

# Lower Churchill Project

## Astaldi CH-0007

### Review of Project to Date (~18 months in)

June-2015

Boundless Energy



Take a  
**MOMENT**  
for Safety

# Chronology

- Award
- Early Plan Deliverables to Allow Start-up
- Monthly Progress Reports
- Interventions/Presentations – Management and Executive

# Award Chronology

<b>Date</b>	<b>Contractual Milestone</b>
<b>14 September 2014</b>	<b>Meeting with Astaldi in London England</b>
<b>24 September 2013</b>	<b>Effective Date of LNTP, covering work in September and October.</b>
<b>26 September 2013</b>	<b>Approval of Evaluation Report CH0007</b>
<b>31 October 2013</b>	<b>Target Date for executing agreement CH0007 as recorded in LNTP</b>
<b>31 October 2013</b>	<b>Amendment No. 1 to LNTP, extending term of LNTP to 30 November 2013</b>
<b>27 November 2014</b>	<b>Commencement of Road maintenance delayed until 30 January 2014</b>
<b>29 November 2014</b>	<b>Signature of Agreement CH0007</b>
<b>30 November 2013</b>	<b>Revised end of LNTP as of Amendment No. 1</b>
<b>19 December 2014</b>	<b>Kick Off Meeting</b>
<b>1 October 2013</b>	<b>Paid: 15 Million Cash Advance related to LNTP</b>
<b>31 January 2014</b>	<b>Paid: Remainder of Advance Payment of 87 Million</b>
<b>31 January 2014</b>	<b>Paid: Billing for LNTP to end November 2013</b>

# Award Process and Rationale

- Up to a two year process from bidder compilation to award - extensive analysis and reviews
- Best constructors in the world were reviewed with a focus on capability and value, LCMC wanted competition and had to work hard to get international contractors to bid
- All companies reviewed in detail for prior experience- safety, quality, performance
- To make the bid list, only the best were chosen, and this included visits to ongoing project sites where they were working
- Based on LCMC Team experience, no matter how good the contractor appears, there is still work to do to get them up and running in Labrador
- LCMC chose Astaldi because they had the best execution plan and the best value option. The other bidders were Salini (execution plan issues); Kiewit (much higher price); and Aecon (significantly higher price)

# Early Plan Deliverables

- Site Specific Health and Safety Plan approved by 25-Feb-2014
- Environmental Management Plan approved in Nov-2013
- Contract Specific Environmental Protection Plan approved in Jan-2014
- Site Specific Quality Plan approved in Feb-2014

# Monthly Progress Reports

- No. 001 for Period Ending Feb-2014 (including progress during LNTP)
- No. 002 for Period Ending Mar-2014
- No. 003 for Period Ending Apr-2014
- No. 004 for Period Ending May-2014
- No. 005 for Period Ending Jun-2014
- No. 006 for Period Ending Jul-2014
- No. 007 for Period Ending Aug-2014 (not in Aconex)
- No. 008 for Period Ending Sep-2014
- No. 009 for Period Ending Oct-2014
- No. 010 for Period Ending Nov-2014
- No. 011 for Period Ending Dec-2014
- No. 012 for Period Ending Jan-2015
- No. 013 for Period Ending Feb-2015
- No. 014 for Period Ending Mar-2015 (not yet in Aconex)

## February, 2014 – Issues

- Crusher dust problems
- Seeking to reduce specified cure times to to pick up pace of concrete placement
- Rock profile in powerhouse different than planned
- ICS design changes
- Availability of accommodations and some services during mobilization
- Winter functionality of powerhouse dewatering system



## March, 2014 – Issues

- Employment up to 489 (previous month[s] employment not reported)
- Planning and baseline schedule preparations
- Forecast warning of delayed milestones concerning spillway and readiness for access for hydro-mechanical contractor (CH0032)
- Activity largely indirect

## April, 2014 – Issues

- Employment up to 581 (20% increase over previous month)
- No concrete placed to date;
- Planning, engineering, and procurement focus

## May, 2014 – Issues

- Employment up to 791 (35% increase over previous month)
- Efforts largely a continuation of mobilization, engineering, procurement, and site preparations on temporary facilities;
- Float for access to spillway for hydro-mechanical contractor is eroding – first reports that “recovery plans” are needed;
- No concrete placed to date

## June, 2014 – Issues

- Employment up to 1060 (35% increase over previous month)
- Design ongoing c/w LCMC reviews
- Rock over-excavation downstream of spillway slab
- Dewatering
- Labrador Ready Mix contract issues
- No concrete placed to date (other than fill for over-break)

## July, 2014 – Issues

- Employment up to 1525 (45% increase over previous month)
- Contract Overall Schedule has not yet been approved
- No concrete placed to date (other than fill for over-break)

## August, 2014 – Issues

- Employment at 1525 (no change from previous month)
- Baseline schedule refined per LCMC input and resubmitted at the end of the period
- First pours of planned concrete – 3000m<sup>3</sup>
- Issues reported included:
  - Shut downs of LRM plant
  - Waiting on approvals
  - Site instructions
  - Issues with formwork movement during pour – rework required
  - Safety shutdowns to lightning strikes

# September, 2014 – Issues

- Insert

## October, 2014 – Issues

- Employment up to 2301 (50% increase on August period)
- Baseline schedule refined per LCMC input and resubmitted at the end of the period – progress curves under development
- >10,000 m<sup>3</sup> of concrete poured
- Potential Issues
  - Difficulty recruiting qualified workers
  - Completion of engineering/design drawings – site conditions not matching design conditions
  - Procurement issues causing delay in delivery and related construction
  - ISC delays will impact opportunity for winter production
- Many schedule floats are deteriorating



## November, 2014 – Issues

- Employment up to 1734 (15% increase since July)
- 6142 m<sup>3</sup> of concrete placed
- ICS delivery interfering with other planned work for powerhouse
- Over-break concrete consuming time and resources
- Lack of skilled workers – union issue

## December, 2014 – Issues

- Employment down to 1676 (~3% decline over previous month)
- Shortfall in concrete placement associated with resources redeployed to address snow, ice and other winter related issues
- ICS delivery interfering with other planned work for powerhouse
- Over-break concrete consuming time and resources
- Some planned concrete work suspended because it is not critical to complete in the winter
- Lack of skilled workers – union issue

# January, 2014 – Issues

- Insert

## February, 2015 – Issues

- Employment at 1181 (>40% lower than December but ramping up from Holiday shut-down – missing January numbers)
- ISC deficiencies and dismantling – access issues
- Severe winter weather
- Lack of skilled workers – union issue

# Presentations/Interventions Management and Executive

- Early presentation of execution plan – September 2014
- Start-up/Mobilization
- Start up Issues – Acknowledgement and Action Plan in May 2014 – 6 months after award finalized
- Follow-up Action plans and executive engagement – 1 year following Acknowledgement and initial Action Plan

# Summary of Presentations

- Sales Pitch and Award
  - Muskrat Falls Generation (LCP, Labrador, Canada) - Final Presentation 04-Sept-2013
- Acknowledgement and Action – Stage 1 (6 months in to project post award)
  - Lower Churchill Project - Action Plan - 12-May-2014
  - Lower Churchill Project - Astaldi Action Plan - 14-May-2014
  - Muskrat Falls Project – CEO’s Meeting – Status Update with Nalcor – Rome, 13-Jun-2014
  - Muskrat Falls Project – Site Visit – Project Physical Progress – 23-Jul-2014
- Acknowledgement and Action – Follow-up Stages (1 year following initial Acknowledgement and Action)
  - Lower Churchill Project - Astaldi Game Plan - 02-Oct-2014
  - Muskrat Falls CH0007 Initiatives - Nalcor Energy & Astaldi Canada – 28-Oct-2014
  - CEO Update Muskrat Falls - Nalcor Energy & Astaldi Canada – 04-Nov-2014
  - Muskrat Falls CH0007 2015 Plan - Nalcor Energy & Astaldi Canada – 15-Dec-2014
  - Astaldi Canada - Construction Management Assessment Phase 1 – Project Summary London – 15-Dec-2014
  - Astaldi Canada - Project update - New York, 15-Dec-2014
  - Muskrat Falls Generation - CEO Meeting March 24, 2015
  - 120 Days Schedule – May 19, 2015

# Start-up

LNTP: 14-Sept-2013

- Mobilization Focus Post LNTP
  - LRM approved as concrete supplier in early November 2013
  - Access to Spillway Provided as required by contract milestones on 15-Nov-2013
  - Access to Company Laydown Areas Provided (Oct 2013) and power supply (Nov 2013)

Contract Award: 29-Nov-2013

- Mobilization Focus Post Award
  - Astaldi started work in Spillway 15-Dec-2013
  - Unrestricted access to Powerhouse provided 20-Dec-2013 ahead of contract milestone

# Start-up Goals

- Short Term
  - Mobilization of Astaldi's Key Management Team Resources to Support the Work
  - Task Force Focus Areas on Critical Milestones
  - Planning Support to Produce Project Baseline
  - Expedite Crushing and Batch Plant Readiness
  
- Medium Term
  - Continued Population of Astaldi Management Team Resources
  - Recruitment of Astaldi Construction Supervision Resources
  - Focus on Completion of ICS Without Impact to Powerhouse Program



