

BEFORE THE INDEPENDENT HEARINGS PANEL

IN THE MATTER of the Resource Management Act 1991 ("**RMA**")

AND

IN THE MATTER Resource consent applications by Te Puna Industrial
Limited in relation to 297 Te Puna Station Road

**STATEMENT OF EVIDENCE OF STEVEN ANTHONY JOYNES
ON BEHALF OF TE PUNA INDUSTRIAL LIMITED**

FLOODWATER MODELLING

26 JUNE 2024

1. EXECUTIVE SUMMARY

- 1.1 My full name is Steven Anthony Joynes and I am a director of Joynes Consulting Trust trading as Golovin.
- 1.2 I was engaged by TPIL in November 2023 to undertake floodwater modelling to assist with the assessment of potential flooding effects of the Application, as well as to assess the proposed management and mitigation of floodwater effects.
- 1.3 I have used my model to assess flooding in four different locations using a baseline scenario (explained in the main body) and a proposed scenario (with development and stormwater mitigation measures proposed in place for the 10-year, 50-year and 100-year events).
- 1.4 The results of this modelling show that there is a decrease in flooding effects in the proposed scenario compared to the baseline scenario at all four locations for all three events assessed, with one exception. This for the 10-year event at location D (OLP Logistics site at 250-264 Te Puna Station Road) where there is a 10mm rise above baseline levels lasting 10 minutes. This occurs due to the landform being filled where necessary (as provided for by the Te Puna Business Park Structure Plan) to comply with District Plan rules to be free from inundation in the 100-year rainfall storm event. It is my opinion that this effect is inconsequential in terms of actual or material flood risk and hazard at the Site.

2. INTRODUCTION

- 2.1 My full name is Steven Anthony Joynes. I am a director of Joynes Consulting Trust trading as Golovin.
- 2.2 I spend about 90% of my time on hydrological and hydraulic modelling catchments for both small developments and large subdivisions. The remainder of my time is spent doing civil design and training.

Qualifications and experience

- 2.3 My qualifications are as follows:
- (a) B.Sc.(Hons) – Civil Engineering, Salford University, 1984

- (b) Ph.D. Computational Hydraulics, Salford University, 1989
- (c) Diploma Management Studies, Waikato University, 1998
- (d) Certificate in Information Technology, Open Polytechnic of NZ, 2021

Code of conduct

3. I confirm that I have read the expert witness code of conduct set out in the environment court's practice note 2023. I have complied with the code of conduct in preparing this evidence and I agree to comply with it while giving oral evidence before the hearings commissioners. Except where I state that I am relying on the evidence of another person, this written evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

Scope of Evidence

- 3.1 My evidence relates to the resource consent applications by Te Puna Industrial Limited ("**TPIL**") in relation to its proposed development of the site at 297 Te Puna Station Road ("**Site**"). The applications are to authorise the development of the Site for the establishment and operation of industrial activities, with associated earthworks and discharge to water, within the Site. The proposed development will give effect to the Te Puna Business Park Structure Plan ("**Structure Plan**") provisions that apply to the Site under the Western Bay of Plenty District Plan. ContainerCo will be the anchor tenant of the Site. ContainerCo intends to store, repair, lease and sell shipping containers.
- 3.2 Regional resource consents to enable the Project are required from Bay of Plenty Regional Council ("**BOPRC**") and land use consents are required from Western Bay of Plenty District Council ("**WBOPDC**") (together, the "**Application**"). The specific consent requirements are set out in the planning evidence of Mr Murphy.
- 3.3 I was engaged by TPIL in November 2023 to undertake floodwater modelling to assist with the assessment of potential flooding effects of the Application, as well as to assess the proposed management, and mitigation of floodwater effects. I also assisted with identifying potential options for on-site stormwater management that also mitigate off-site flooding effects (as described in the

evidence of Mr Curtis). I have assessed the potential flooding effects of the Application, drawing on the modelling I have undertaken.

