

Level 1

Level 2

Level 3
End Feature

Level 4
Sub Feature

Level 5
Work Packages

- To be further reviewed with the team

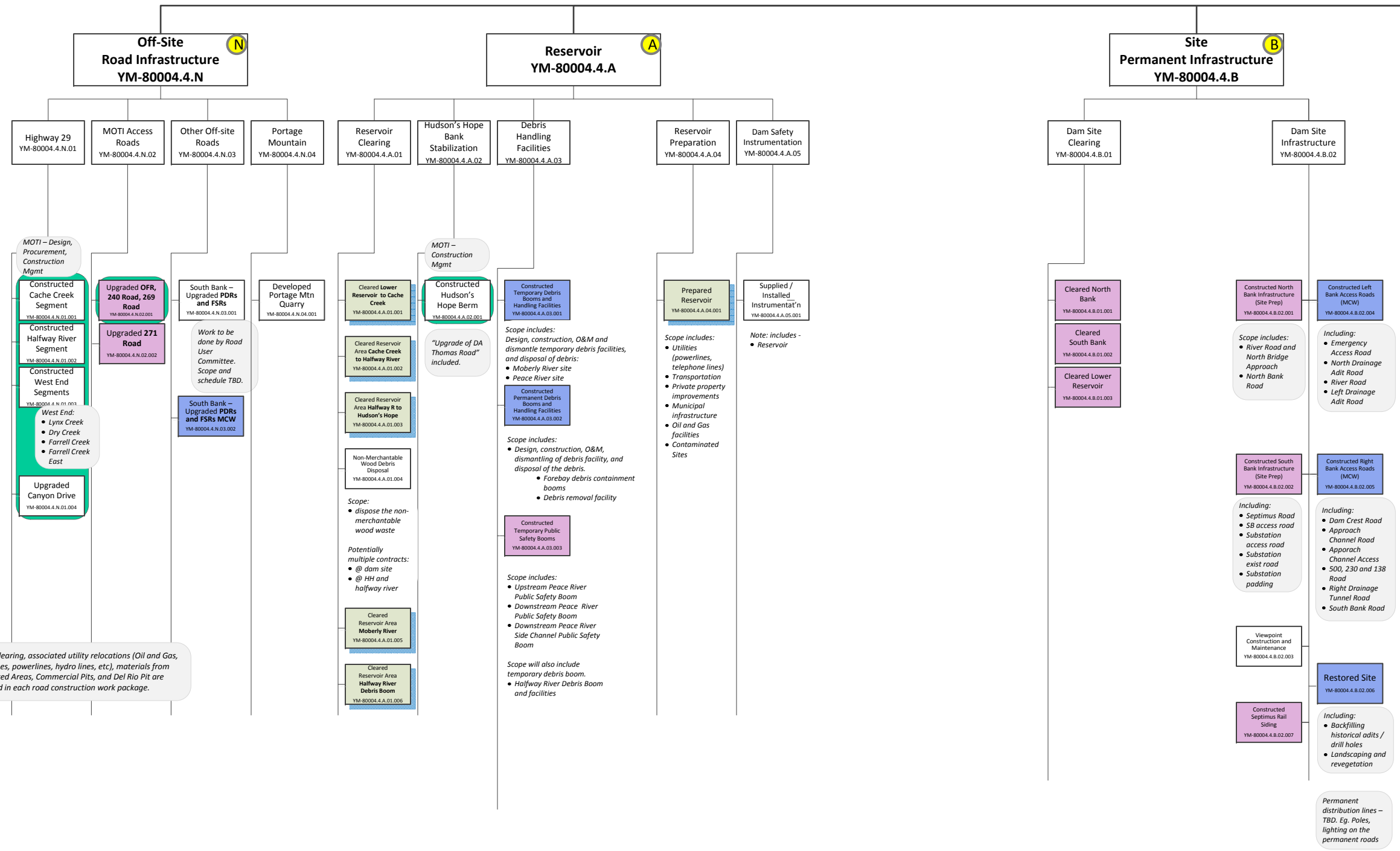
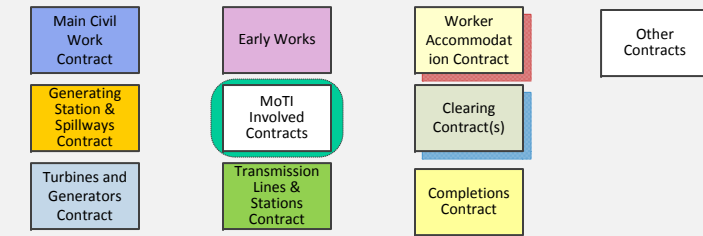
Rev 3.5 – for internal distribution
UPDATED August 1, 2017
FOR DISCUSSION PURPOSES

DRAFT WBS for discussion purposes only.