# Specific Actions Taken

- Readiness to Mobilize – Post LNTP
- ICS Design
- Planning
- Interface Management
- Productivity / Labour Management
- Recruitment assistance
- Controls
- Management Systems Support
- Engineering Program Streamlining
- Operational Focus

# Specific Actions Taken

- Readiness to Mobilize – Post LNTP
  - Early Engagement With Contractor on “Readiness to Mobilize”
  - Multi-Disciplinary Approach with Focus on Key Aspects of Work, including Quality, Health and Safety, Environment, Project Controls and Execution Elements to Allow Mobilization to MF Site
  - Discretization from Overall Mobilization Activities to Facilitate Success in Small Steps
  - Dedicated Working Level Workshops to Elevate Astaldi Documentation / Approaches to LCMC Standard
  
- ICS Design
  - Facilitated interface meetings to advance ICS design to Resolve Structural / Embedments Design Impacts
  - Constructability Review With Astaldi to Focus Efforts on Fabrication, Erection and Operational Requirements

# Specific Actions Taken

- Planning
  - 3-Week look ahead schedule focused on short term goals
  - Extended working sessions with combined planning groups to resolve schedule deficiencies
  - Dedicated ongoing weekly meetings between LCMC/Astaldi planners to expedite schedule preparation
  - Execution Workshops to Establish Execution Methodologies to Align with Planning Effort
  
- Interface Management
  - Facilitated Interface Meetings with Astaldi, Andritz and SLI with Focus on Critical Technical Interfaces
  - Coaching by LCMC on a host of issued including concrete material production, Crusher and Batch Plant readiness
  - Visits to Key Subcontractors to Ensure Astaldi's Approaches Align With Project Objectives

# Specific Actions Taken

- Productivity / Labour Management
  - Regular coaching on specific labour management issues in support of day to day operational requirements
  - Bi-weekly productivity management meeting with focus on process improvement with Astaldi construction management team
- Recruitment assistance
  - Specific CV's provided to Astaldi for key positions including construction management and support positions
  - Regular recruitment review with Astaldi HR team to maintain focus on key hiring activities
- Controls
  - Review of controls requirements as outlined in the Agreement together with implementation opportunities to streamline progress reporting and invoicing processes

# Specific Actions Taken

- Management Systems Support
  - Quality System Audits Implemented in Key Areas (e.g. Document Control)
  - Day to Day Quality Coaching – NCR Generation, Query Requirements, etc.
- Engineering Program Streamlining
  - Real time turnaround of time sensitive / critical issues
  - Engineering Interface Meetings on Specific Topics (eg Andritz Interface)
  - Revision to Internal LCMC Process to Entrench Role Clarity and Minimize Turnaround Delay
- Operational Focus
  - Daily Operational Meetings with Construction Management Teams
  - Ad hoc reviews daily to support construction requirements
  - Readiness review focus to maintain visibility of 4 key milestones

# Acknowledgement and Action – Stage 1 (May, 2014)

- Positive Signs
  - Astaldi acknowledged that the Start-up had not gone to plan
  - Astaldi was committed to address and fix the issues at the highest levels of the Company
  - Astaldi identified and took steps to rectify- they were not in denial
- Areas for Improvement
  - More effort and resources are needed from Astaldi to meet production pace required
  - Astaldi need to attract the best superintendents and supervisors – the cost of which was resisted during Start-up

# Key Issues Identified

- Management Resource Gaps Including Both Project Management and Construction Supervisory Personnel
- Previous lack of Visibility With Respect to Astaldi's Ongoing Efforts in Support of Project Delivery, plans unclear

All resulting in:

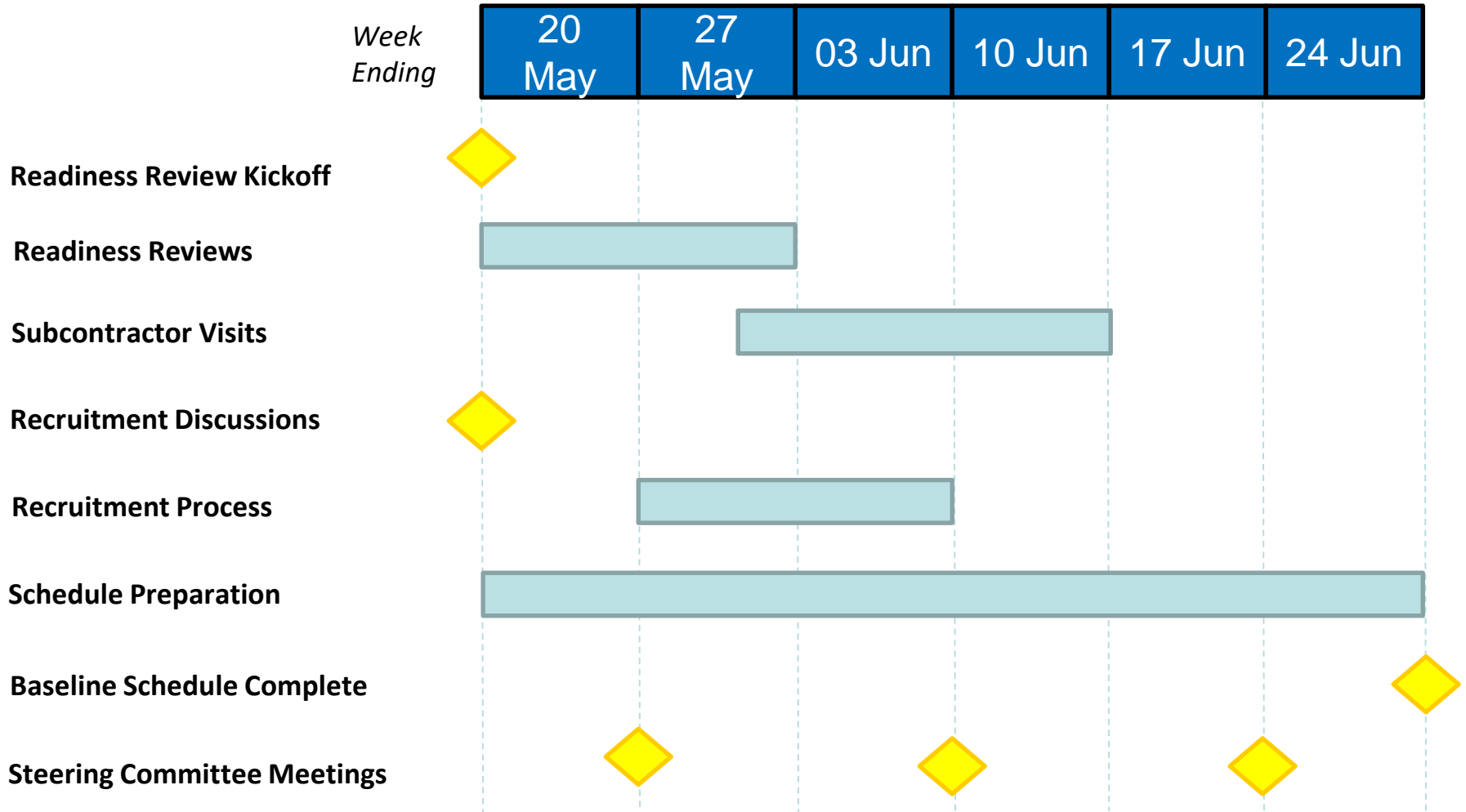
- Slow Progress on Critical Milestones
- Issues not getting resolved
- Spillway and Powerhouse progress not where it was planned to be

# Mitigation Action Summary

- Steering Committee had to engage at an operational level
  - Continued Collaboration With Steering Team on Key Issues
  - Development of an Action Plan to Establish Record and Monitor Progress on All Fronts
- Top PM's in the Astaldi organization were sought from elsewhere (e.g., South America)
- LCMC developed a more engaged oversight plan that focuses on major risks
  - Identification of Specific Resources with Responsibility for Delivery of Critical Items
  - Daily and Weekly Meetings to Maintain Focus on Priority Activities
- LCMC developed back up options including how to best protect the Project commercially
- Astaldi CEO invited to participate in mitigation planning



# Acknowledgement and Action Plan Schedule



# Goals

- Short Term
  - Mobilization of Astaldi's Key Management Team Resources to Support the Work
  - Joint Task Force Focus on Readiness in Critical Areas – Spillway, Powerhouse, Integrated Cover System (ICS), Batch Plant/Crushing Plant
  - Planning Support to Produce Project Baseline
  
- Medium Term
  - Continued Mobilization of qualified/experienced Astaldi Management Team Resources
  - Recruitment of Astaldi Construction Supervision Resources
  - Focus on Completion of ICS
  
- Long Term
  - Get the spillway and powerhouse delivered on time and budget

# Priority Activities

- High Priority Milestones Established
  - MS-01 – Crushing Operation and Batch Plant Fully Operational
  - MS-02 – Spillway First Pour
  - MS-03 – ICS Ready for Occupancy
  - MS-04 – Powerhouse First Pour
- Astaldi Established Task Force Approach Aligned to High Priority Milestones
  - Team Members Pending at the time (mobilization from South American operations)
  - LCMC Responsible Team Members In Place to Steward to Milestone Completion
- Readiness Review Process Initiated to Establish Action Plan to Achieve Milestones
  - Comprehensive People, Processes and Systems Approach Across All Readiness Aspects
  - Included Visits to Key Astaldi Subcontractors
  - Review Outcomes to Include Specific Deliverables Necessary for Successful Milestone Completion
- Daily and Weekly Operational Meetings Continuing with Astaldi to Provide Focus in All Necessary Areas

