SP ENERGY NETWORKS

18th November 2016

South West Scotland Forum

Agenda

- Introduction – Craig McDougall
- System Design – Diyar Kadar
- Land and Planning – Ross Baxter
- Programme Update – Bob McGuire, John Rodger
- Questions – Craig McDougall

Safety Contact

DESCRIPTION:

A number of recent incidents have highlighted the need for better planning, control & management of vehicles & plant on site. In the last 6 weeks there have been 11 serious incidents involving large vehicles/plant on IEC sites. These have included: vehicles overturning, vehicles becoming stuck in the verge of access tracks, vehicles coming into contact with OHL GS6 barriers &/or other vehicles - causing damage, plant with unfamiliar controls being operated without familiarisation training (MEWP coming into contact with post insulator) and vehicles operated in an unsafe manner (hi-ab lifting over public road).

SP ENERGY NETWORKS

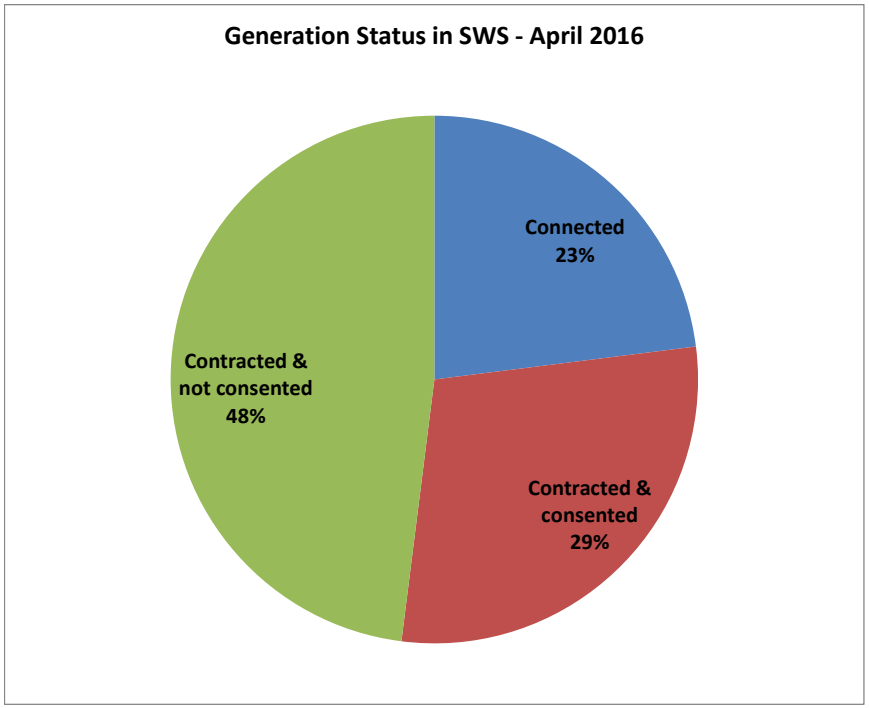
18th November 2016

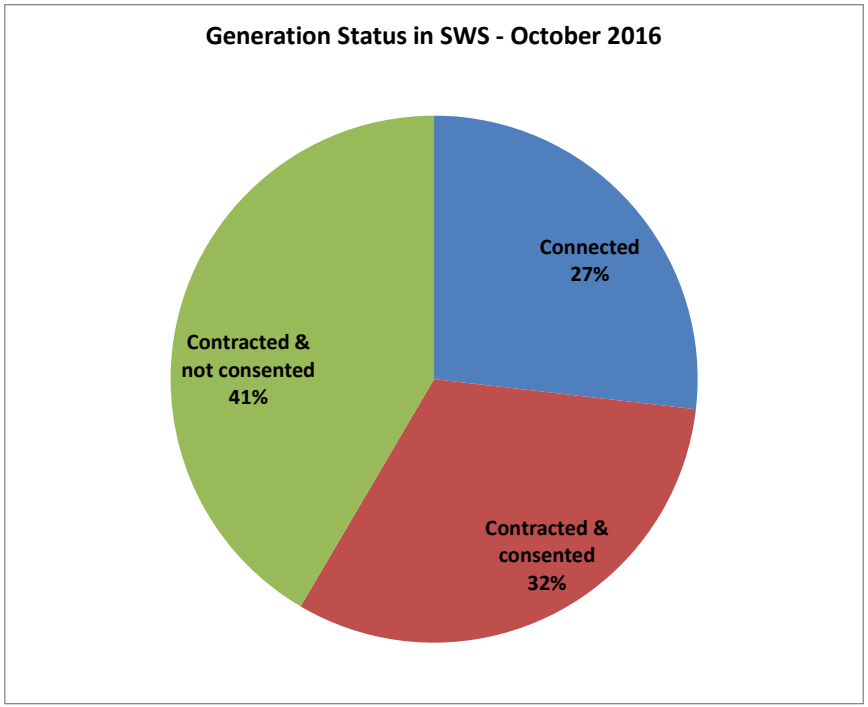
SWS Developer Forum

SPT System Design

Diyar Kadar

Generation Background – Change from last forum





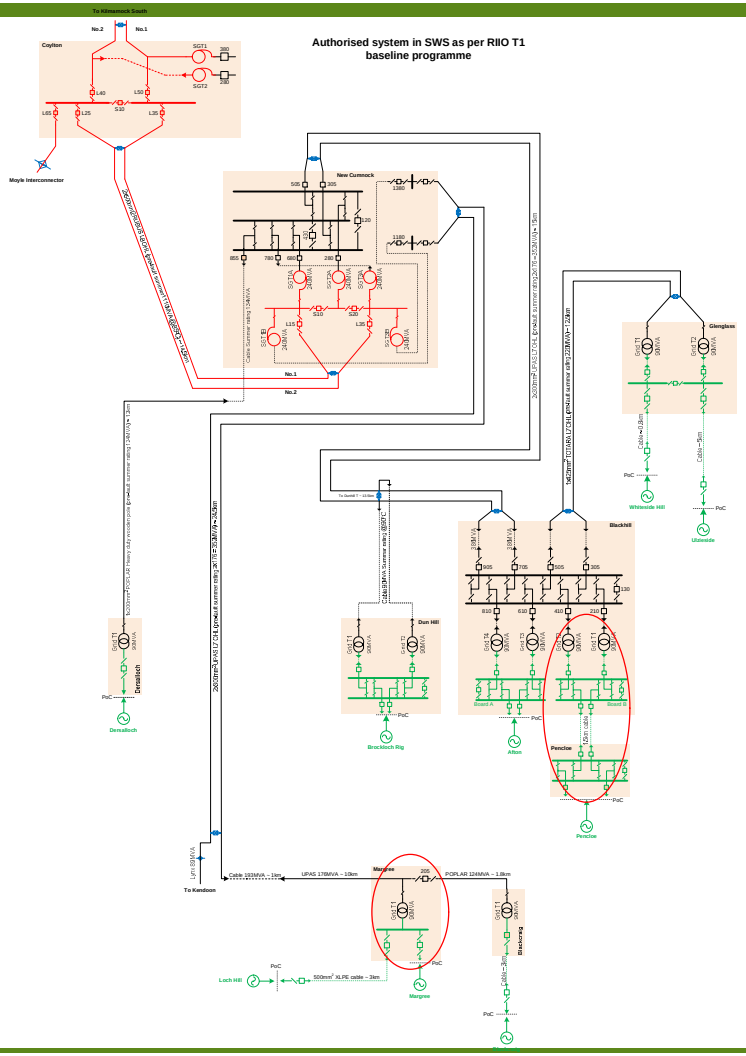
Three new wind farms connected to the system (Dersalloch, Glenchamber and Assel Valley)

