issued in an efficient manner

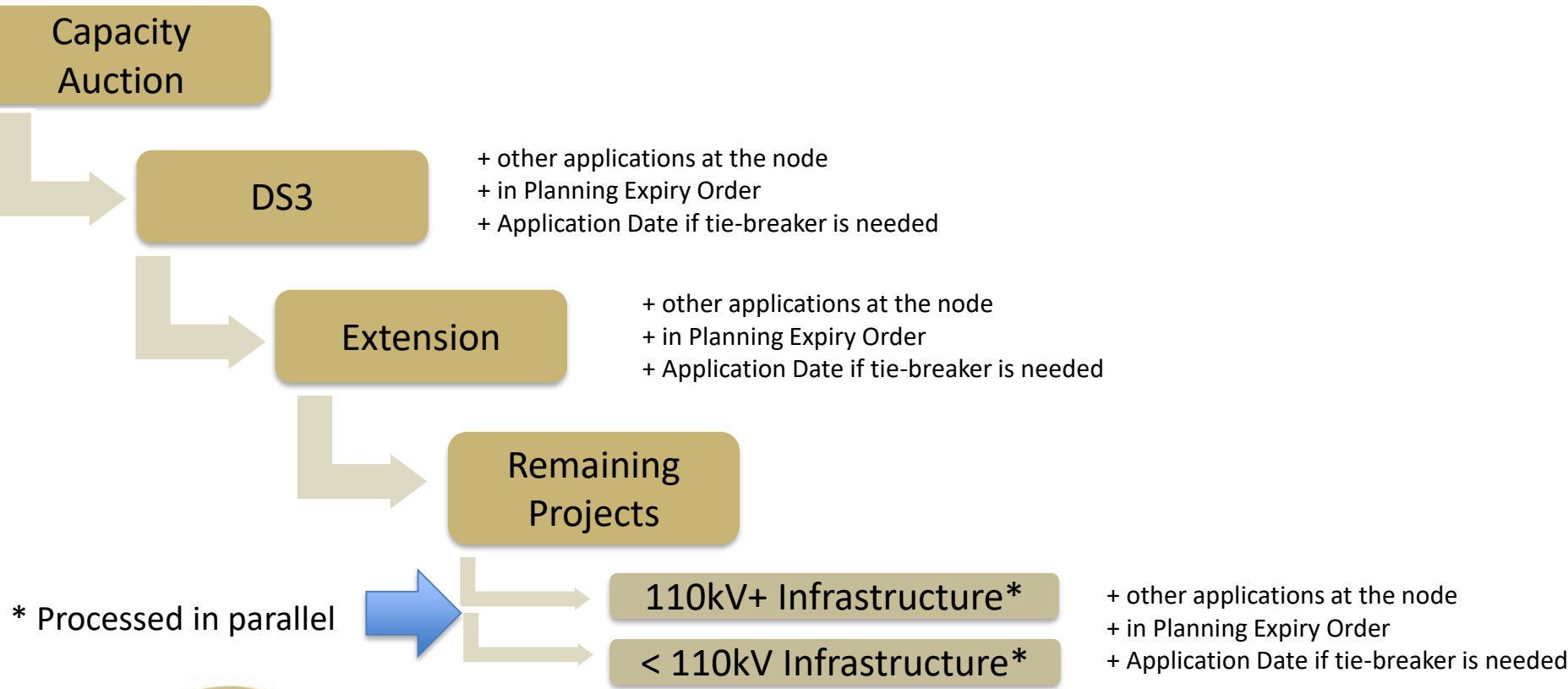
ECP-1 2018 Batch

Offers scheduling and next steps – 2 of 3



ECP-1 2018 Batch

Offers scheduling and next steps – 3 of 3



Typical TSO Connections Considered

1. Loop-in station: Connect into closest circuit
2. Tail station: Single connection back to closest station
3. Tail to Loop-in station: Tail back to new Loop-in station
4. “Over the fence”: Customer site adjacent to existing station

Typical Considerations:

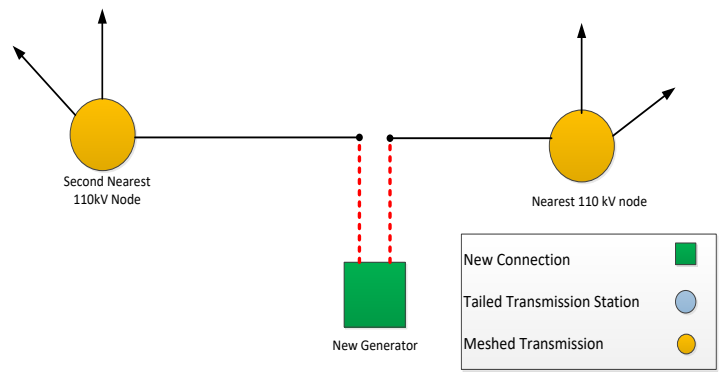
Least Cost Shallow (most basic connection method)

