

Paradise Dam Essential Works

Fact sheet: 5.8 metre lowering

May 2020

Sunwater is lowering Paradise Dam to reduce the risk of a dam failure. This was for a nominal 5 metre lowering, subject to Sunwater finalising detailed design and integrating the Essential Works lowering with existing dam structural details and constraints. The total lowering for the Essential Works has been confirmed as 5.8 metres. This equates to a temporary full supply volume of 57% capacity of the existing dam. The storage will be managed at 42% capacity as advised in September 2019 to facilitate the Essential Works construction and to provide for improved warning time.

This fact sheet shares information about the engineering need for the 5.8 metre lowering for the Essential Works, the timeline for that decision and what that means for customer water availability.

Sunwater and Building Queensland will work in partnership to ensure that the information required for a robust decision on the long term remediation of Paradise Dam is provided to government by early 2021. Government will then decide on the option(s) to be considered in a detailed business case (DBC) that will be developed throughout 2021.

Engineering need for 5.8 metre lowering

The extent of lowering has evolved with the construction methodology as follows:

- A nominal 5 metre lowering has been discussed for some time as this can significantly reduce the risk of a dam failure.
- The actual approach for lowering the wall has been developed as the construction methodology has been refined with CPB Contractors since they were appointed in March this year.
- Figure 1 shows a schematic of the Essential Works. Figure 2 is a section through the Primary Spillway showing the lowered level.
- The upstream spillway is constructed of panels 2.2 metres tall. The upstream panels and section of the dam are critical components to safe operation of the dam, including the waterproof membrane attached to the inside of the panels, and adjacent drainage systems running horizontally and vertically to manage and reduce pressure within the dam.
- To ensure the spillway is left secure on completion of the Essential Works, the methodology has been developed to cut only every second panel at the base of the new lowered crest, with these panels retaining sufficient anchors, and adjacent panels remaining fully intact.
- To meet this objective the wall needs to be lowered by 6.4 metres to match existing panel height, and then a 600 mm flat temporary concrete cap will be constructed on top. Note, the panels don't start right at the top of the wall, so we are removing two panels (each 2.2 metres tall). That 4.4 metres, plus the 2 metre space at the top before the first panel, equals a total reduction in height of 6.4 metres.
- Thus, the lowering for the Essential Works is 5.8 metres.
- Figures 3 and 4 show the existing panels and how they will appear after the wall lowering.

Decision timeline

- September 2019 – need for Essential Works confirmed
- 5 March 2020 – CPB Contractors appointed
- 26 March 2020 – the Qld Dam Regulator issued to Direction to Sunwater to lower dam by 5 metres (or level as close as practical) by 1 December 2020
- 8 April 2020 – Detailed Design completed for Essential Works, including design report, technical specification, and construction issue drawings
- 9 April – Sunwater submitted Detailed Design documents, and CPB construction methodology, to Dam Regulator, including reasons for recommended 5.8 m lowering
- 7 May – Dam Regulator confirmed design outcomes and construction methodology, including 5.8 metre lowered level for the Essential Works
- 7 May – Sunwater confirmed 5.8 metre lowering with the Paradise Dam Community Reference Group
- 11 May – Sunwater confirmed 5.8 metre lowering with the Burnett Catchment Industry Forum
- 15 May – Sunwater confirms 5.8 metre lowering with the community

What does a 5.8 metre lowering mean for water availability?

The following table shows how the water available from the dam will change due to the Essential Works. A 5 metre lowering is included for comparison. The difference between 5.8 metres and 5 metres is 4% of the storage capacity.

Once the Essential Works are complete the dam can be returned to 57% supply level, which is 170,000 ML.

Project Phase	Height below Full Supply Level	Storage Capacity %	Storage Volume (ML)
Reduced Supply Level required for Essential Works period	9.0 m	42%	126,000 ML
Finished level on completion of Essential Works	5.8 m	57 %	170, 000 ML
For comparison a 5 metre lowering is included here	5 m	61%	184,000 ML

Sunwater has worked with customers to secure a change to water sharing rules that mitigates the impact on customer allocations, regardless of the exact wall lowering.