# Priority Activities

- Focus on Schedule Development with Astaldi
  - Planning Team Working with Astaldi to Complete Astaldi's Baseline Schedule
  - First Schedule Review Complete – Planned Baseline Finalization 30 June 2014
  - Short Term Focus on 3 week Look Ahead Schedule to Achieve Short Term Execution Goals
  
- Management and Construction Supervision Resource Gaps is a Primary Concern
  - Astaldi Commitment to Mobilize Construction Management Resources from South America Project Teams
  - Construction Supervision Resource Identification Within Local Community Ongoing
  - Submission of Possible Candidates from LCMC network to Astaldi in May/June

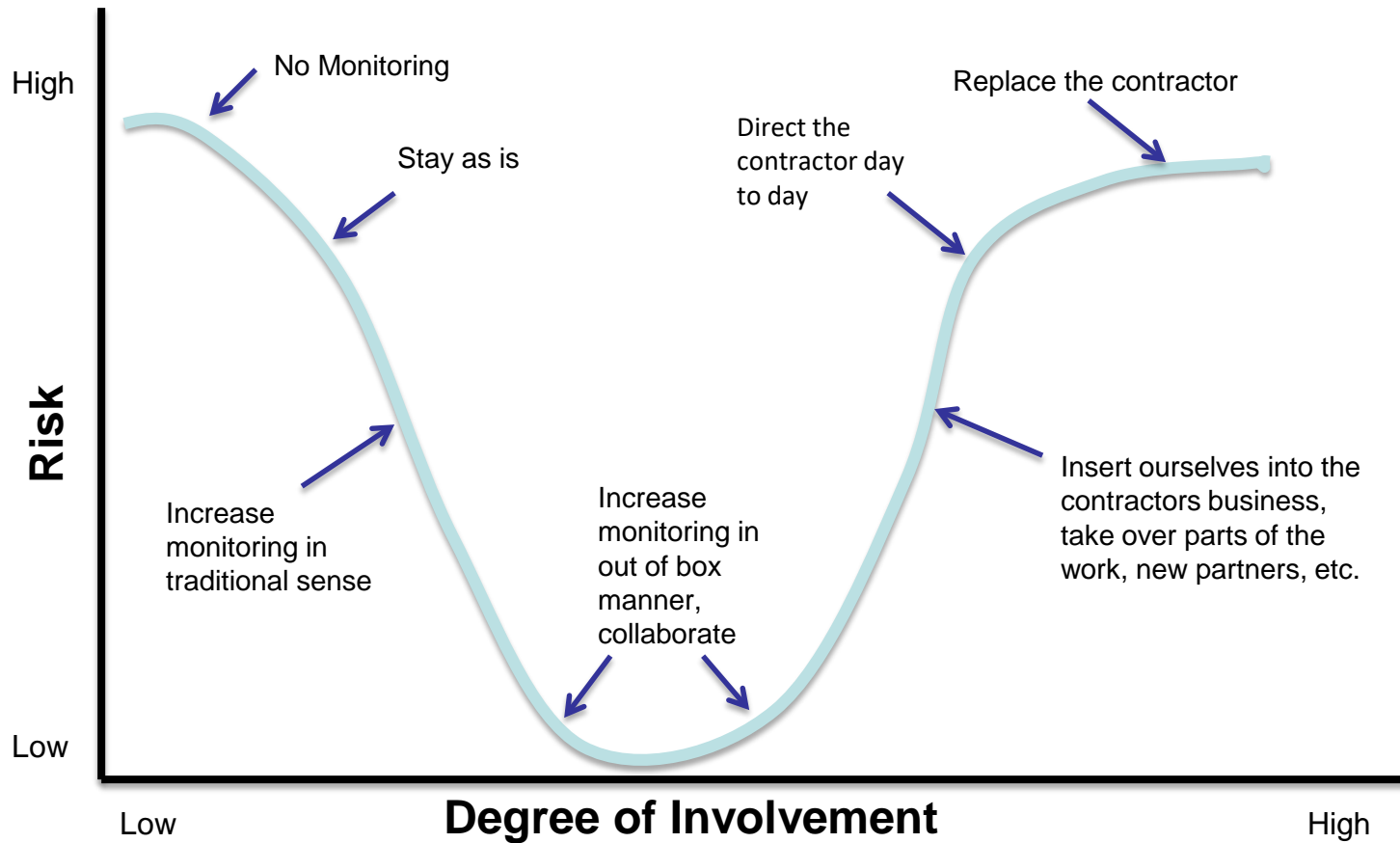
# Key Milestones

- MS-01 – Crushing Operation and Batch Plant Fully Operational
  - Schedule Completion 01 July – Significant Risk to Spillway Execution Schedule
  - Astaldi Mobilizing Additional Crushing and Batch Plant as Contingency to Support Schedule Delivery
  - Astaldi Revisiting Execution Timeline With New Dedicated Site Resources
  - Focused Readiness Review Planned w/c 12 May 2014 to Confirm Requirements
  
- MS-02 – Spillway First Pour
  - Schedule Slippage in First Pour from 17 March to 18 July in Latest Astaldi Schedule
  - Team Working With Astaldi to Identify Opportunities, Program Adjustments to Reflect Impact of Short Term Delays
  - Removal of Spillway Cover Structure, Elimination of Hoarding for Temporary Works, etc. Reflects Spring Operations
  - Focused Readiness Review Planned w/c 19 May to Confirm Delivery Requirements

# Key Milestones

- MS-03 – ICS Ready for Occupancy
  - Schedule Slippage in ICS Completion from mid-November to 22 December in Draft Astaldi Schedule
  - Project Team Subcontractor Audit Planned w/c 19 May to Verify Approaches to Execution
  - Dedicated Risk Review Planned Immediately After Subcontractor Visit to Document Risks to Milestone Delivery and Ensure Necessary Mitigation Measures are in Place
  
- MS-04 – Powerhouse First Pour
  - Powerhouse Execution Risk Tied to ICS Completion
  - Schedule Review In Progress – Focus on Schedule Logic, Influence of Overbreak, etc.
  - Readiness Review to Commence w/c 19 May

# Options and Relative Risks at Stage 1



# Issues for Initial Action Plan

(from CEO presentation in June, 2014 and Site Visit in July, 2014)

- Subcontractor issues – while main contracts had been established, there were difficulties getting there;
- Complaints about bureaucratic review and approvals (engineering, change orders, permits);
- Union worker productivity reported low;
- Communications on site also reported to be an issue;
- 1<sup>st</sup> winter experience not good;
- Recruiting challenges;
- A great deal of re-planning has been required as lessons learned take effect; and
- SWOT analyses done for 4 key milestones (e.g., crushing and batch plant, 1<sup>st</sup> spillway pour, the ICS, and the powerhouse).



# Outcome from Initial Action Plan

(from CEO presentation in June, 2014 and Site Visit in July, 2014)

## PLANNING

- New overall contract construction schedule and updates per LCMC recommendation (July 20th, 2014) being developed with a target *by the end of July*
- The loading of man hours into Astaldi's P6 schedule for direct construction time is underway and expected to be completed *by the end of July*
- Progress reporting anticipated once the overall contract schedule is approved - expected to be completed *in August*
- Development of a progress measurement table for construction activities is ongoing end expected to be completed *in August*

## ENGINEERING

- ICS drawings have been received from DPHV. PROCO has developed approx. 92% of the shop drawings
- DOKA drawings for the Spillway Base Slab have been submitted. Panels have been installed.
- Piers drawings have been submitted. Material is already on site for pre-assembling
- AGF drawings for rebar of 3 Spillway northern pours have been approved. All remaining Base Slab drawings have been submitted
- Drawings Log and Submissions Log are being developed. Activity will be completed in 2 weeks

# Outcome from Initial Action Plan

(from CEO presentation in June, 2014 and Site Visit in July, 2014)

## CONSTRUCTION

- The Ready-Mix design for concrete pours is in the approval process – expected approval within 2 weeks
- Additional Crushing Plant is in place and will be operational in 2 weeks to avoid possible lead time due to plant failures
- LRM Crushing Plant is functional and operating. Actual aggregates stockpile sums up to approx. 147,000 tons. This is enough to produce concrete until Spring 2015
- One batching plant line is ready for production – Second line will be ready by early August
- Personnel training for Formworks assembly still ongoing in collaboration with DOKA

## ORGANIZATION

- Designated Project Manager has obtained work VISA and expected on Site within 1 week
- Field supervision has been empowered with personnel from Astaldi branches – New Production Manager and four additional Superintendents will join the Project by the end of July
- Engineering Department has been strengthened with additional resources, SWS team is in place and support is provided also for logs and document control
- Additional resources to be added to the H&S and Quality Departments within august.