Sandy Knowe partly consented

Total generation (Connected and Contracted) in the whole of South West Scotland is around 2900MW

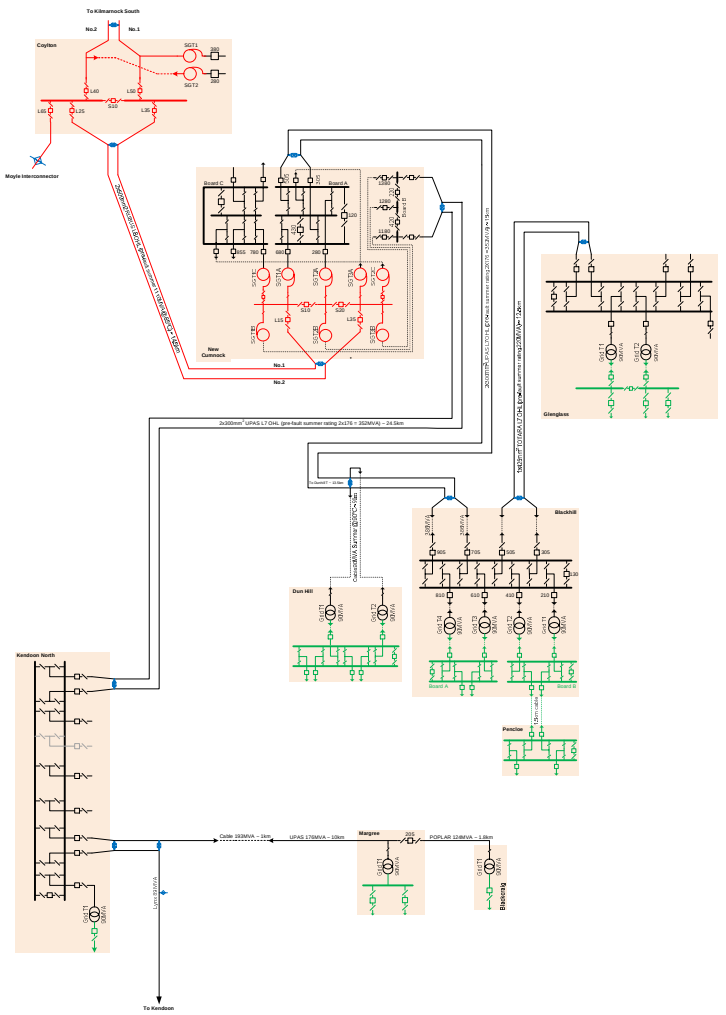
Baseline system in SWS

No change in the baseline system design (Stages 1 to 4).

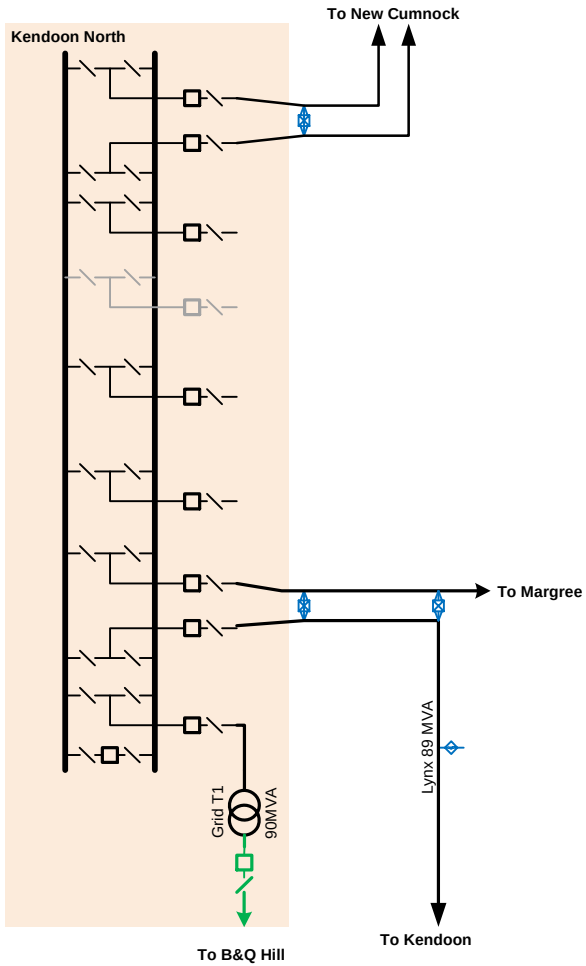


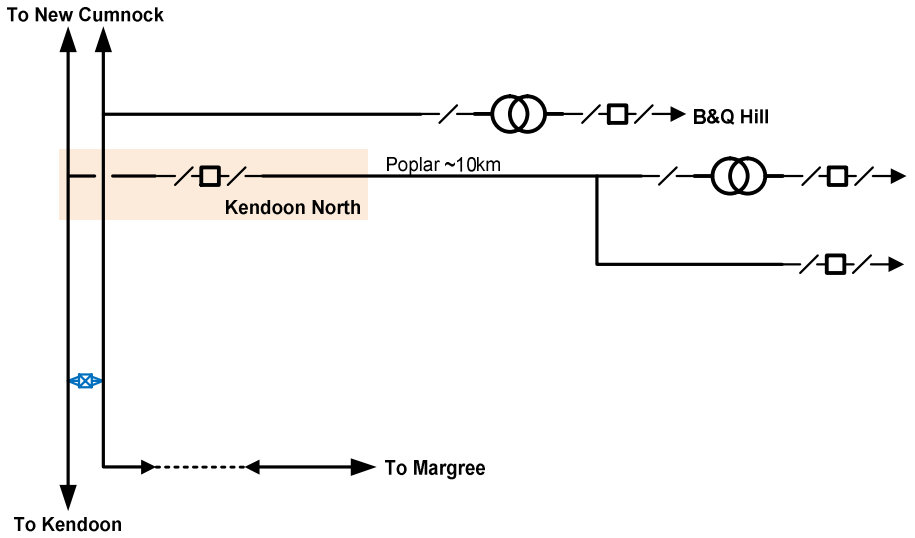
Future Developments

- Mark Hill to Coylton circuit uprating (TORI 136 – YY route) is now completed
- Withdrawal of Kendoon North (TORI 134)
- Withdrawal of New Cumnock to Coylton circuit uprating (TORI 160 – WA Route)
- Withdrawal of the new double circuit between Coylton and Kilmarnock South (TORI 147)
- Development of non-build solutions to maximise system utilisation
- Implementation of load management schemes