The impact of the rule change, as previously communicated to customers, is outlined below:

- All customers are currently on 100% of announced allocations.
- An amendment to water-sharing rules that Sunwater applied for in consultation with customers will maximise allocations in the Burnett River sub-scheme for the next water year.
- Commencing 1 July, high priority allocations will continue at 100% and medium priority allocations are expected to be in a range similar to the past five years.
- Over the last five years, medium priority allocations for the Burnett River sub-scheme have ranged between 71 and 91 per cent at the beginning of the water year.
- Medium priority allocations for the next water year are now anticipated to be in the range of 68 to 74 per cent in the Burnett River sub-scheme.
- Medium priority allocations in the Kolan River sub-scheme are anticipated to remain at 100 per cent in the next water year.
- High priority allocations in both sub-schemes will remain at 100 per cent for the next water year.
- Other variables – including scheme carry-over, inflows, releases and evaporation – may impact on the amount of water available when calculating allocations for the next water year.
- Allocations for the 2020/21 water year will be confirmed in July.

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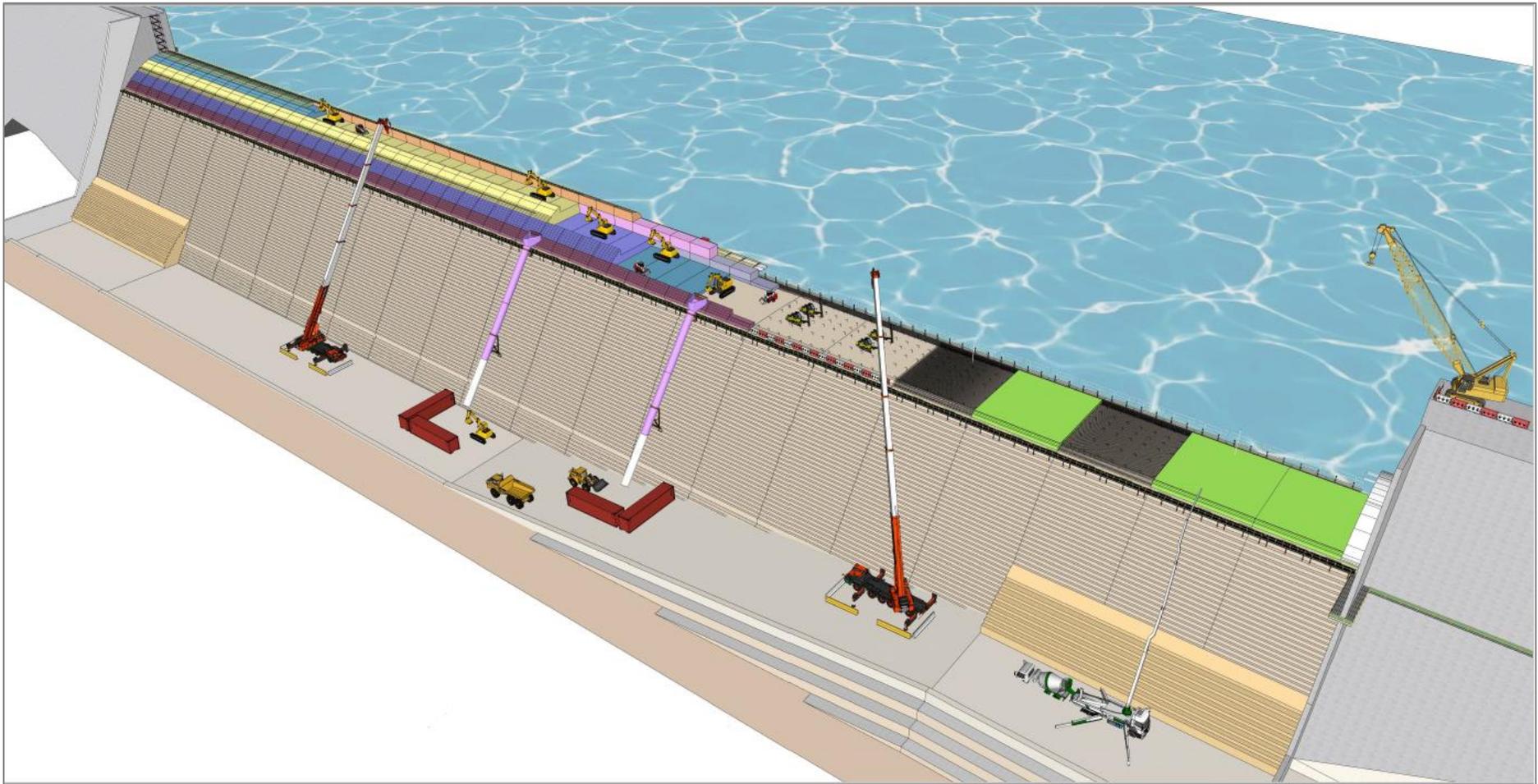


