Unexpected High Pressures in Depleted Zone

What happened?
A TLP Well drilling campaign was underway and a well was drilled to TD, using sufficient mud weight for virgin pressures, then cased off and handed over to Completions. The well was perforated with the expectation that sands would be depleted, based on the history of production in the area.

What went wrong?
Immediately following the perforation, the well experienced a cased-hole kick event of 1210 psi at the wellhead. The reservoir pressure was almost 4000 psi higher than expected. This required closing the BOPs and securing the well until the correct kill weight fluid could be provided, three days after the kick event.

Why did it happen?
The potential for undrained sands was not clearly communicated to the Completion Engineers. The predrill recommendation to acquire formation pressures and confirm offset depletion was dropped due to operational concerns about differentially sticking the formation pressure tool. At least a portion of the sand was at the original reservoir pressure even after multiple years of offset production.

What areas were identified for improvement?
Include the original reservoir pressures in the Well Functional Specifications and the completion risk register. Ensure the team discusses the likelihood of original reservoir pressure and the geologic complexity.

What will WE do to prevent this from happening HERE?