Future System Plans – Kendoon North





- Termination and lapse of connection offers
- Changes to Point of Connection
- Rationalisation of overhead line connections
- New solution more economic and efficient

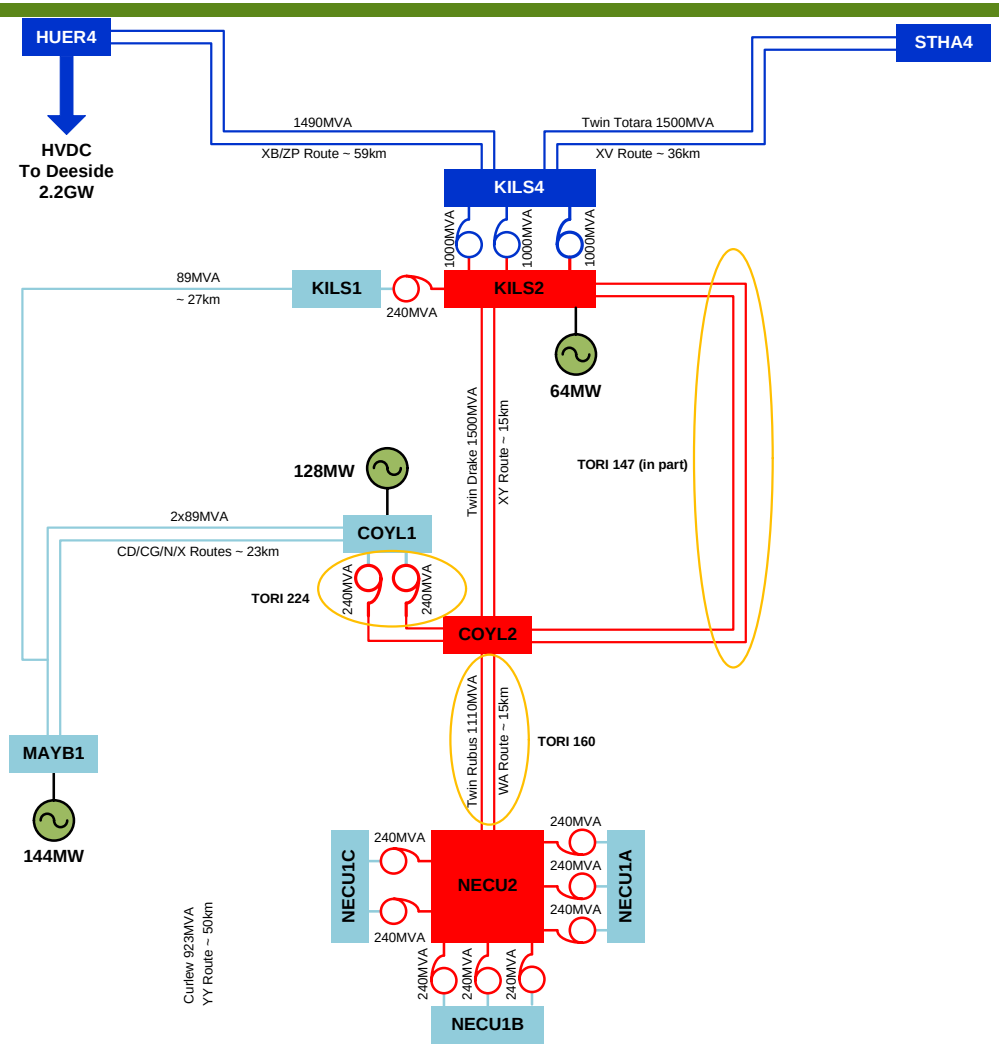
Future System Plans – Withdrawal of TORIs 147 and 160

TORI 147 was introduced to increase the capacity between Coylton and Kilmarnock South and ensure compliance with NETS SQSS

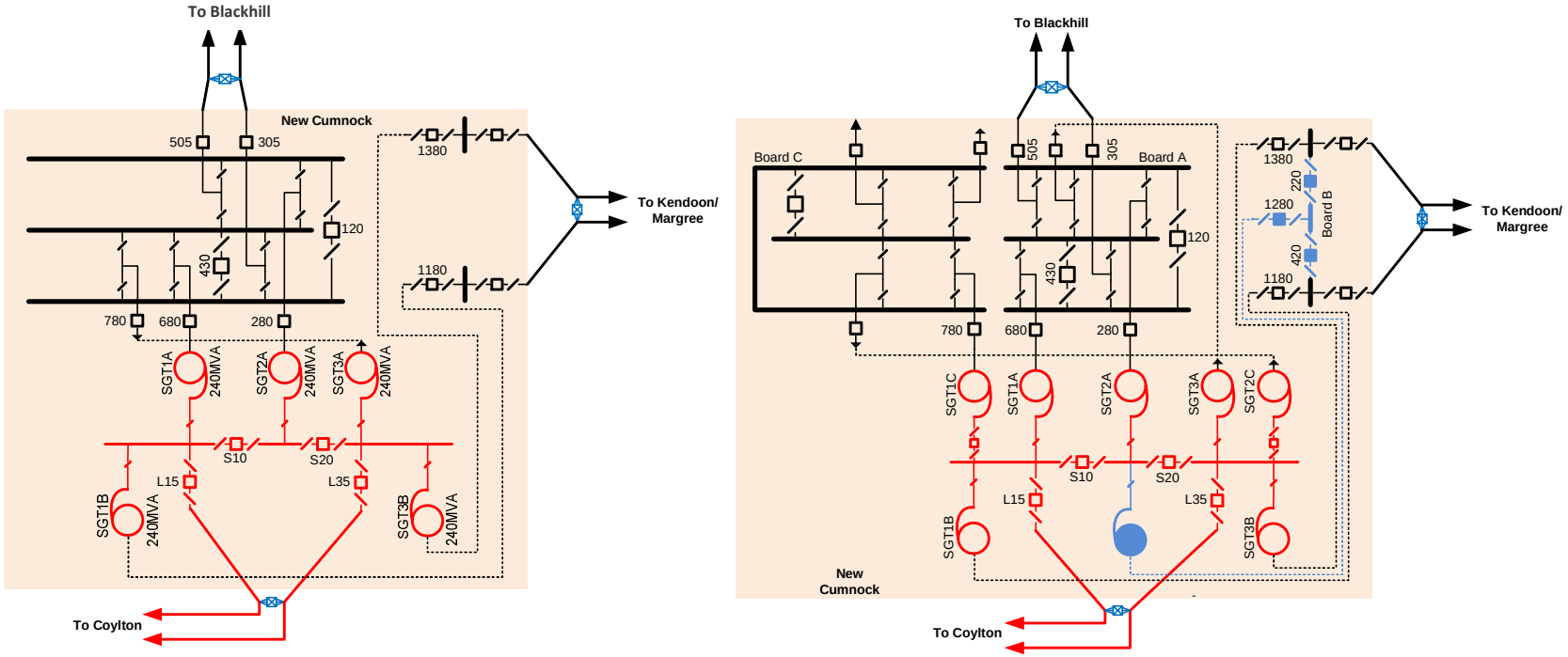
The OHL part of this TORI will not progress as recent Cost Benefit Analysis by NGET SO have shown the scheme to be uneconomic