- 3.4 As part of this assessment, I have reviewed the following documents which were included as appendices in the Assessment of Environmental Effects ("**AEE**") or have been submitted to provide further information on flooding and stormwater effects to both WBOPDC and BOPRC in 2024:
- (a) Structure Plan (SW Management) (Revision 2), Drawing No. 11 prepared by Momentum Planning and Design, dated 17 August 2023, which was attached at Appendix 3 of the AEE;
 - (b) Alternative SW Management (Revision 2), Drawing No. 12 prepared by Momentum Planning and Design, dated 17 August 2023, which was attached at Appendix 3 of the AEE;
 - (c) Updated WSP Site Plans which were attached at Appendix 3 of the AEE;
 - (d) Engineering Report by WSP dated 17 August 2023 ("Engineering Report"), which was attached at Appendix 5 of the AEE;
 - (e) Flooding memorandum by WSP to BOPRC dated 17 August 2023 which was attached at Appendix 5 of the AEE;
 - (f) Flooding memorandum by WSP to WBOPDC dated 17 August 2023 which was attached at Appendix 5 of the AEE;
 - (g) Golovin Flood Modelling Data dated 17 July 2023 which was attached at Appendix 5 of the AEE; and
 - (h) Floodplain Assessment by Golovin dated May 2024.
- 3.5 I originally started working on this catchment in October 2021, acting for Tinex Group Ltd ("**Tinex**") which owns 245 Te Puna Station Road ("**Tinex Site**") which is part of the Te Puna Business Park Zone. The Tinex Site and the Site share property boundaries.
- 3.6 In early 2023 I attended a meeting with both Councils and land-owner representatives to resolve flooding issues (real and potential) in the catchment, relating to devising coordinated floodwater mitigation across the Business

Park. This meeting included Vincent Murphy (planner for this Application).

- 3.7 Mark Pennington of Tonkin & Taylor represents the WBOPDC as an engineering advisor. After this meeting I met with Mark Pennington to show him the flood model I had developed. He indicated he was generally happy with the approach taken and suggested some amendments which I have since instigated.
- 3.8 From February to around October 2023 I worked with all business park parties (Tinex Site at 245 Te Puna Station Road, Site at 297 Te Puna Station Road, and OLP Logistics Ltd site at 250-264 Te Puna Station Road, being the three sites comprising the Te Puna Business Park) to come up with a design that would mitigate flooding in the catchment for a fully developed industrial area within the Structure Plan under the Western Bay of Plenty District Plan ("**District Plan**").
- 3.9 In November 2023, I was engaged by TPIL to design and confirm the flooding effects for its Application. Tinex allowed me, on behalf of TPIL, to use the flood model that Tinex had originally commissioned.
- 3.10 Both parties agreed this would provide consistency in approach.
- 3.11 In this statement of evidence, I will:
- (a) provide a description of the modelling undertaken for the stormwater run-off affecting the Site;
 - (b) explain the conclusions that can be drawn from the modelling in terms of potential flooding effects;
 - (c) respond to submissions in relation to potential flooding effects; and
 - (d) comment on the proposed conditions of consent as they relate to potential flooding effects.

4. DESCRIPTION OF MODELLING UNDERTAKEN

- 4.1 I prepared a report in May 2024 ("**Golovin Report**") which describes the work I have done for TPIL in advance of preparing this evidence.¹ I have also

¹ Floodplain Assessment prepared by Golovin (dated May 2024).

completed further work in June 2024 using the same modelling and software in response to the questions from Mr Pennington on behalf of WBOPDC and from Ms Bronwyn Rhynd on behalf of BOPRC.