Least Cost Overall (considering all costs e.g. reinforcements to comply with standards)

Customer Preference

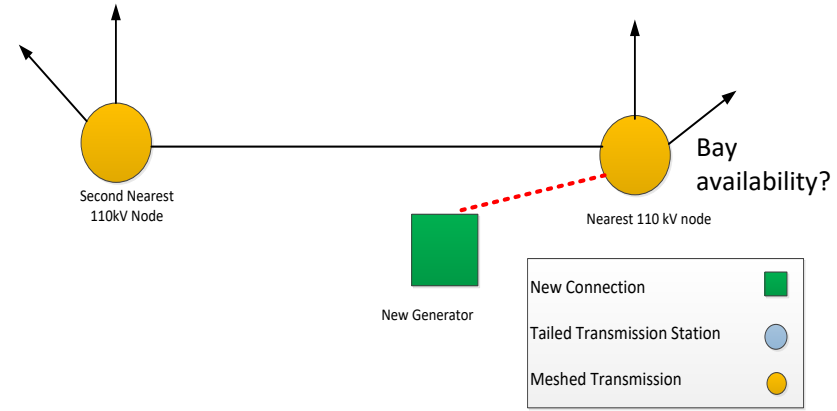
SO Preference

Loop-in station



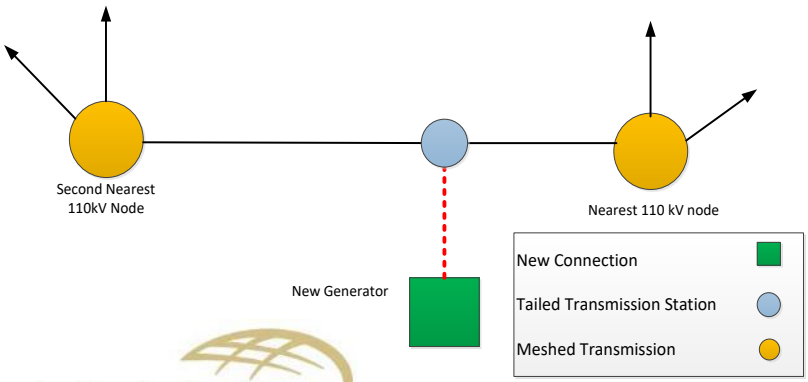
When close to existing circuits....

Tail station



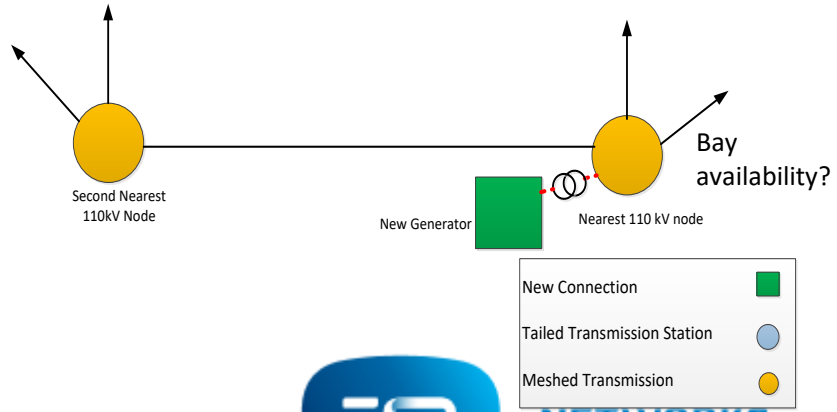
When close to existing stations (~5 km)

Tail to Loop-in



Remote from existing stations (16) and circuits (6)