LEGEND:

- Shaded boxes in (various colors) – Scope being considered for each potential major contract packages
- Shaded boxes in GREY – Notes

Procurement:

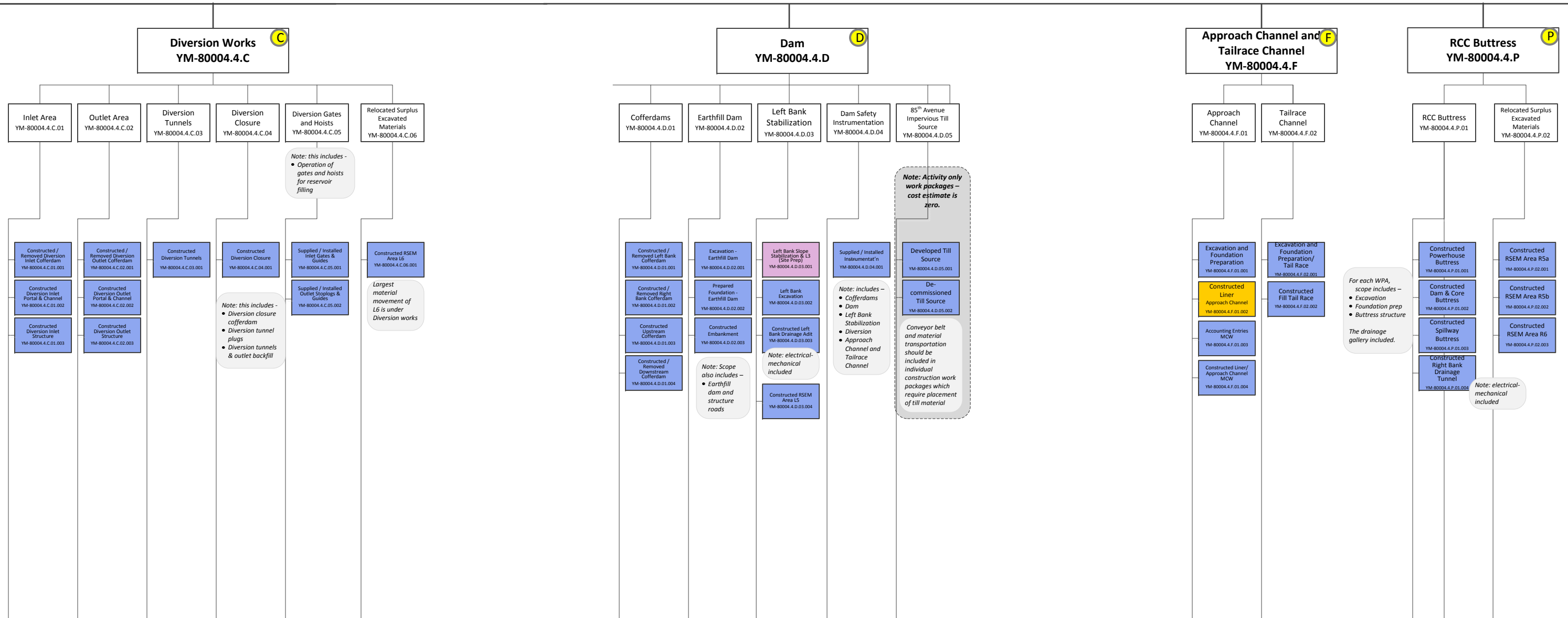


Note: Each Work package should include:
• Preliminary design
• Detailed design
• Procurement (Spec, drawings, evaluation, award)
• Construction management
Refer to the final scope of MoT Agreement / MoU.