- 4.2 The software used for the hydrological assessment is HEC-HMS. The software used to calculate flood flows and levels is HEC-RAS. These are globally used for this type of work and is developed and improved by the United States Army Corp of Engineers. The methodology I used is set out at [2.1] of the Golovin Report.
- 4.3 All levels information produced within this model are expressed in terms of Moturiki Datum 1953.
- 4.4 I calculated a peak flow and hydrograph for the catchment upstream of State Highway 2 ("**SH2**") (which is about 65% of the total analysed catchment). I then modelled the terrain from SH2, the north-west area and down to the Teihana Road culverts (which act as the main outlet of the catchment). The terrain data I used was from the 2018 LINZ Lidar survey. I also utilised the surveys of WSP-Opus on the culverts within the surrounding stormwater system for my modelling. I did not analyse the floodwater flows north of the railway because, following various tests, I was satisfied the railway line would not overflow.
- 4.5 I then analysed the 24-hour storms according to the Bay of Plenty Hydrological run-off guidelines to calculate flow hydrographs and excess rain hyetographs. The rain depths were extracted from HIRDS V4 using the RCP8.5 climate scenario. The return periods that were assessed were:
- (a) 10-year (a frequent flood event);
 - (b) 50-year storm (to determine the minimum earthworks platform for the Site); and
 - (c) 100-year storm (the worst-case scenario for design purposes).
- 4.6 A tidal boundary was used with a 20-year return period. The peak level of RL2.37m includes a 0.17m storm surge. The tidal boundary is more realistic than a mid-tide static level because water enters the system and can add to the storage issues in the floodplain. A tidal boundary was used for all simulations.

- 4.7 HEC-RAS software was then used to generate flood levels within the grid.
- 4.8 The other key elements and parameters for the model are set out in the Golovin Report at [3.1].

Existing and Proposed Scenarios Modelled

- 4.9 I have iteratively modelled a total of four different physical scenarios. These are (a) the baseline scenario, (b) the proposed scenario (MPAD Drawing 011), (c) the proposed scenario, with unconsented fill remaining outside of a 45m-wide OLFP on the Tinex Site; and (d) the proposed scenario, with additional drainage improvements on the northern side of Te Puna Station Road (MPAD Drawing 012). The first three scenarios, were run for the 10, 50 and 100-year rainfall events (using RCP8.5 future climate scenario). For the fourth scenario, given previous consensus between stormwater engineers representing all three landowners that this northern option is a superior option to the 'proposed scenario', only a 50-year storm event for pattern verification has been modelled. These scenarios are elaborated on further below.
- 4.10 The baseline flooding scenario, ie the floodwater modelling of the lawful existing situation, includes:
- (a) only the existing 2 Teihana Road culverts;
 - (b) Existing terrain at the Site and OLP Logistics site (250-264 Te Puna Station Road), being the other two sites making up the Te Puna Business Park;
 - (c) 245 Te Puna Station Road unconsented fill ignored, reverting back to 2012 lawful terrain.
- 4.11 The proposed flooding scenario (see MPAD Drawing No. 11) includes the following additional features.
- (a) A third Teihana Road culvert with a diameter of 1600mm (as required to be installed in accordance with Structure Plan agreements); and
 - (b) earthworks platform at RL3.0m totalling 5.24ha within the Site, generally parallel to Te Puna Station Road, including an allowance for the stormwater treatment pond sized by Harrison Grierson

engineers (ie this area has been excluded as potential floodwater storage/conveyance space);

- (c) An acoustic bund on the southern boundary so as to be consistent with the Structure Plan expectations in this regard; and
- (d) an overland flowpath swale through the Site and the Tinex Site 45m wide. It is 416m long. The upstream invert is RL1.40m and the downstream invert is RL-0.69m to match the drain to which the OLFP connects to as directed by the Structure Plan.