The proposed transformer uprating at Coylton which is part of TORI 147 will go ahead and will be part of a new TORI (224)

TORI 160 is also deferred as it assumes unrestricted capacity beyond Coylton



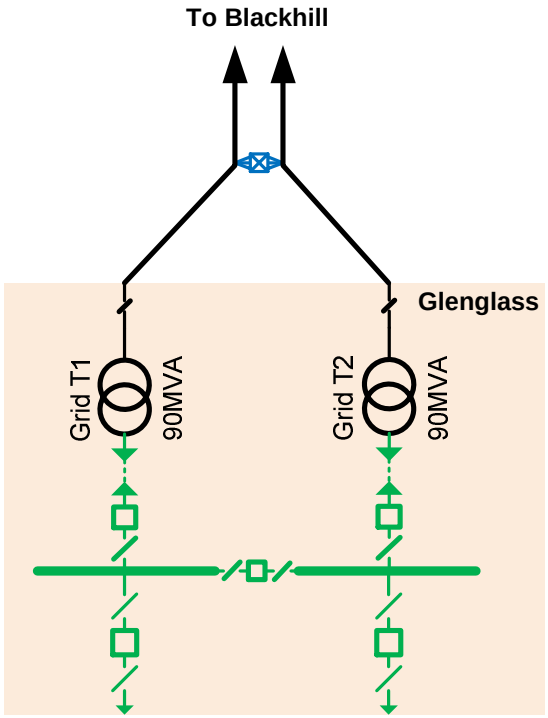
Future System Plans - New Cumnock (no Change)

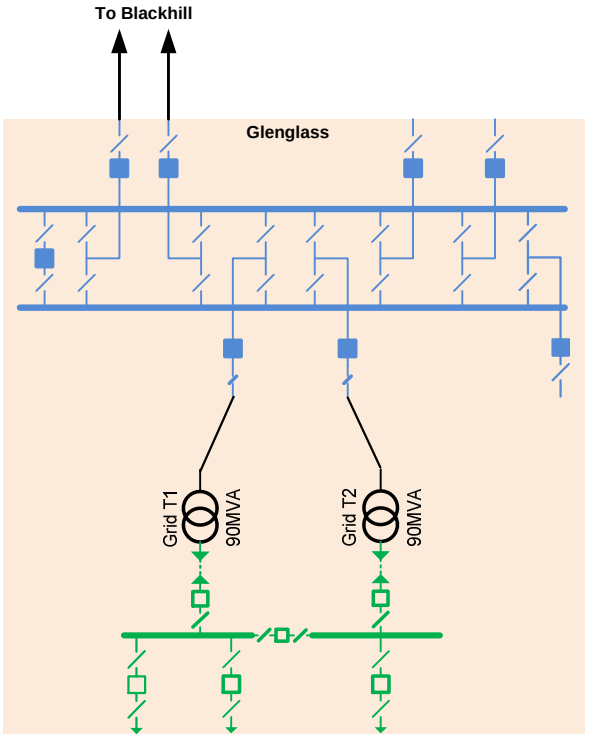


New Cumnock – No change to design

However the 3rd Supergrid Transformer on Board B will now be part of the non-secure works as part of the Dumfries and Galloway development (TORI 213 – items highlighted in blue)

Future System Plans – Glenglass (TORI 173)





No change in design

In Summary

Baseline system developments in SWS are progressing as originally designed and as per our RIIO T1 submission.

The double busbar substation at Kendoon North is deferred due to contract termination

Wider system TORIs 147 (in part) and TORI 160 are withdrawn

Non-build solutions will be developed to ensure system security

Not a significant change in Contracted background

Ross Baxter
Head of Land & Planning

Land & Planning
South West Scotland Renewables Project

South West Scotland – Consents

- One remaining servitude to be completed on Route D
  - Negotiation around construction use rather than any particular ‘land right’ issue
  - Land owner has already consented on separate phase of SWS
  - Low risk

- All other statutory consents and land rights granted
- Ongoing dialogue during construction
    - Landowners
    - Local Authority
    - Statutory consultees

Approach to Consents

- Routeing of overhead lines and siting substations unchanged
- Topic specific methodologies
- Standard Section 37 conditions
- Aware of limited resources
- Stakeholder Liaison Group
- Design / construction = Consent Application
- Programme milestones
- Statutory Powers
- Day 1 mitigation - Green Networks
- Getting on the ground can still be challenging

Engagement

- Public Consultation
- Early Landowner engagement
- Feedback Reports
- Use of modelling techniques
- Community Liaison Group
  - Community Liaison
  - Community Councils / Groups
- Move to early engagement on solutions

18th Nov 2016

SWS Developer Forum

Delivery Update

Bob McGuire

Project Progress Stage 1: Coylton - New Cumnock

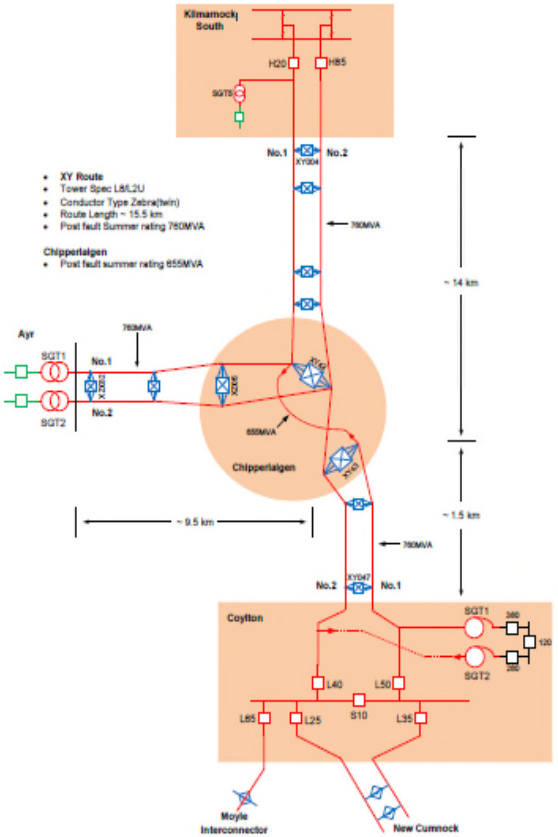
- All works substantially complete (excluding landscaping/reinstatement works)
- New substation and overhead line available to accept first renewable generation export in August 2016