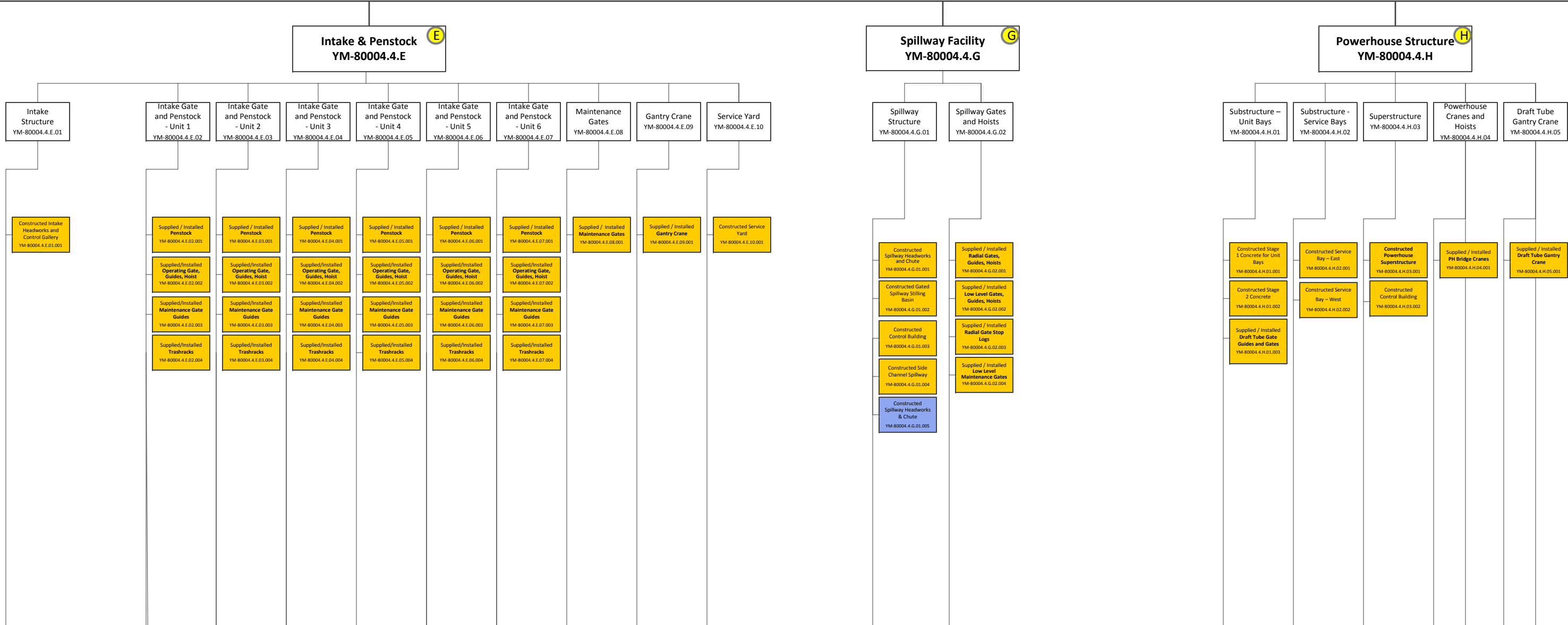
Note: Jackfish Lake Road upgrade is deleted – it is now considered as an optional scope for MCW

Note: Clearing, associated utility relocations (Oil and Gas, telus lines, powerlines, hydro lines, etc), materials from Inundated Areas, Commercial Pits, and Del Rio Pit are included in each road construction work package.

Main Civil Works Contract (MCW)



Generating Station and Spillways Contract (GSS)