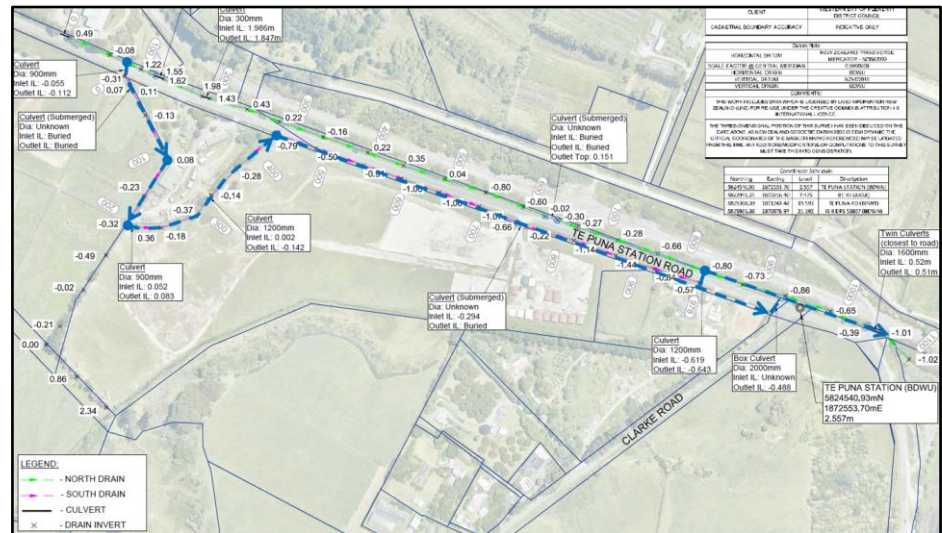
4.12 The third scenario modelled is the 'proposed flooding scenario' described above, but with unconsented fill outside of the 45m-wide OLFP through the Tinex property remaining in-situ. This has been done to account for potential 'real' effects if the unlawful fill remains for any period of time after the development is given effect to.

4.13 The three scenarios above assume no change to conveyance of stormwater (post-treatment and storage in ponds on individual sites) as envisioned by the Structure Plan. Working from west to east, which is the general direction of flow the following occurs:

- (a) Water flows from the northern side of Te Puna Station Road in a 900mm culvert beneath the road adjacent to the OLP Logistics site;
- (b) Into a re-constructed roadside drain inside the TPIL property (mirroring current conveyance ability);
- (c) Then into a swale drain on the north-eastern/eastern boundary of the Site with the Tinex Site;
- (d) From this drain, into an overland flowpath traversing west to east from the TPIL site through the Tinex Site to roadside drains parallel with the Tinex road frontage to Te Puna Station Road; and
- (e) Then via existing downstream stormwater infrastructure, which includes numerous culverts crossing back to the northern side of the road.
- (f) Hakao Stream connects via a 2m box culvert to the connect with the northern drain.

- (g) Flows then converge to the current twin 1600mm culverts beneath Teihana Road, which are required to be complemented by a third culvert as per historic agreements accompanying the Structure Plan.

The pattern of stormwater and floodwater conveyance is depicted on the image below (emphasised with blue lines).



5. CONCLUSIONS THAT CAN BE DRAWN FROM THE MODELLING

Baseline v Proposed Scenario

5.1 For the baseline scenario the table below gives the peak water levels for design (Golovin Report, Table 3.1):

Storm Return Period (years)	Peak water levels (MVD53)	Comment
1 in 10	2.36	Frequent storm
1 in 50	2.09	Min platform for earthworks
1 in 100	3.00	Maximum 100-year water level allowed

5.2 Responding to concerns within the s.42A reports published 18th June 2024, Table 4.1 within the Golovin report dated May 2024 has been expanded to include a fourth measurement point 'D' on the northern side of Te Puna Station Road within the OLP Logistics property. All four measurement points are illustrated in re-produced Figure 4.2 from the same report.