TORI 007 New Cumnock Substation

TORI 007 WA Route

TORI 142 Kilmarnock South – Coylton 275kV (XY Route) Uprating

- Uprating of Coylton to Kilmarnock Cumnock Circuits
- Current rating 600MVA
- New rating 1500MVA
- New twin Drake ACCR Conductor
- Works due to finish by end of November 2016
- New Chipperlagan GIB compound energise 11th November 2016
- All Works planned to finish by end of November 2016



XY Route between Coylton and Kilmarnock South

TORI 142 Kilmarnock South – Coylton 275kV (XY Route) Uprating

Chipperlagan Farm_Viewpoint 2 _ Existing. (Correct viewing distance = 594mm)

Chipperlagan Farm_Viewpoint 2 _ Proposed. (Correct viewing distance = 594mm)

Chipperlagan GIB Compound
(Indicative only)

TORI 142 Kilmarnock South – Coylton 275kV (XY Route) Uprating

SWS Project Progress (Stages 2 – 4)

Stage 2 New Cumnock – Blackhill
Stage 3 Blackhill - Glenglass

Progress since June 2016 SWS Developer Forum

Land Agreements: Previously secured.

Wayleaves / Servitude: Previously secured.

Consent Discharge: OHL and Substation consents discharge previously secured.
Target was for consent discharge of 4 x remaining quarries in June 2016.

Actual: 3 x quarries discharged with D&G June 2016
1 x pending EAC quarry placed on hold / potentially not required / stone
from other quarries tested and suitable for use in Afton valley.

SWS Project Progress (Stages 2 – 4)

Stage 4 New Cumnock - Margree

Progress since June 2016 SWS Developer Forum

Land Agreements:	Previously secured.
Wayleaves / Servitude:	Target indicated at for last forum was completion by Jul 2016 of remaining agreement for 7 towers.
Actual:	1 x servitude remains outstanding for 7 towers agreement in principle reached targeting November conclusion.
Consent Discharge:	Previously completed
Actual:	ECU / D&G consent agreed to construct OHL bypass through Margee due to revision of connection dates.

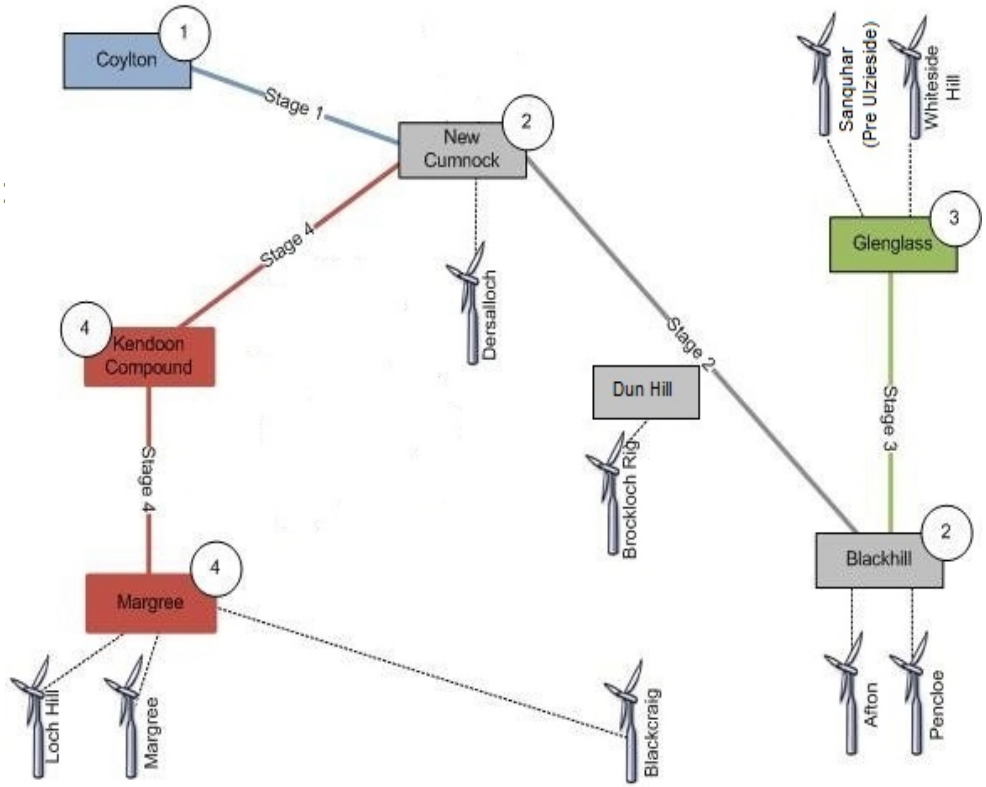
SWS Project Progress (Stages 2 – 4)

Stage 2 New Cumnock – Blackhill

Stage 3 Blackhill - Glenglass

Stage 4 New Cumnock - Margree

- £101m expenditure to date (£30m since June).
- £49m future expenditure in 2016 / 2017.
- Steel tower overhead line main construction in progress:
  37% accesses complete
  13% foundations complete
  Tower erection commenced 14th Nov.
- Tree cutting works in progress 87% route corridor cleared / 545 Hectares felled / mulched. (195 since June)
- Substation platform works complete at New Cumnock / Dunhill / Blackhill / Glenglass and Blackcraig
- New Cumnock / Dunhill / Blackhill / Glenglass and Blackcraig Substation civil works in progress.
- Manufacture of key plant now complete.