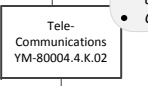
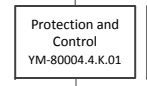
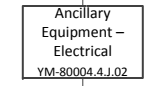
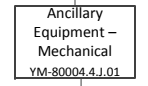
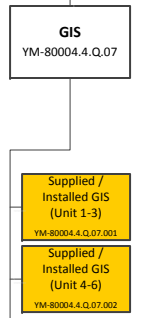
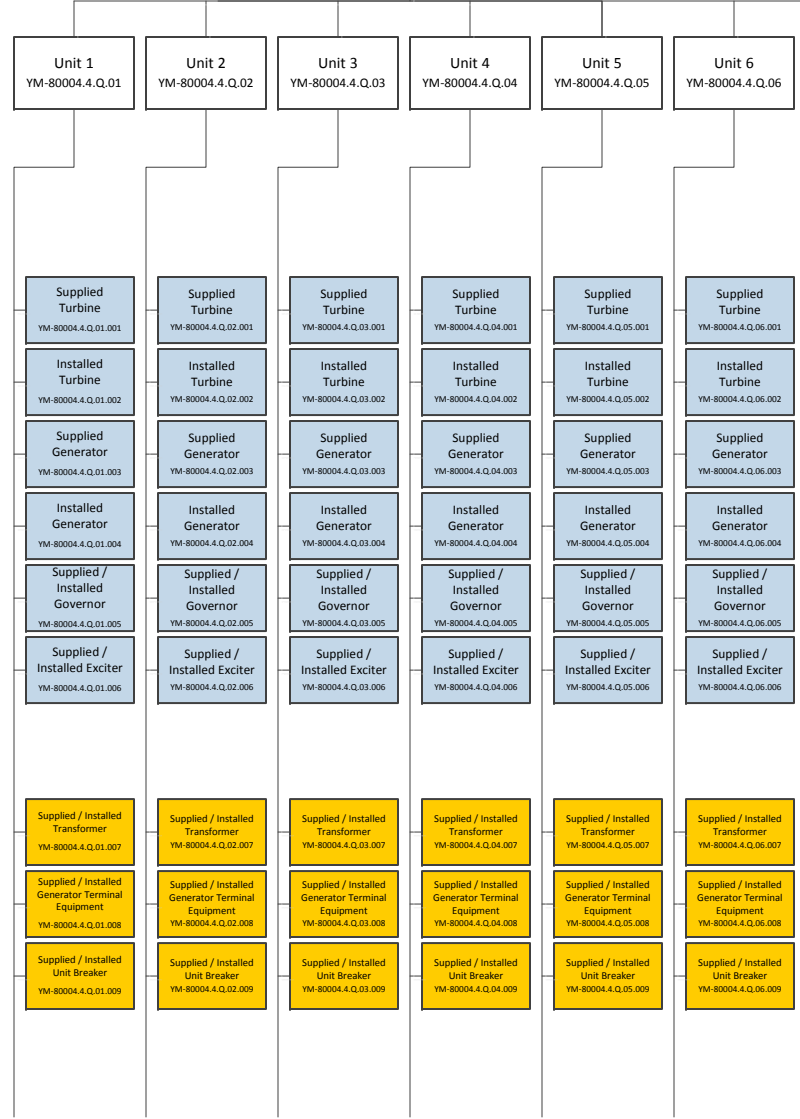
Site C Clean Energy Project

Implementation Phase

Generating Equipment YM-80004.4.Q

Ancillary Equipment YM-80004.4.J

Protection, Control & Telecom Systems YM-80004.4.K



Note: "Supply" includes
• Vendor design
• Fabrication
• Shipping and delivery

Note: High voltage equipment connecting generator to system - Main scope for Balance of Plant contract

Specialized equipment:
• Long lead time - 1-2 years
• Safety
• Quality
• Generates revenue stream

Note: Fire Protection System - Locations
• Diversion
• RCC
• Intake
• Spillway
• Powerhouse (incl fire pumps)

Note: HVAC System - Locations
• Diversion
• Dam
• RCC
• Intake
• Spillway
• Powerhouse

Note: Drainage System - Locations
• Diversion
• Dam
• RCC
• Intake
• Spillway
• Powerhouse

Note: Elevator - Locations
• RCC
• Spillway
• Powerhouse

Note: Raw Water System - Locations
• RCC
• Intake
• Spillway
• Powerhouse

Note: Station Air System - Locations
• Intake
• Spillway
• Powerhouse (incl compressors)

Note: Service Hoists - Locations
• Intake

Ancillary Equipment is defined as "Non-generating Electrical and Mechanical features in the following:
• Dam
• Powerhouse
• From Generator terminal to the Switchyard

What goes to ANCILLARY should be aligned with the potential delivery (procurement packaging) as much as possible.

Note:
• Design-Build by GSS

Note: Location - Powerhouse

Note: Lighting and Outlet - Locations
• Diversion
• Dam
• Approach Channel and Tailrace / Discharge Channel
• RCC
• Intake
• Spillway
• Powerhouse

Note: Cable tray and Conduits - Locations
• Dam
• Approach Channel and Tailrace / Discharge Channel
• RCC
• Intake
• Spillway
• Powerhouse

Note: Power supply - Locations
• Dam

Note: Station Service - Locations
• Approach Channel and Tailrace / Discharge Channel
• RCC
• Intake
• Spillway
• Powerhouse