# Outcome from Initial Action Plan

(from CEO presentation in June, 2014 and Site Visit in July, 2014)

## PRODUCTIVITY

- Automated payroll management system already operational for the Astaldi Union component and will be fully implemented within September for the Subcontractors Union and Astaldi Staff Components
- Implementation of automated time sheet management with 5 badge stations to be installed within September at Main Office, Warehouse, Power House , Spillway and Transition Dam full compatible with Nalcor Badge system
- Collection of Productivity data per cost codes in progress. First Report will be issued by end of august
- Superintendents' review of the qualifications and requirements of the new hires of Union workers
- Training of Astaldi Staff on Labor Agreement contents
- Escalation of Astaldi Representative Level at the Union meetings
- Continue negotiations with Unions for the 20-10 rotation
- Availability of Nalcor charter flights
- Negotiations with incentives to extend the rotation period on Site for the Key Staff
- HR Manager from Rome HQ to support on-site
- Flexibility of the shifts with Unions
- Efforts to reduce overtime

## Follow-on Stage – Fall 2014

- Despite the action plan established in spring, and outcomes of the summer, issues with performance persisted.
- The fall and leading into winter was considered a strategic point in the Project to revisit areas for improvement
- Follow-on initiatives were devised reflecting on the Positives, Challenges, and potential Solutions
- Astaldi has been undertaking initiatives, LCMC is aligned, and both organizations have agreed that joint participation would be beneficial
- Focused initiatives were established in three key categories of opportunity:
  - 1) Leadership; 2) Planning and Execution; and 3) Labour and Productivity
- This exercise was seen by senior management of both companies as a priority to which additional dedicated resources would be assigned to the day-to-day management team

# Leadership

- 1) Meetings were held with Astaldi senior leadership to review current underperformance, risks to project execution, personnel motivation and commitment to complete the work – Outcome was alignment on issues, urgency, and opportunities
- 2) Senior project level meeting with Astaldi was held to present concerns highlighted during LCMC review, discuss actions required, and agree on a “Game Plan”
- 3) Astaldi Construction management assessment conducted including review of organizational effectiveness. Review included participation Astaldi Rome and 3rd party
- 4) Joint Town Hall with both Astaldi and LCMC teams conducted – effectively a 2nd kickoff given significant numbers of new personnel in both teams

# Planning and Execution

- 1) Held a planning production coordination workshop with Astaldi construction personnel to establish need for daily and short term look ahead planning, and to identify expectations for daily coordination
- 2) “War Room” established and instigation of 2 x Daily Coordination Meetings with key construction personnel from both LCMC and Astaldi
- 3) Winterization Working Group established with focus on prioritizing necessary activities and establishing clear plans to maintain winter operations
- 4) Spillway Working Group established with focus on prioritization of critical work faces, identification of handover optimization opportunities and plan for expediting delivery to Andritz
- 5) ICS Working Group established with focus on optimization of installation, review of schedule criticality, and operability approach

# Labour and Productivity

- 1) Establish Productivity Task Force to review all aspects of productivity management and determine best practices for the project. Includes collective agreement application, work teams, broader productivity initiatives, incentivizing approaches, and other workforce challenges
- 2) Review Astaldi's approach toward supervision and determine optimization opportunities to suit specific work scopes and workforce expectations
- 3) Hold Town Hall for the workforce including all staff and craft personnel
- 4) Host Training Program on Labour Agreement for all key Astaldi personnel
- 5) Hire Productivity Champions including both Astaldi and LCMC personnel to spearhead productivity initiatives

# Overall Path Forward Principles

- Clarity – ensuring that the LCMC and Astaldi teams know who their counterparts are on each initiative and action item
- Execution – ensuring each main action is underway
- Communication – proactively present status on weekly basis to feed in to regular management sessions



## Follow-on Stage – Holiday Break 2014

- Prior to the holiday break – senior leadership convened to review progress and contemplate a holiday break shut down and new approach for new year re-start/ramp-up, including:
  - Review and update on Working Groups and Initiatives
  - Consider additional initiatives
  - Outline and gain alignment on the proposed 2014 shut down and 2015 re-start/ramp-up
  - Agree what success looks like over the coming weeks and months in to the 1<sup>st</sup> quarter of 2015

# Working Groups and Initiatives

- All Working Groups and Initiatives ongoing in the three main categories of focused opportunity, as follows:
  - 1) Leadership; 2) Planning and Execution; and 3) Labour and Productivity
- Additional actions have been established and agreed to:
  - Productivity workshop Nov 26th and follow on calls
  - Constructability sessions week of Dec 8<sup>th</sup>
  - Tie productivity and constructability into the shutdown plan
  - Commence strategic hiring asap - confirm Construction Management organization, combine known people with needs, develop and start recruitment plan - hiring to start by Dec 19<sup>th</sup>
  - Internal and external communication plan Dec 15th
- Astaldi also took on the concept of a reset over the holiday period

# 2014 Shutdown/2015 Start Up

- Shut down December 19 and Re-start/Ramp-up January 5
- Maintenance Team retained on site (~20 people based in HV-GB) to:
  - Maintain dewatering
  - Provide heat control for last concrete pours
  - Provide rock protection to allow pours to resume in January
  - Conduct road maintenance
- Constructability plan to guide labour ramp up (i.e., hiring the right skillsets)
- Orientation to occur the first week of January
- LCMC Labour and Benefits team to support the process
- Productivity initiatives to be reviewed with relative teams (i.e., Construction and Labour) and implemented
- Construction Management hiring to continue
- Discussions to occur with Unions

# 2014 Shutdown/2015 Start Up – Success?

## December

- CEO Alignment – Meeting held 15 December
- Alignment at Senior Management Level on Path Forward – December
- Top 3 People in Construction Organization in Place
- Clear Plan to holiday season Shutdown

## January

- Hiring Well Advanced for Construction Management Team
- Only Critical/Productive Work Underway
- Productivity Actions Kicked Off
- Labour Management Plan Kicked Off
- Long Term Concrete Production Plan in Place

# Re-start/Ramp-up 2015 – Success?

## All Productivity Actions Implemented

- Early January training with the intent to have all supervision fully trained and given the proper skills to lead the workforce through 2015
- Courses given in:
  - Supervisory Skills
  - Occupational Health and Safety
  - Collective Agreement
  - Astaldi Policies and Procedures for Supervisors
- Courses given to Foremans, General Foremans, Superintendents, Lead Superintendents and other Manager.
- For non-supervisory union employees training will include Fall Arrest, Confined Space, Rigging, Arial Platform and Power line Hazards.

# Early 2015 – Success?

## February

- Tangible Production / Productivity Improvements
- Successful Ramp up of Construction Management Team/Craft Labour Complete
- Noted Morale Improvement

## March / April

- Sustainable Production

# Quarter 1, 2015 – Results on Work Force & Staff

- Reset and full reorganization of labour force from January 2015
- New direct and indirect labour employment strictly tied up with monthly concrete pouring volumes
- Employment only of selected and qualified labour
- Improvement of work force – control on employee selection
- Strict and firm authorization process on new employees
- Labour and staff training started the first week of January as planned

# Quarter 1, 2015 – Results on Productivity

- Early January training completed
- New batching plant installation
- Crushing plant reactivated
- Tower cranes for Units 3 and 4 ordered
- Entire site analysis and planning of logistics
- Engineering revision of construction methods looking for optimization ideas
- Engineering specialists analyzed the dismantling of the ICS and erection of the superstructure