Network Overview Diagram

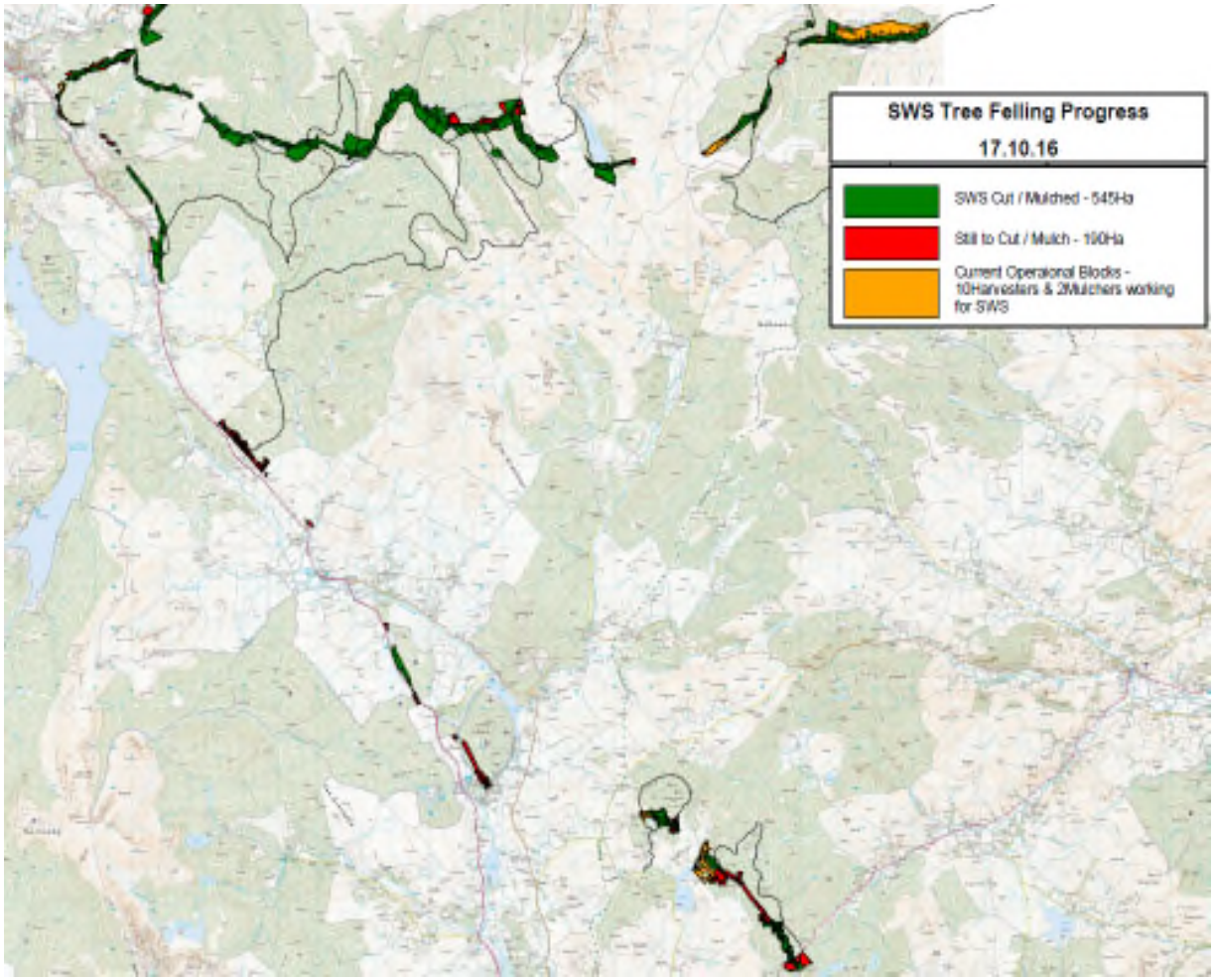
SWS Project Progress (Stages 2 – 4)

- Transformers delivered to site at Dunhill and Blackhill
- Platform / civil / control building / cabling construction contracts now awarded for New Cumnock / Dunhill / Blackhill and Glenglass substations and all overhead line works.
- Award in progress for Glenglass / New Cumnock / Blackcraig Electrical works.
- Tendering progressing for Route D cabling contract steel tower to wood pole line.
- Q2 of 2017 for completion of TORI 114 /145 infrastructure to Dunhill.
- Q3 of 2017 for completion of TORI 116 / 022 infrastructure to Blackhill and Glenglass substations.
- Q3 of 2017 for completion of TORI 111 infrastructure.
- TORI 034 Margree collector substation now likely 2018/19 build / interim OHL bypass to be constructed.
- Energisation of customer connection Q2 2017 from Dunhill Substation in line with current contract date.
- Energisation of customer connections Q3/4 2017 Blackhill / Glenglass Substations and beyond Margree in line with current contract dates.

SWS Project (Stages 2 – 4) Key Risks Remaining

- Conclusion of land agreements with 1 x remaining landowner (Stage 4) agreement in principle reached.
- Stone production commencing at Gallowrig quarry.
- Major construction activities through winter period.