Note: Security System - Locations
• Dam
• Approach Channel and Tailrace / Discharge Channel
• RCC
• Intake
• Spillway
• Powerhouse

Note: Grounding - Locations
• Approach Channel and Tailrace / Discharge Channel
• RCC
• Intake
• Spillway
• Powerhouse

Note: Location - Powerhouse
• Dam
• RCC Buttress
• Intakes
• Spillway

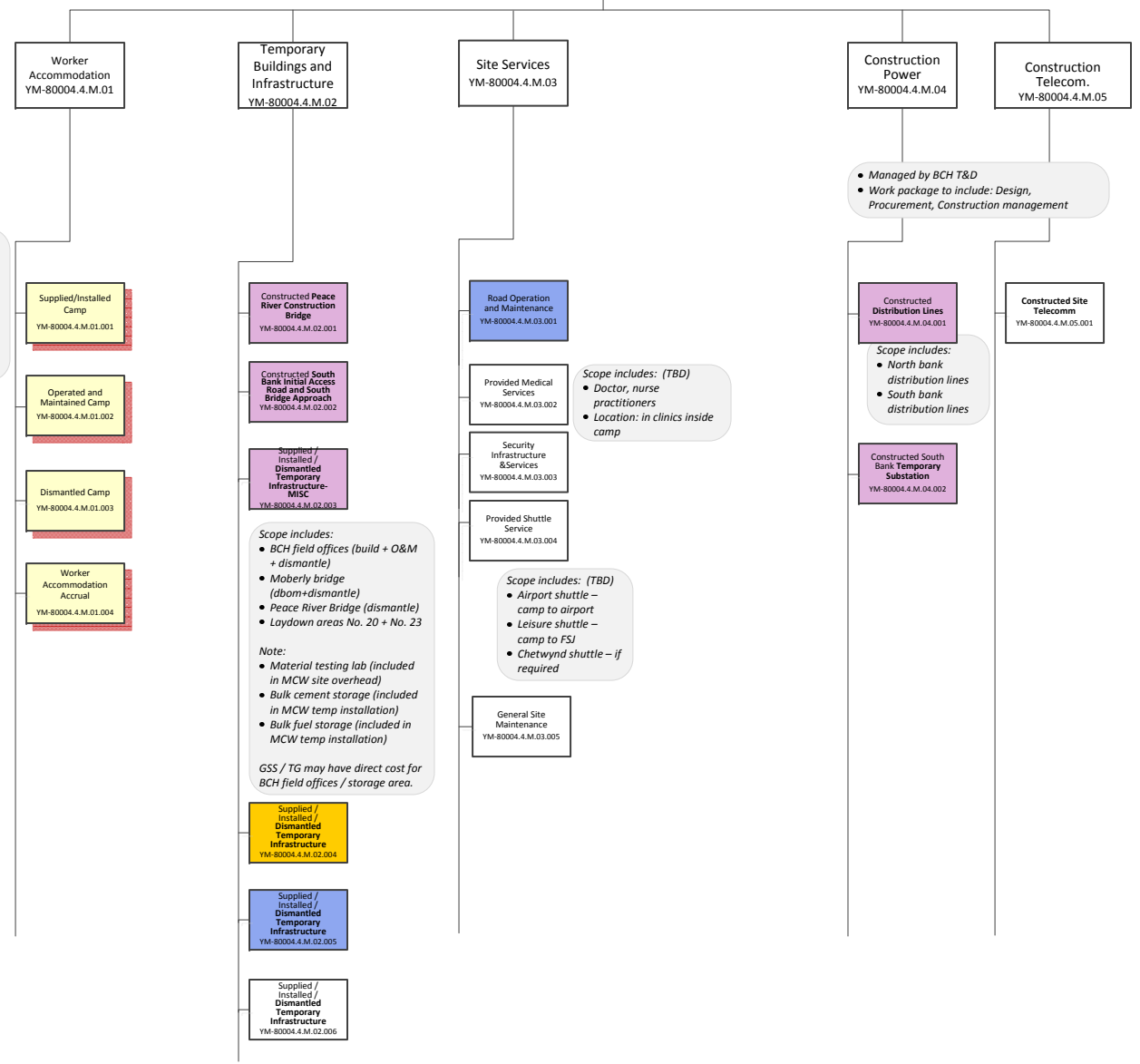
Note: Location - Powerhouse

Procurement model to be confirmed:
• Design, procurement - IET
• Supply - Specialty supplier
• Install - GSS (Balance of Plant) contractor
• Commissioning - BCH