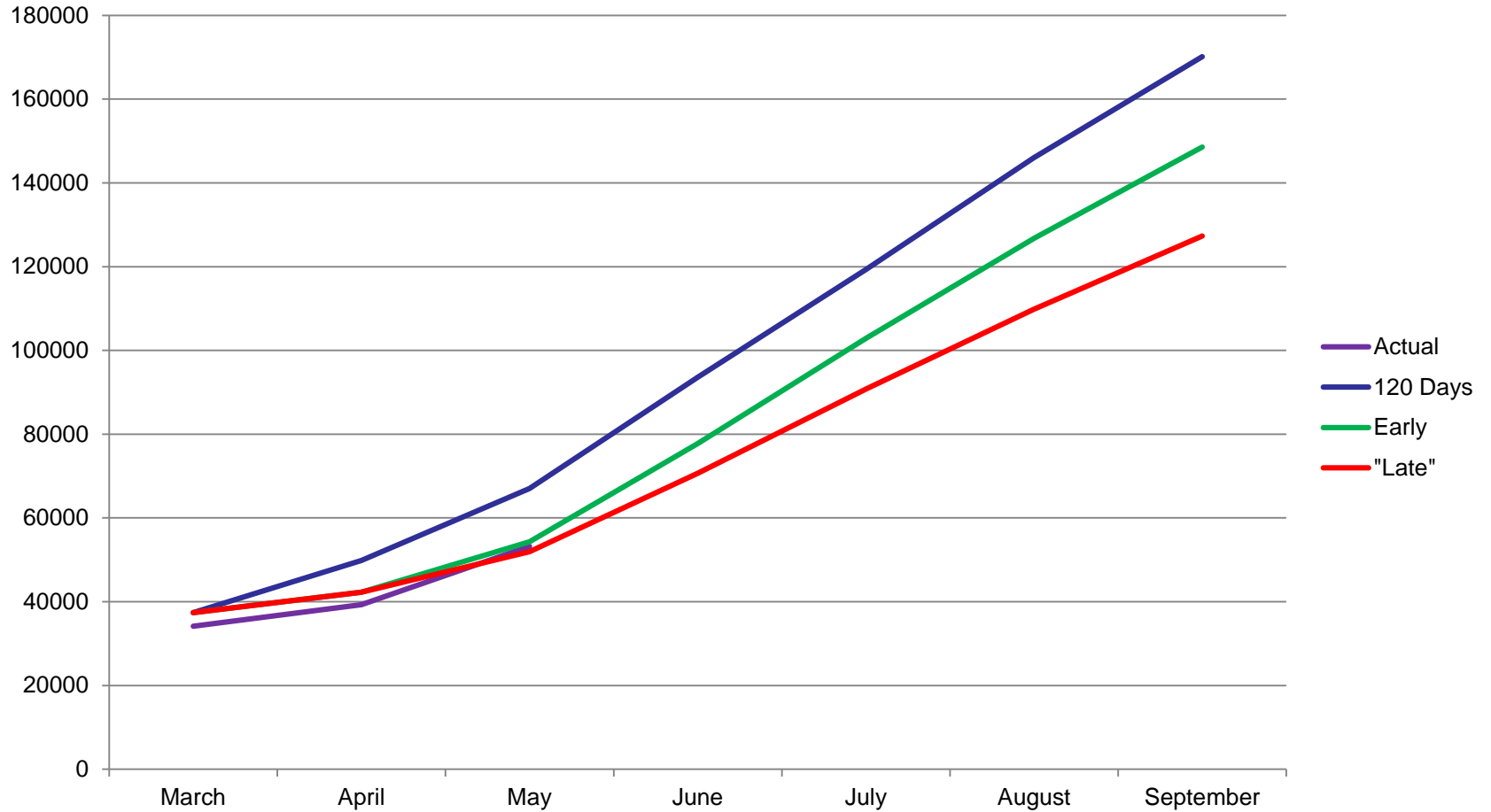
# Quarter 1, 2015 – Results on Staffing

- New senior personnel on site:
  - Production Manager
  - Technical Manager
  - Procurement Manager
  - Safety Manager
- Recruiting underway for:
  - Chief Engineer
  - Contract Manager
  - Labour Relations Manager
- Relationship building and issue resolution with union work force underway

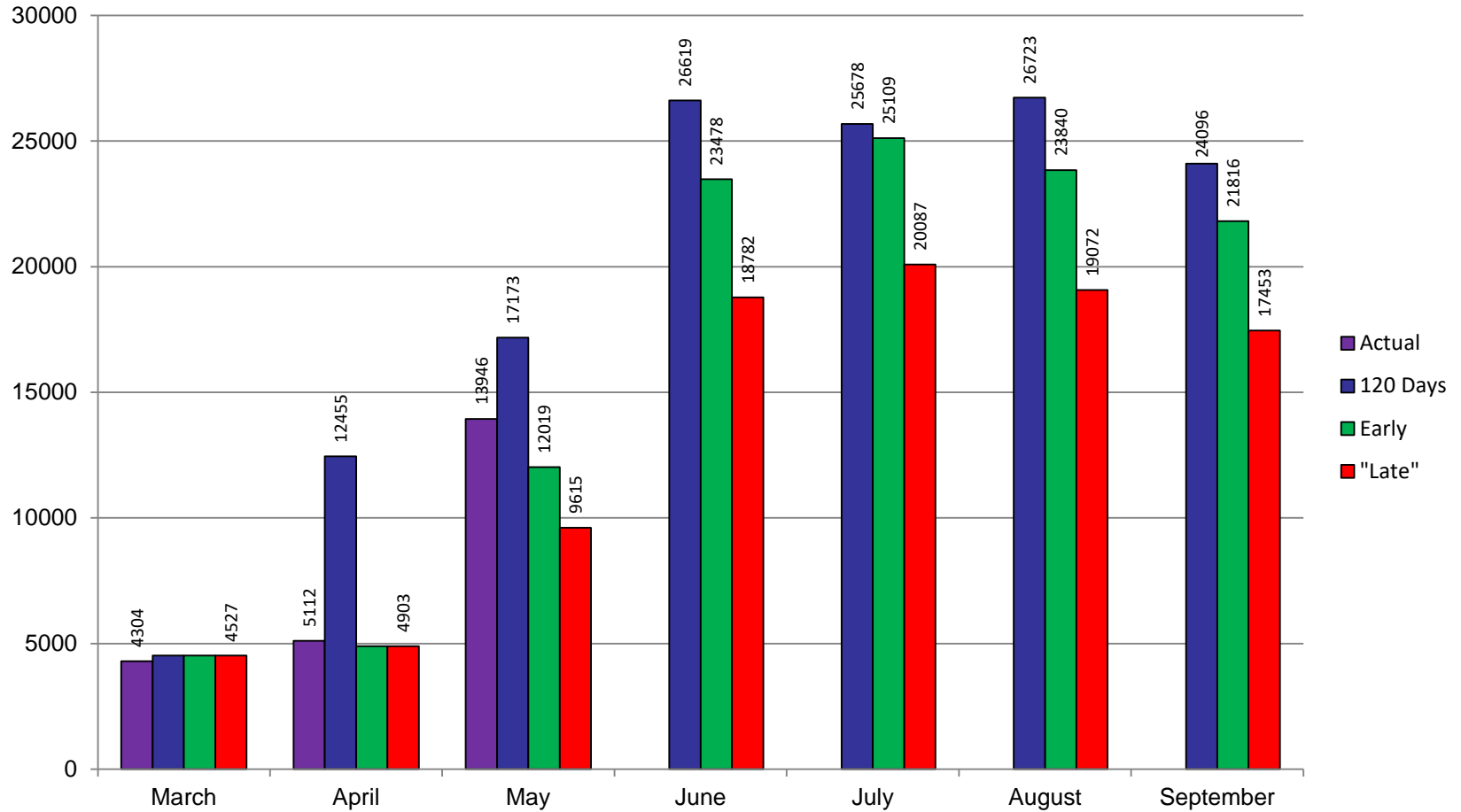
# Quarter 1, 2015 – 120 Day Schedule

- Following ramp-up of management, supervisory, and labour resources, implement a 120 day schedule focused on concrete production and placement.
- Plan to start mid-March and seek to achieve desired production/placement rate by mid-July
- Seek to evaluate whether peak production/placement rate is sustainable
- Re-plan overall schedule S-curves based on sustainable rates of concrete production/placement
- Re-plan overall schedule of milestones, interfaces, and implications with other contractors
- Continue all initiatives with LCMC including those associated with:
  - 1) Leadership; 2) Planning and Execution; and 3) Labour and Productivity

# Monthly Cumulative Concrete Placement



# Monthly Incremental Concrete Placement



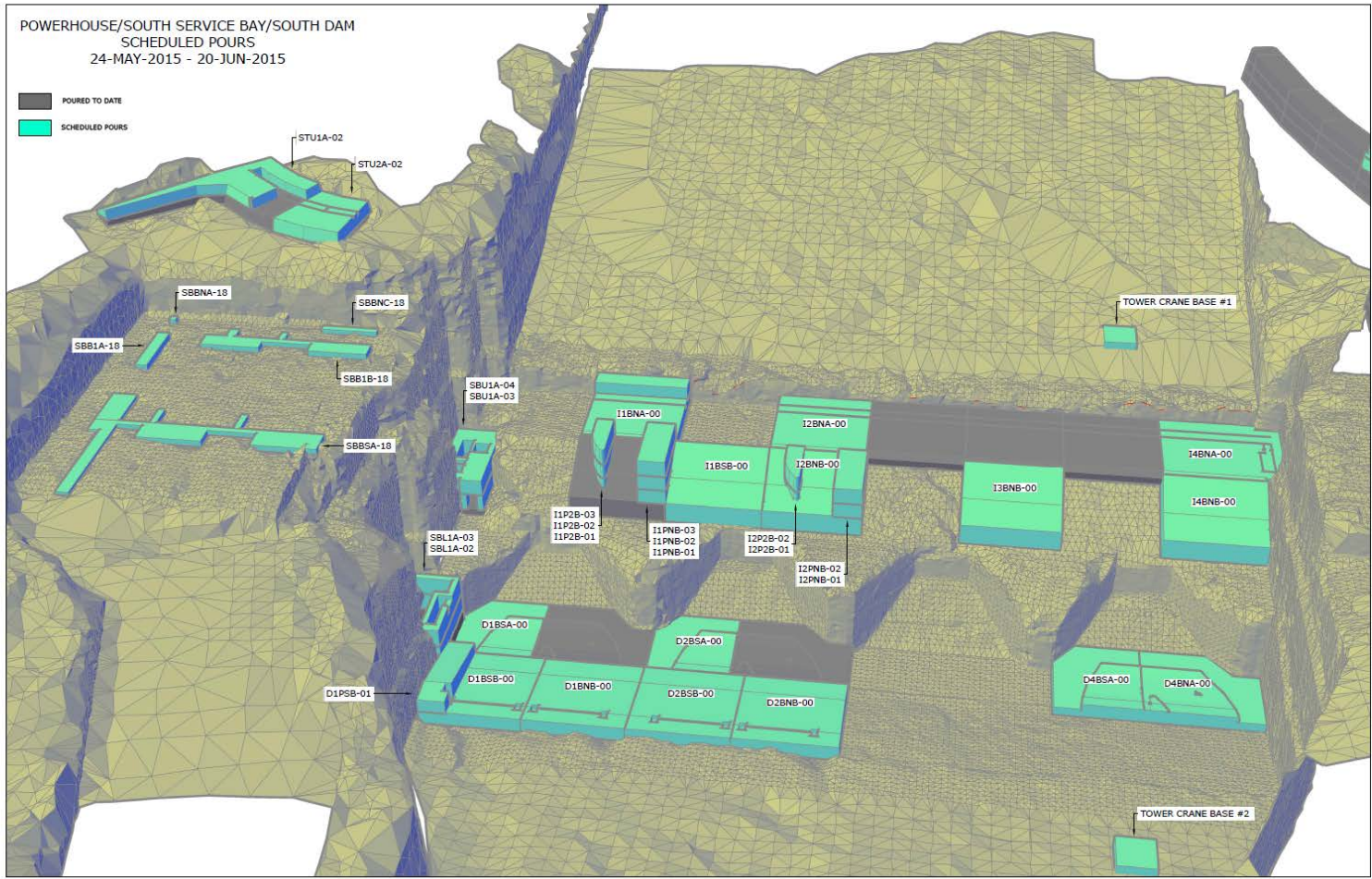
# Concrete Placement Plan for June, 2015