Figure 1 – Essential works schematic

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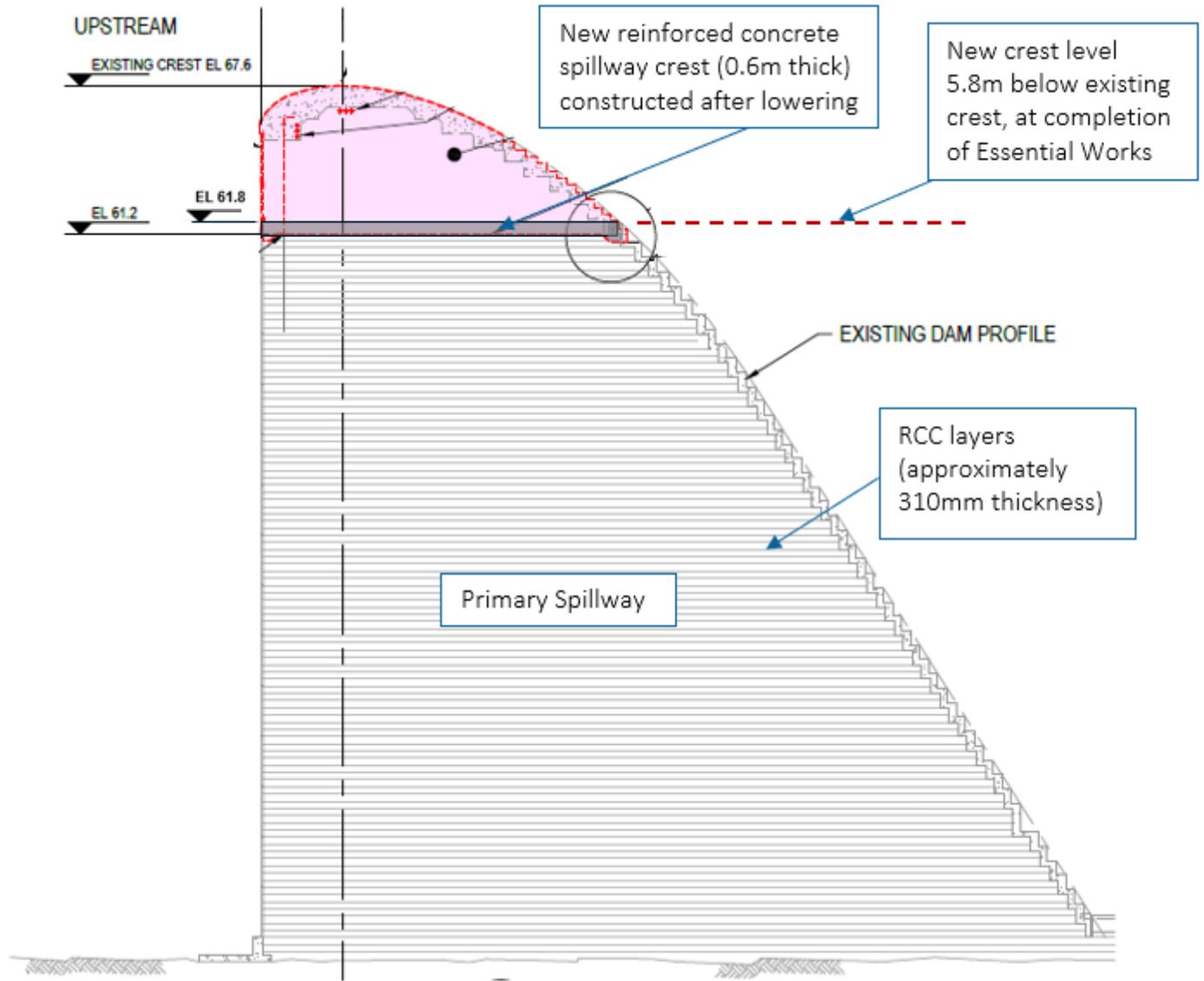