Note: Scope includes construction phase telecom to operation phase telecom (on-site and off-site):
• Fiber to PH
• Fiber to SUR
• Telecom to reservoir
• etc

Likely by T&D OCTO:
• Design
• Procurement
• Construction

Construction Infrastructure (Temporary Facilities) YM-80004.4.M



Scope include:

- Camp
- Main BCH Site Office
- Water / Waste treatment plant
- Site prep
- Long term parking lot

Note: "Supply" includes design, fabrication, and shipment

Scope includes: (TBD)

- Doctor, nurse practitioners
- Location: in clinics inside camp

Scope includes:

- North bank distribution lines
- South bank distribution lines

Scope includes: (TBD)

- Airport shuttle – camp to airport
- Leisure shuttle – camp to FSJ
- Chetwynd shuttle – if required

Scope includes:

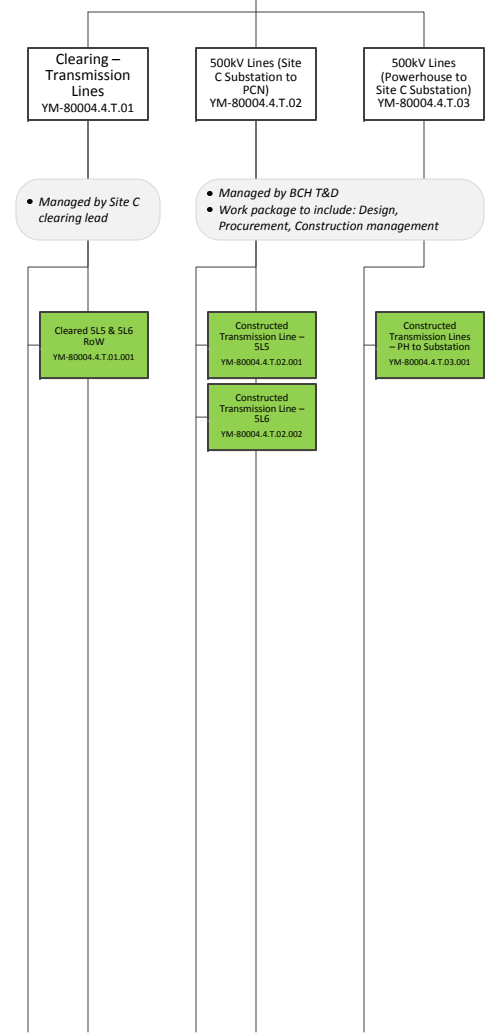
- BCH field offices (build + O&M + dismantle)
- Moberly bridge (dbom+dismantle)
- Peace River Bridge (dismantle)
- Laydown areas No. 20 + No. 23

Note:

- Material testing lab (included in MCW site overhead)
- Bulk cement storage (included in MCW temp installation)
- Bulk fuel storage (included in MCW temp installation)

GSS / TG may have direct cost for BCH field offices / storage area.

Transmission Lines YM-80004.4.T

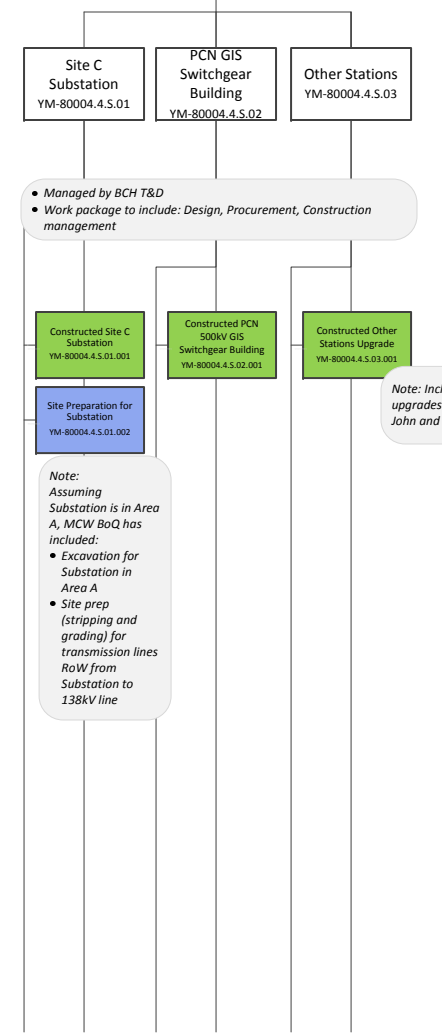


Managed by Site C clearing lead

Managed by BCH T&D

- Work package to include: Design, Procurement, Construction management

Stations YM-80004.4.S



Managed by BCH T&D

- Work package to include: Design, Procurement, Construction management

Note:

- Assuming Substation is in Area A, MCW BoQ has included:
- Excavation for Substation in Area A
- Site prep (stripping and grading) for transmission lines RoW from Substation to 138kV line

Note: Including upgrades in Fort St John and Taylor etc.