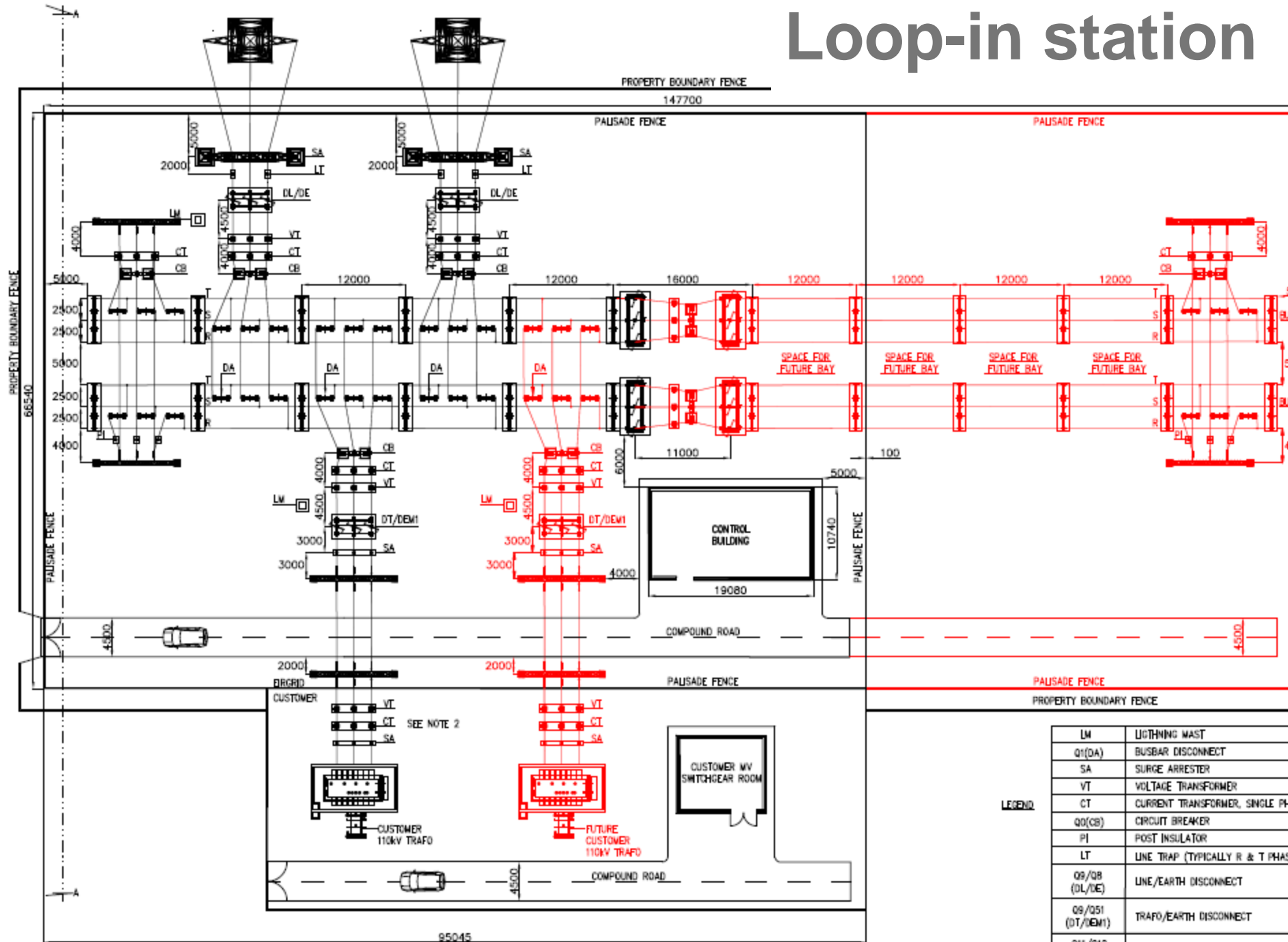
Over the fence



Sites adjacent to existing stations



Loop-in station



LEGEND

LM	LIGHTNING MAST
Q1(DA)	BUSBAR DISCONNECT
SA	SURGE ARRESTER
VT	VOLTAGE TRANSFORMER
CT	CURRENT TRANSFORMER, SINGLE PH.
Q0(CB)	CIRCUIT BREAKER
PI	POST INSULATOR
LT	LINE TRAP (TYPICALLY R & T PHAS)
Q9/Q8 (DL/DE)	LINE/EARTH DISCONNECT
Q8/Q51 (DT/DEM1)	TRAF0/EARTH DISCONNECT
Q11/Q12 (SA1-2 SA1/GA1-2 GA2)	SECTIONALISER

Local Network Considerations

- Local Network Considered between two meshed Nodes
 - Three or more transmission circuits or transformers (excluding tails)
- Intact and N-1 scenarios considered
 - Ideal load flows: Power flows utilise available capacity in both directions.
 - Through-flows are not considered.
 - It must be possible to export power from the local area at some times of the year.
 - Intact or N-1 limitations will require a local reinforcement as part of the Site Related Connection Equipment (SRCE)
 - Credible dispatch patterns will be assumed
- Non-Firm
 - Deep reinforcements will not form part of these offers

Other Considered

- Voltage Studies
 - Capability to operate at 0 MVA_r during 0 MW outputs
 - Required to prevent large proliferation of system wide high voltages
- Short Circuit Studies
 - Some circuit breaker replacements may be required in problematic areas
- Power Quality
 - Assumptions will be made for connections with large cables or large transformers
 - Filters and soft closing circuit breakers may be assumed as requirements
 - Pre-energisation studies will confirm specific limits and requirements

ECP – 1 2018 Batch

Next Steps

- The schedule of ECP offers will be set in accordance with current principles, however both SO's reserve the right to schedule practically and/or reschedule if the situation requires it.
- Following confirmation of the schedule, the SO's will also start holding kick off meetings with relevant customers to discuss potential connection method options.