SWS Tree Cutting Progress



SWS Project Tree Cutting / OHL Construction Progress

SWS Project Tree Cutting / OHL Construction Progress

SWS Project Tree Cutting / OHL Construction Progress

SWS Project Progress Photos Glenglass S/S

SWS Project Progress Photos Glenglass S/S

SWS Project Progress New Cumnock S/S

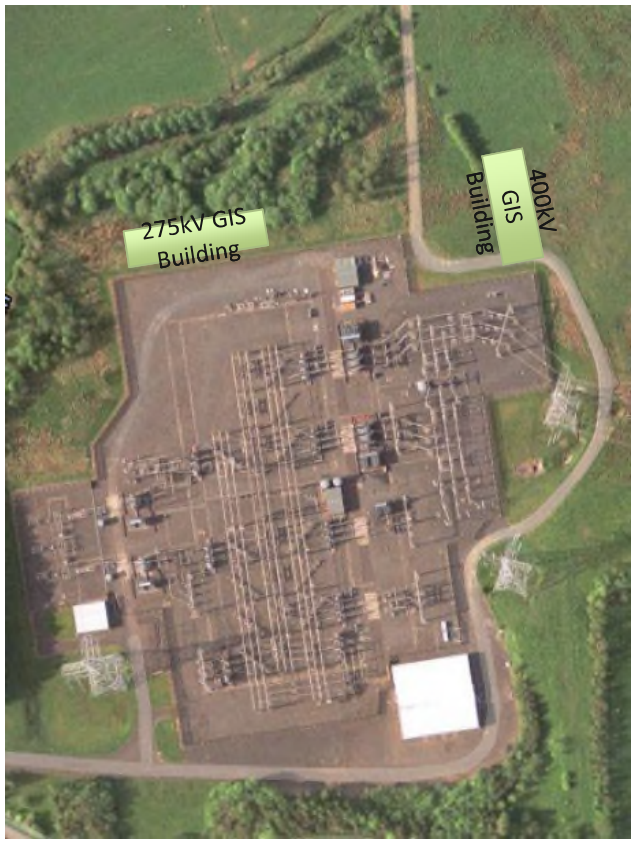
SWS Project Progress New Cumnock S/S

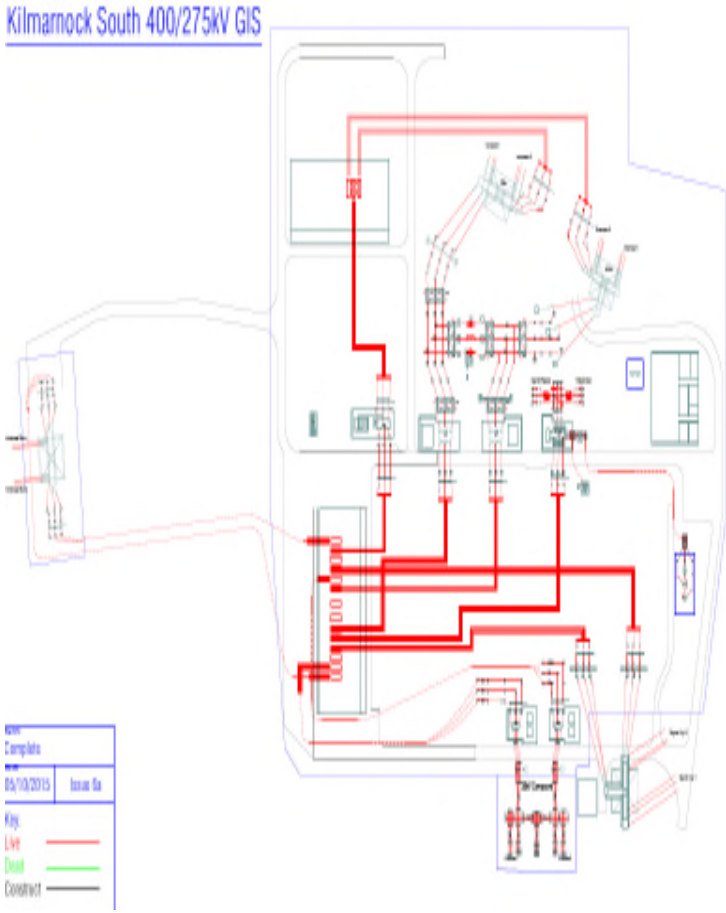
SWS Project Progress Photos Dunhill S/S

SWS Project Blackhill 9th Nov 2016

TORI 143 – Kilmarnock South Uprating

- Construct new 275kV and 400kV GIS Substation and Installation of a third 1000MVA 400/275kV auto wind transformer
- Planned Completion Date November 2019





TORI 143 – Kilmarnock South Uprating Project Progress

- Planning Consents in place for new GIS buildings
- 275kV and 400kV GIS contracts awarded
- Civil enabling contract awarded
  - – site works commenced 30th May
- GIS Building contract awarded – works to start January 2017
- Civil contract award planned end of November 2016
- OHL and transformer contracts awarded
- 33kV cable diversions @ Kilmarnock will be complete in December 2016
- Experiencing some complaints regarding vehicle movements on narrow access road to Kilmarnock – however majority of bulk earthworks/stone import will be complete in February 2017
- Summary: civil enabling works marginally behind programme but overall programme for 2019 completion on track

TORI 143 – Kilmarnock South Uprating

Enabling works at East elevation

Earthworks to Foundation Level

SP ENERGY NETWORKS

Transmission Programmes

18th November 2016

South West Scotland Forum

Development Update

John Rodger

Kilmarnock South Uprating now in delivery

Kilmarnock South to Coylton 3rd Circuit – No Longer Required

Coylton Transformers Uprating

Reduced Kendoon North 132kV Substation - No Longer Required

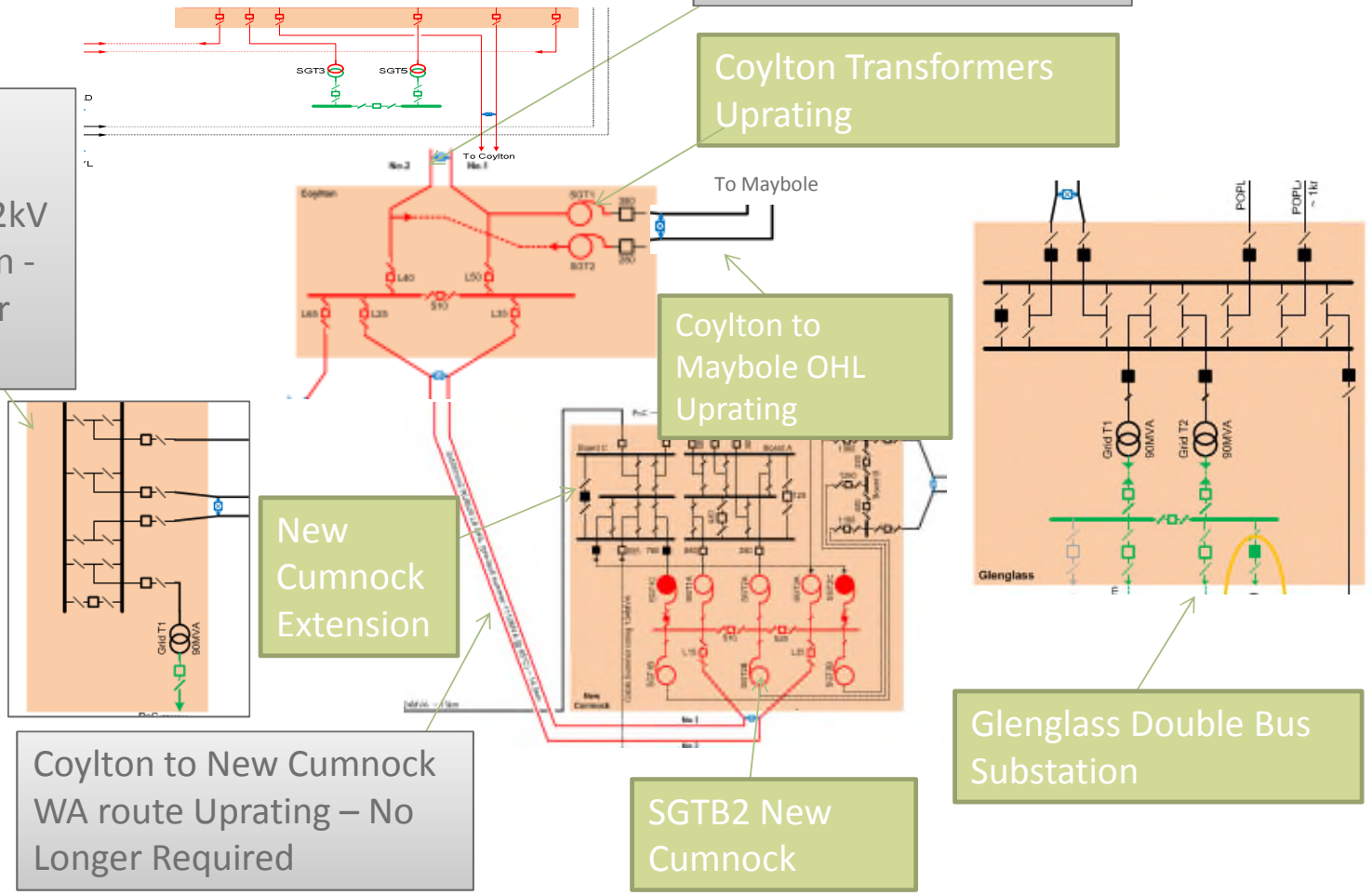
Coylton to Maybole OHL Uprating

New Cumnock Extension

Coylton to New Cumnock WA route Uprating – No Longer Required

SGTB2 New Cumnock

Glenglass Double Bus Substation



TORI 134 Kendoon North Substation

Update from July Forum:

- Confirmed GIS tender stopped
- Confirmed smaller AIS solution
- Confirmed separation of New Cumnock works into (new) TORI 213

- Following further changes to the contracted background there will be no requirement for a substation at this location however there will be a requirement to T into the existing line.