## Power House

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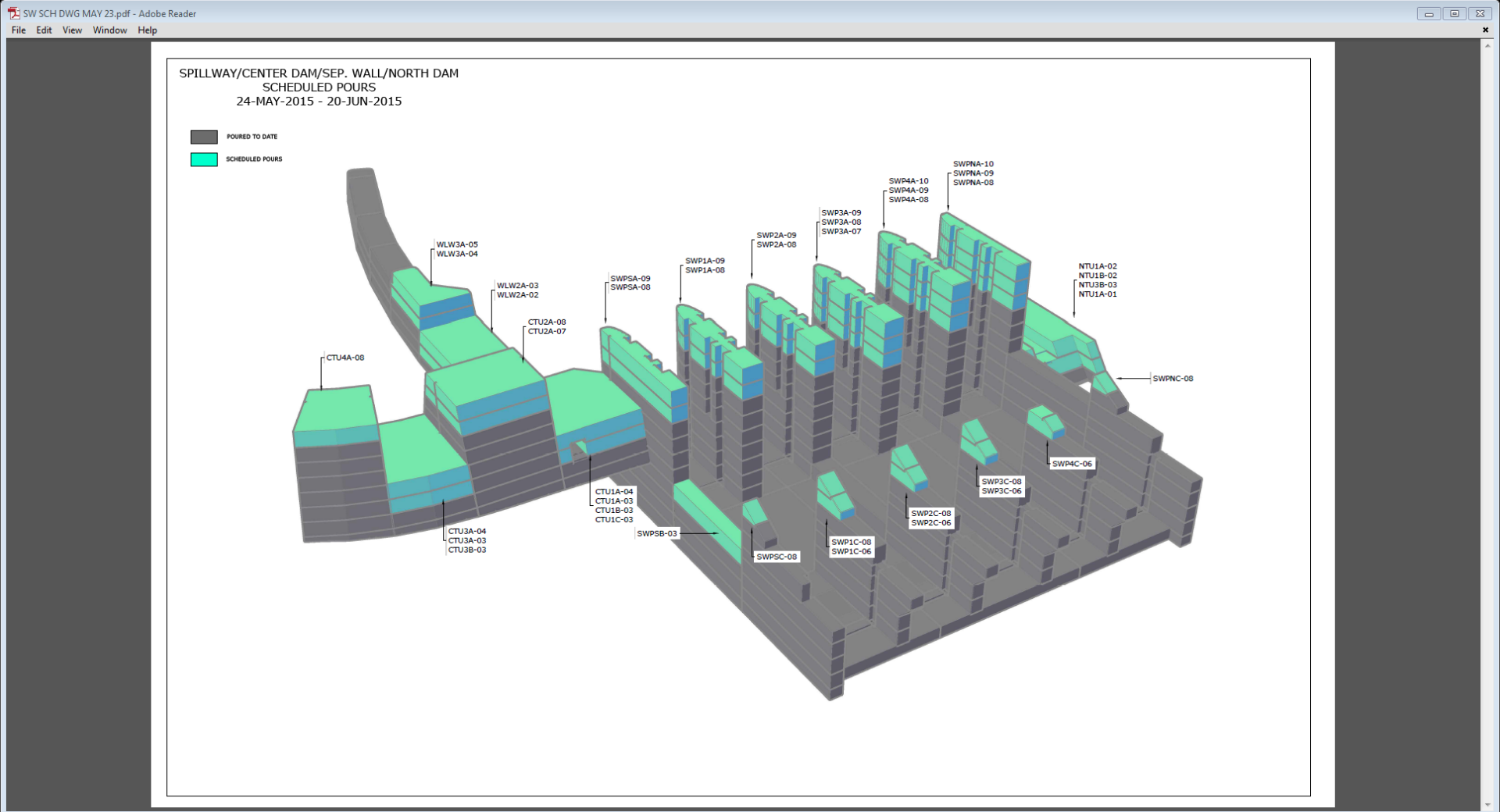
POWERHOUSE/SOUTH SERVICE BAY/SOUTH DAM  
SCHEDULED POURS  
24-MAY-2015 - 20-JUN-2015

POURED TO DATE  
SCHEDULED POURS



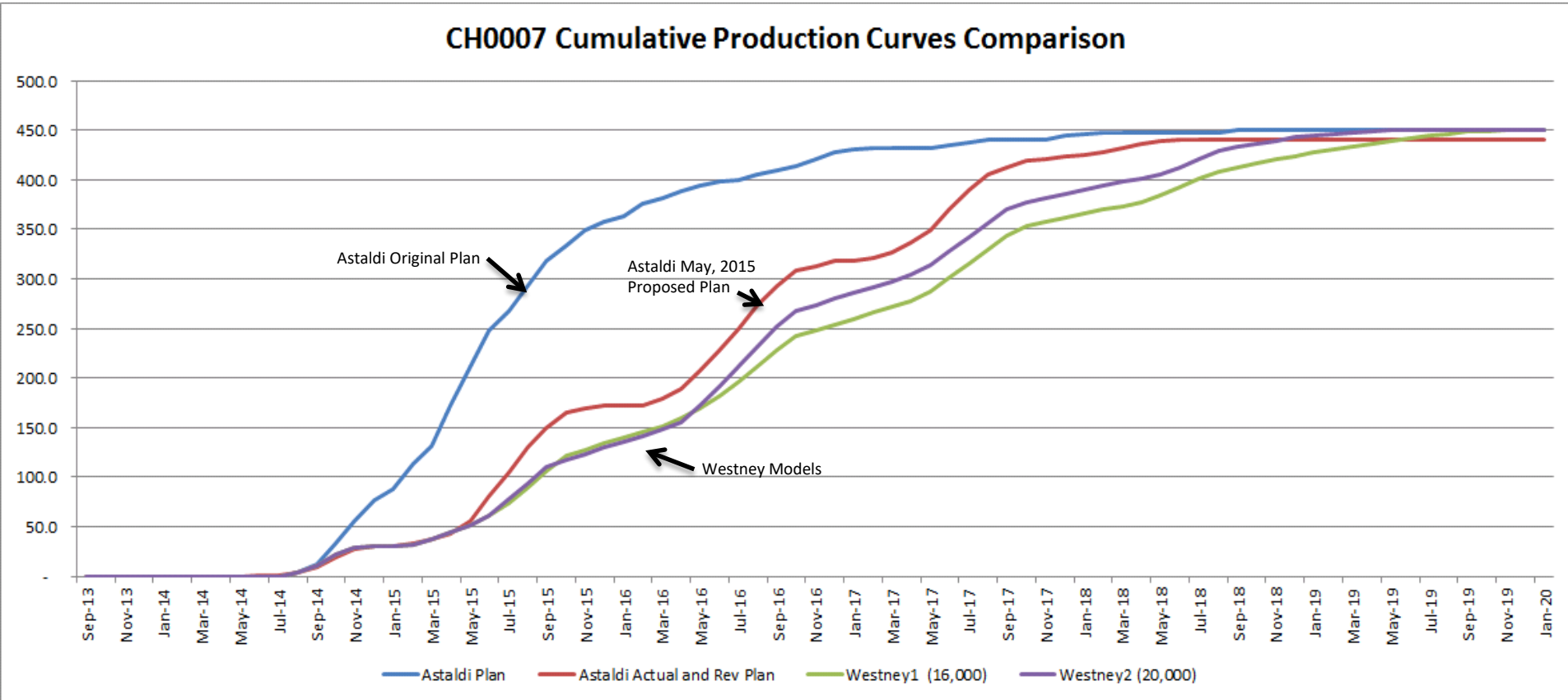
# Concrete Placement Plan for June, 2015