Figure 2 – Section through primary spillway – showing lowered level

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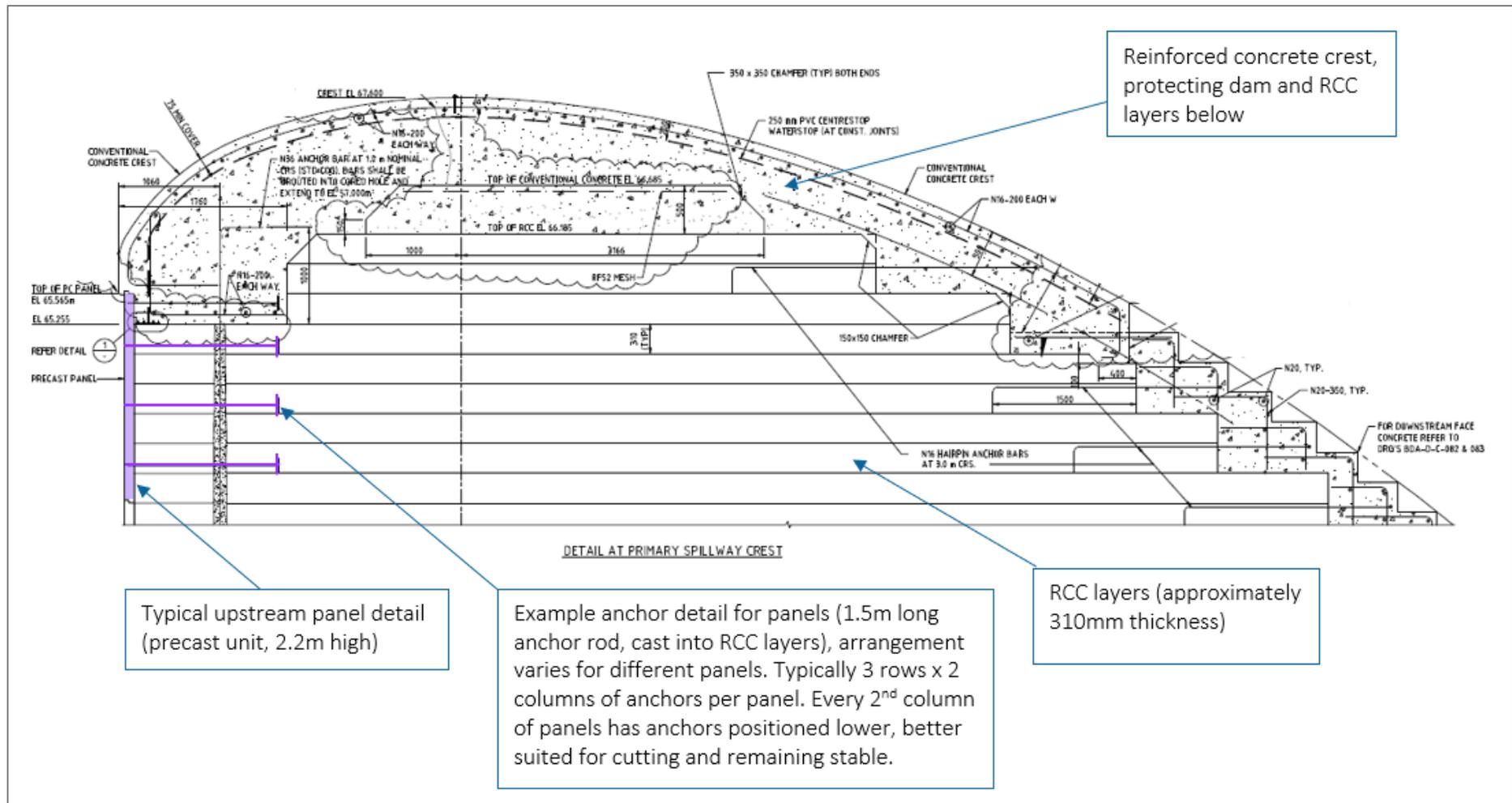