TORI 213 – SGT2B New Cumnock

Current layout of New Cumnock Substation with the highlighted areas for TORI 213 works.

At New Cumnock 275kV substation

- Install a new 275/132kV 240MVA transformer.
- Cabling work to connect to New Cumnock 132kV Board B

At New Cumnock 132kV Board B

- Install three new 132kV circuit breakers to tee in the new transformer.

Contracted generation 258.4MW with 0MW consented however this will be progressed as non secured works as part of the revised D&G solution.

Target completion date Q4 2022

New Cumnock Substation Extension

TORI 158 - New Cumnock Substation Extension

- Extend double bus bar to create Board C and install 2 new 275/132kV 240MVA units (SGT1C and SGT2C)
- Contracted generation has decreased since July (472MW) to 372MW with 48MW consented
- Following changes to the contracted background target completion date is now Q4 2021

TORI 146 – Coylton to Maybole Circuit Uprating

Sealing end tower south of Coylton substation.

Existing X route shown, which will be replaced by new line.

- Technical solution currently under review

Update based on existing solution:

- Construct 23km of new 132kV double circuit overhead tower line
- Environmental consultants now completed route options. Public consultations currently on hold until technical review is complete
- High level technical review of route options now complete
- Target completion Q4 2022
- Contracted generation has increased from July (52.6MW) to 85.6MW and 30MW consented.

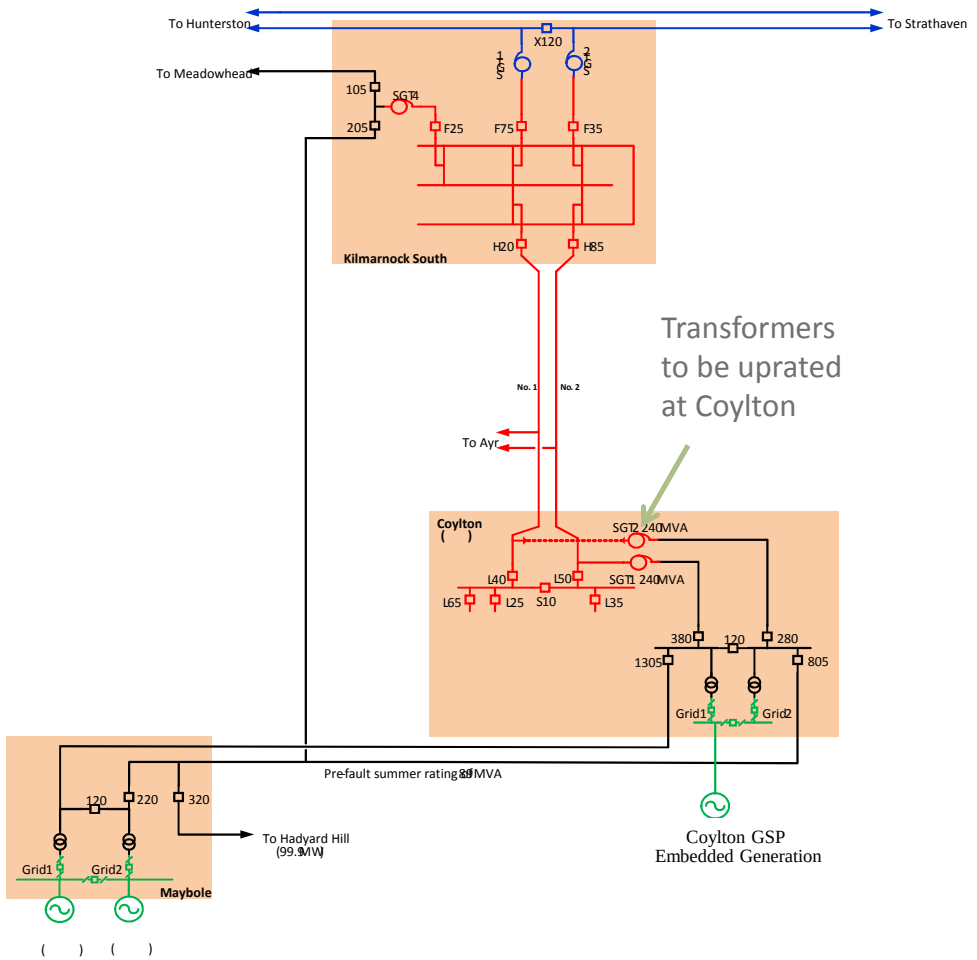
TORI 147 Kilmarnock South to Coylton

Kilmarnock south to Coylton existing line.

- TORI 147 was introduced to increase the capacity between Coylton and Kilmarnock South and ensure compliance with NETS SQSS
- The OHL part of this will not progress as recent Cost Benefit Analysis by NGET SO have shown the scheme to be uneconomic
- The proposed transformer uprating at Coylton which is part of TORI 147 will go ahead and will be part of a new TORI (224)

TORI 224 Coylton SGT1(2) Reinforcement

The diagram below shows the Coylton 240MVA SGT1(2) units installed, along with the wider transmission network associated with Maybole and Coylton GSPs. (N.B. This is shown post the removal of the Kendoon to Maybole T 132kV circuit, scheduled to be completed as part of SPT-RI-111 in October 2017).



At Coylton 275/132kV substation:

- Decommissioning and removal of the existing Coylton SGT1(2) 275/132kV 120MVA transformers.
- Installation of two 275/132kV 240MVA transformers SGT1(2).
- Target completion date September 2022
- Currently contracted

  85.6MW

Project Progress (Stage 5 and Beyond)

TORI 160 - WA Route Uprating

- Reconductor 14.5km between Coylton and New Cumnock using HTLS has now been withdrawn as part of the D&G cost benefit analysis as it assumes unrestricted capacity beyond Coylton.

TORI 173 - Glenglass Double Busbar Substation

- At the proposed Glenglass 132kV Substation, install a new 132kV GIS double busbar substation with eight bays.
- Continually reviewing design requirements based the contracted background
- No change in contracted capacity since July, 277.4MW contracted with 48 MW consented
- Target completion date currently October 2020 however based on contracted background changes a technical review is on-going to confirm a new target completion date of October 2021

Project Progress (Stage 5 and Beyond)

Following the completion of the reinforcement works we will have increased the capacity in the SWS area south of Kilmarnock South Substation by 1000MVA firm capacity creating a combined Firm capacity of 2000MVA and 3000MVA non-firm.