## Spillway

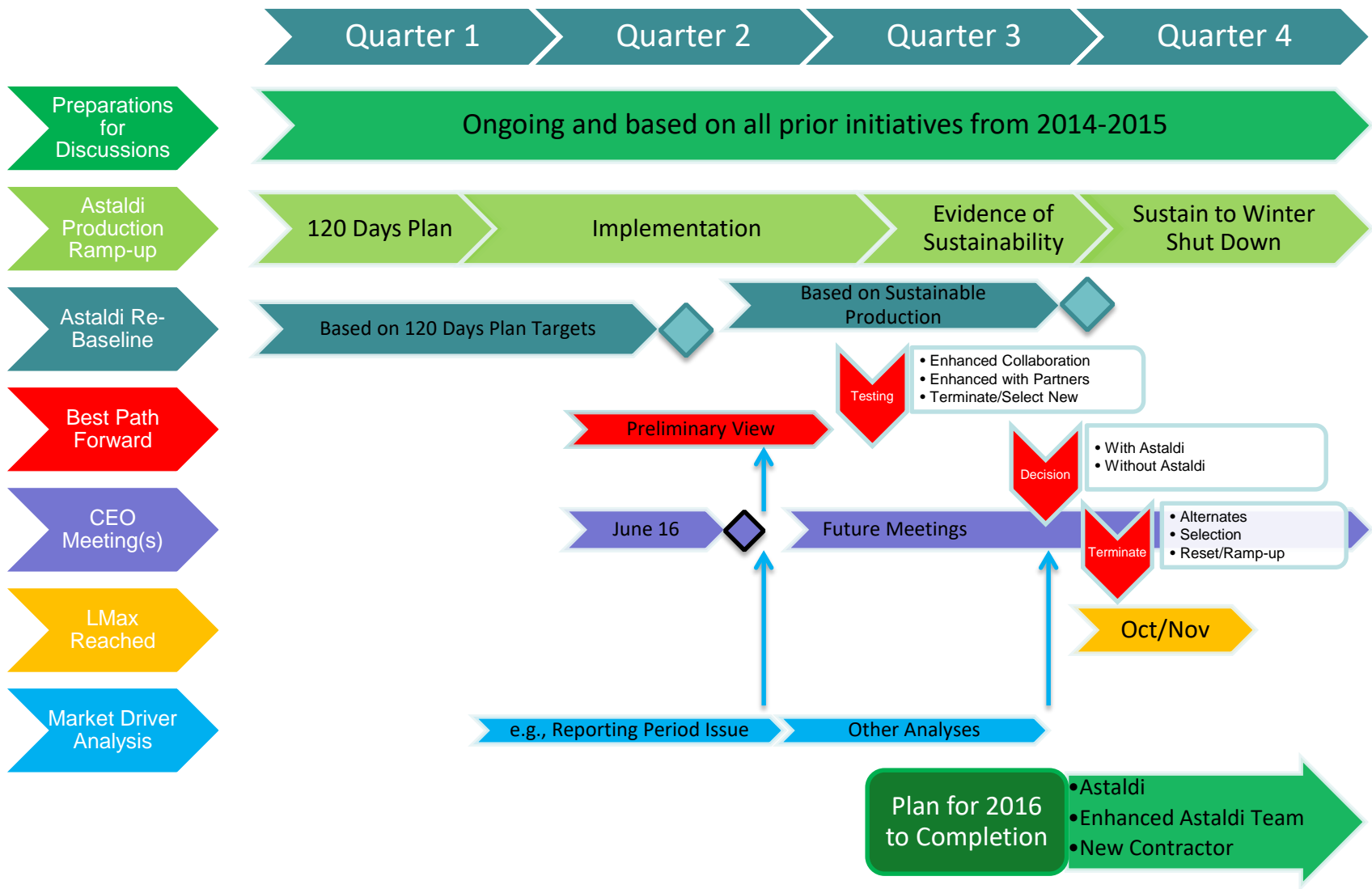


# Proposed Concrete Placement Schedule May, 2015

CH0007 Cumulative Production Curves Comparison



# Proactive Contingency Planning (Concept Schedule for 2015)





# Proactive Contingency Planning

- **Focus Area 1**

- Ensure steps are being taken to maximize and sustain Astaldi production
- Tiger teams, etc.

- **Focus Area 2**

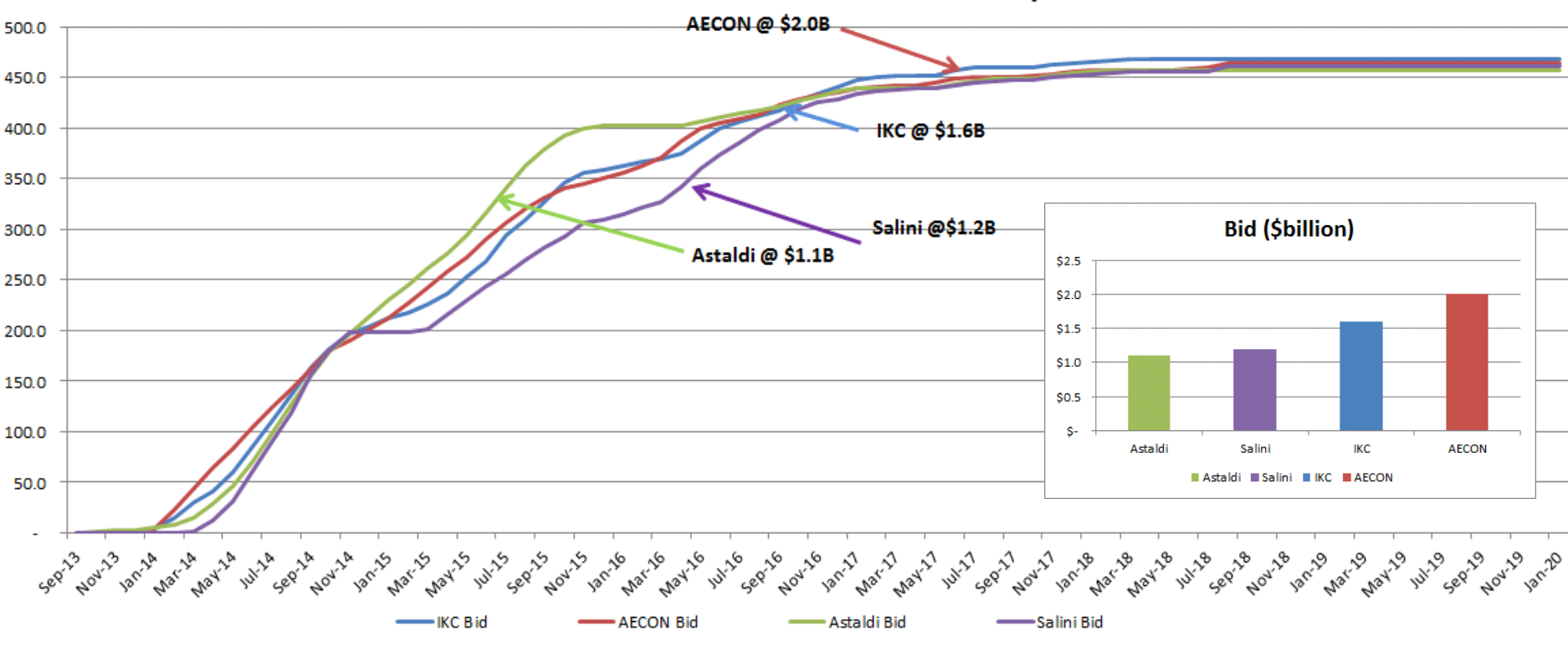
- Papers and presentations
- Key targets and decision timelines
- Cost and cash curves of all scenarios- bid rates, expected production rates, etc.
- Time curves of all scenarios