Figure 3 – Primary spillway crest detail, showing precast panels – existing dam

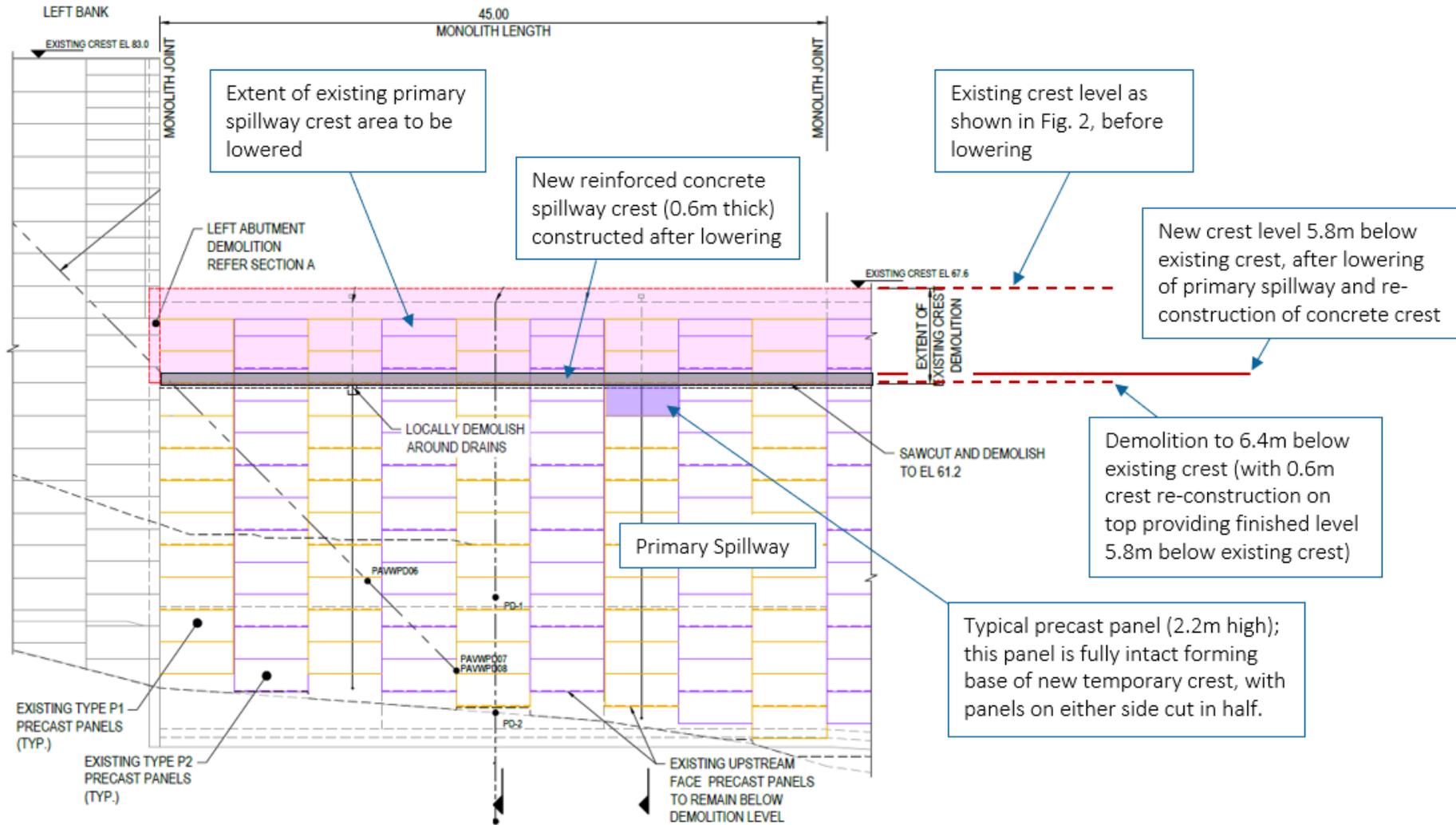


Figure 4 – Upstream face of primary spillway section at left abutment, showing precast panels