Removals
YM-80004.4.R

138kV
Removal
YM-80004.4.R.01

• Managed by BCH T&D
• Work package to include: Design, Procurement, Construction management

138kV
Removal
YM-80004.4.R.01.001

Work Package scope includes:
• Removed 1L374 (GMS to Site C)
• Removed 1L360 (GMS to Site C)
• Modified 1L374 (Site C to FSJ)
• Modified 1L360 (Site C to Taylor)

General Contractor Costs
YM-80004.4.U

Contractor
Overhead
YM-80004.4.U.01

• Cost will be allocated to each contract

Contractor
Overhead – Site
Prep North Bank
YM-80004.4.U.01.001

Contractor
Overhead – Site
Prep South Bank
YM-80004.4.U.01.002

Contractor
Overhead – MCW
YM-80004.4.U.01.003

Contractor
Overhead – GSS
YM-80004.4.U.01.004

MCW Contingency
YM-80004.4.U.01.005

MCW Scope
Clearing
YM-80004.4.U.01.006

PRH/MCW
Changes
YM-80004.4.U.01.007

General Rights, Taxes, Grants
YM-80004.4.X

Land / ROW /
Tenure
YM-80004.4.X.01

Water License
YM-80004.4.X.02

Royalties
YM-80004.4.X.03

Insurances
YM-80004.4.X.04

Compensation to
property owners

Property and
Property Rights
YM-80004.4.X.01.001

Property
Maintenance/
Management
YM-80004.4.X.01.004

Property
Management
Services
YM-80004.4.X.01.005

Water License Fees
YM-80004.4.X.02.001

Royalties
YM-80004.4.X.03.001

Work Package
scope includes:
• Royalties – MoTI
• Royalties – West
Pine Quarry
• Royalties –
Wuthrich Quarry
• Royalties – Howe
Pit?

Insurance Fees
YM-80004.4.X.04.001

Mitigation & Compensation Benefit Agreements
YM-80004.4.Y

Community
Benefits
YM-80004.4.Y.01

Aboriginal
Benefits
YM-80004.4.Y.02

Fish and Fish
Habitat
YM-80004.4.Y.03

Vegetation
and Wildlife
YM-80004.4.Y.04

Heritage
YM-80004.4.Y.05

Social and
Land Programs
YM-80004.4.Y.06

Monitoring
Physical
YM-80004.4.Y.07

First Nations
Cultural Heritage
YM-80004.4.Y.08

Community
Issues
Management
YM-80004.4.Y.09

Legacy Benefit
Agreement
(PRRD)
YM-80004.4.Y.01.001

Community
Benefit
Agreements
YM-80004.4.Y.01.003

IBA
YM-80004.4.Y.02.001

Fish and Fish
Habitat
YM-80004.4.Y.03.001

Need to capture:
MCW:
• Temporary
fish passage
construction –
MCW
• Instream fish
mitigation
work – MCW
GSS:
• Permanent
fish passage –
GSS

Fish and Fish
Habitat
YM-80004.4.Y.03.002

Vegetation and
Wildlife
YM-80004.4.Y.04.001

Heritage
YM-80004.4.Y.05.001

Need to capture:
• Archeological
work for 2015
• Archeological
work for
future years

Social and Land
Programs
YM-80004.4.Y.06.001

Monitoring Physical
YM-80004.4.Y.07.001

First Nations
Cultural Heritage
YM-80004.4.Y.08.001

Community Issues
Management
YM-80004.4.Y.09.001

The WBS Level 4 and 5 will be set up at the project teams' discretion.

Sample WBS levels and 4 and 5 elements are provided to illustrate examples of level 3 scope decomposition.

Level 5 elements require a noun suffix such as Constructed, Supplied, Installed or the like.

* Bold = non discretionary