- **Focus Area 3**

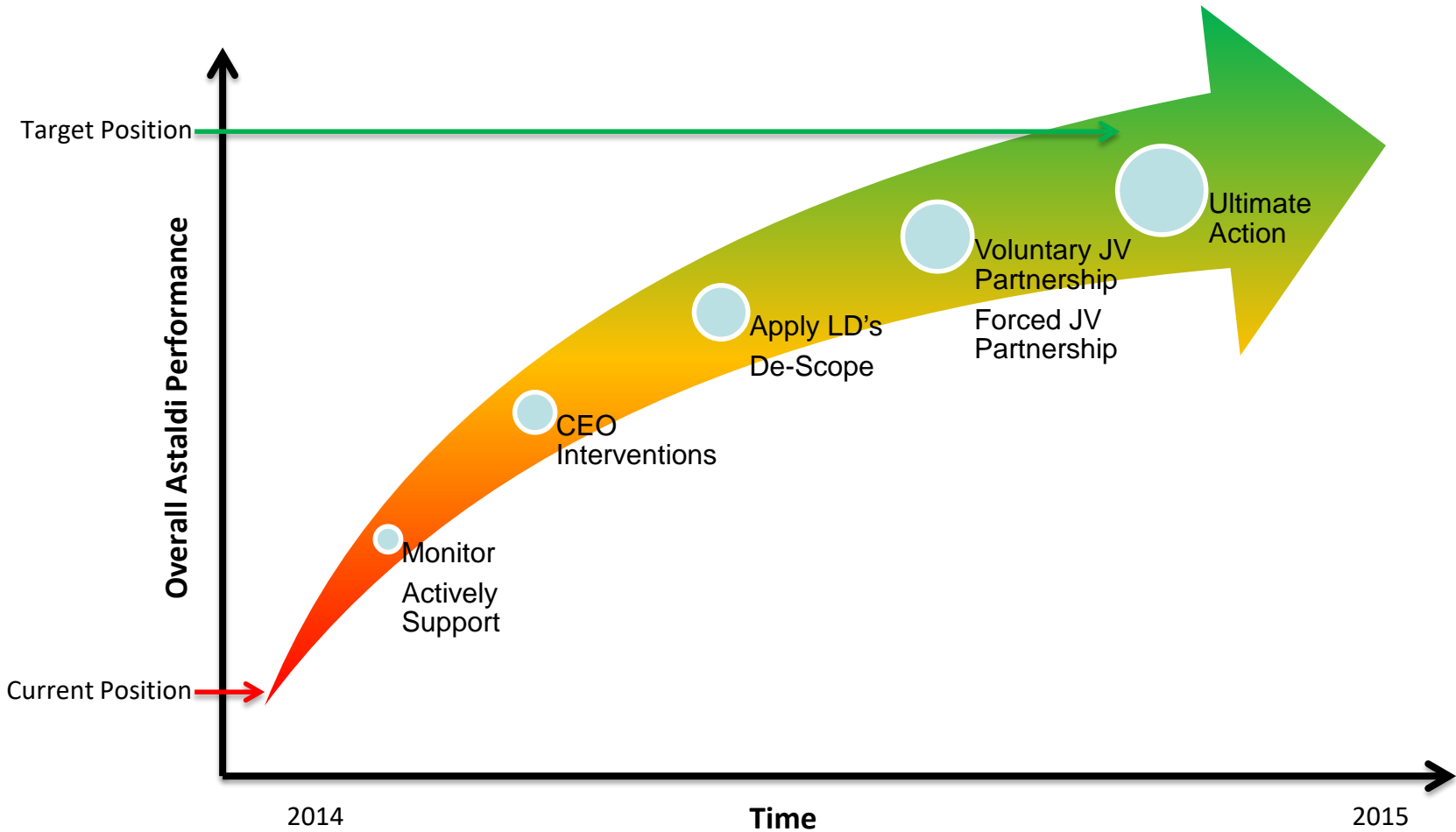
- Emera, interest, finance, rates and Provincial gov't impacts
- Investment evaluation - do cost and time adjustment
- Phase two Time opportunities for whole project-including curves
- Time curves of all scenarios
- What is the value of time to us?

# Benchmarking Astaldi with Competition

CH0007 Cumulative Production Curves Comparison



# Incremental Steps in Nalcor Intervention



# Summary of Performance Security

## Parent Guarantee

Astaldi S.P.A. undertakes and guarantees financial and other support to fulfill its obligations

\$ - Contract Value  
Term –Duration of the Agreement

## Letter of Credit (Multiple)

Security for the proper performance of Contractor's obligations under the agreement

\$ - Amount of initial advance payment  
Term – until Company Acknowledges repayment

\$100,000,000  
Term – Substantial Completion

\$20,000,000  
Final Completion

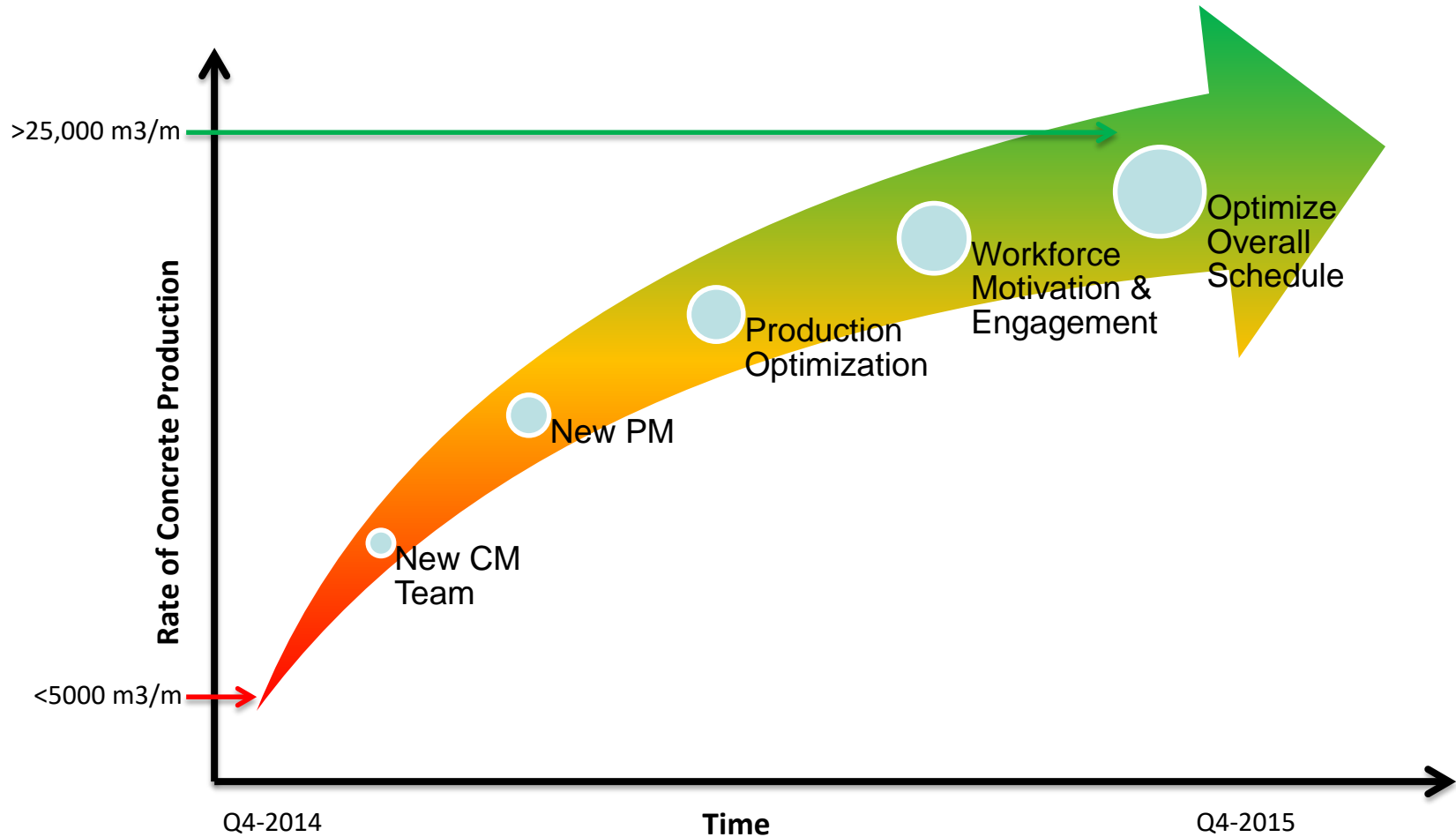
\$10,000,000  
Warranty Period

## Performance Bond

Guarantee for the Performance of the Work

\$150,000,000  
Term – Duration of the Agreement

# Incremental Steps in Organization to Sustain Future Production Targets



# Execution Options – With Astaldi

## As Is

## Partner

## Integrate

\*Assumes Astaldi's Performance improves to level of prudent contractor

### Time

12-18 Months\*

12-18 Months\*

12-18 Months\*

### Cost

Carrying Costs  
IDC

- \$150-225 M
- 2-3 Bond Payments @ \$150 M Each

- \$150-225 M
- 2-3 Bond Payments @ \$150 M Each

- \$150-225 M
- 2-3 Bond Payments @ \$150 M Each

Rev. & Opp.  
3rd Party Direct  
Scope Comp.

- Rev\$
- 3rd Party \$
- \$0-\$600 M

- Rev\$
- 3rd Party \$
- \$0-\$500 M

- Rev\$
- 3rd Party \$
- \$300-\$800 M

# Execution Options – Without Astaldi

	Terminate	Default	Mutual Termination
Time	15-24 Months	15-24 Months	15-24 Months
Cost	<ul style="list-style-type: none"> <li>• \$180-300 M</li> <li>• 2-4 Bond Payments @ \$150 M Each</li> <li>• Rev\$</li> <li>• 3<sup>rd</sup> Party \$</li> <li>• \$275-\$500 M</li> </ul>	<ul style="list-style-type: none"> <li>• \$180-300 M</li> <li>• 2-4 Bond Payments @ \$150 M Each</li> <li>• Rev\$</li> <li>• 3<sup>rd</sup> Party \$</li> <li>• \$0-\$275 M</li> </ul>	<ul style="list-style-type: none"> <li>• \$180-300 M</li> <li>• 2-4 Bond Payments @ \$150 M Each</li> <li>• Rev\$</li> <li>• 3<sup>rd</sup> Party \$</li> <li>• \$200-\$350 M</li> </ul>
Carrying Costs IDC			
Rev. & Opp. 3 <sup>rd</sup> Party Direct Scope Comp.			

Sharing our ideas in an open and supportive manner to achieve excellence.

# Teamwork

# Open Communication

Fostering an environment where information moves freely in a timely manner.

# Honesty and Trust

Being sincere in everything we say and do.

Relentless commitment to protecting ourselves, our colleagues, and our community.

# Safety

# Respect and Dignity

Appreciating the individuality of others by our words and actions.

# Leadership

Empowering individuals to help, guide and inspire others.

Holding ourselves responsible for our actions and performance.

# Accountability



# Incremental Steps to Sustain Future Production (alternate illustration)