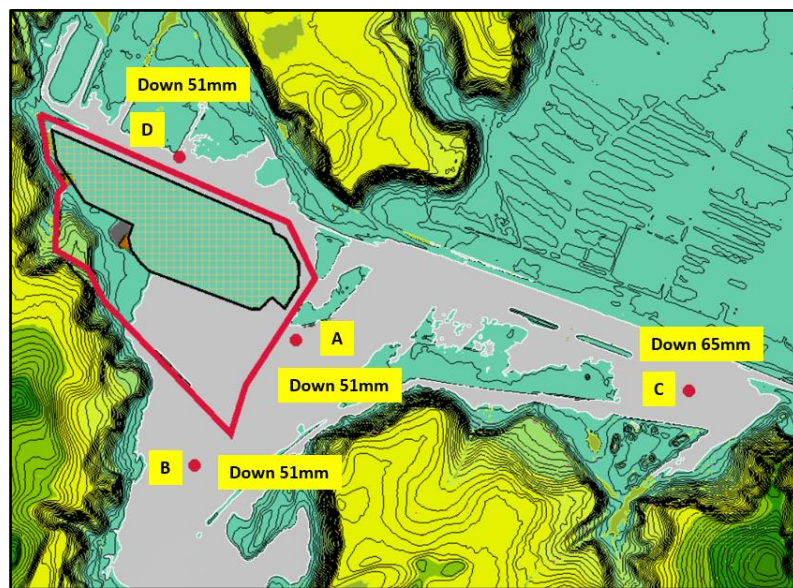


Figure 4.2– re-produced from Golovin report May 2024. Illustrates locations of measuring points A-D (annotated reductions occur in 50-year flood event)

5.3 Re-produced Table 4.1 below shows the changes in flood levels at the four locations A, B, C and D.

Location	10-year	50-year	100-year
A	Down 57mm	Down 51mm	Down 25mm
B	Down 56mm	Down 51mm	Down 26mm
C	Down 181mm	Down 65mm	Down 28mm
D	Rise 10mm	Down 51mm	Down 27mm

5.4 Re-produced Table 4.1 above demonstrates that at all locations, in the 50 and 100-year storm events, there is a reduction in the vertical extent of flooding affecting land under the proposed scenario. There is also a corresponding reduced flood duration of between 4 to 6 hours across the locations during the

50 and 100-year storms. It can therefore be concluded in my opinion that there is a net benefit to landowners and occupiers upstream and downstream in terms of reduced flood hazard risk in the 50 and 100-year rainfall storm events.

Proposed Scenario – 10 Year Storm at OLP Logistics Site

- 5.5 Initially with acoustic bunding requirements between the earthworks platform and Te Ouna Station Road there was a negative flood impact of 68mm on the OLP Logistics land for the 10-year storm.
- 5.6 The bunds were removed giving a negative impact of just 10mm. This is shown in item 5.3 above. This is less than minor. Additionally, all the run -off remains in the drainage system.
- 5.7 In my opinion, this is an inconsequential change in the flood risk and flood effects upon this property in comparison to the baseline scenario flooding.

Third Scenario – Tinex Unconsented Fill

- 5.8 If the unlawful fill in the Tinex Site remained outside of the 45m OLFP cut through the Tinex Site as modelled, the following occurs for the 50-year and 100-year storms.

Location	50-year		100-year	
	No Tinex Unconsented	Tinex Unconsented outside of OLFP Remains	No Tinex Unconsented	Tinex Unconsented outside of OLFP Remains
A	Down 51mm	Rise 8mm	Down 25mm	Rise 9mm
B	Down 51mm	Rise 8mm	Down 26mm	Rise 14mm
C	Down 65mm	Down 25mm	Down 28mm	Down 29mm
D	Down 51mm	Rise 9mm	Down 27mm	Rise 9mm

- 5.9 In general, there is about a 60mm turnaround for the 50-year event and 35mm turnaround for the 100-year event, demonstrating the impact of the unlawful fill and the 45m OLFP.
- 5.10 The absolute rises is a maximum of 14mm which can be regarded as less than minor in relation to the accuracy of surveys, analysis and construction tolerances.
- 5.11 It should be noted that Point B, where the 14mm effect occurs, is on the Tinex property itself ie the unconsented fill placed at the Tinex property is causing

the identified adverse effect. Given the ability for the landowner to remedy this issue to their benefit, his effect is not considered further.

Fourth Scenario – Alternative Northern Drainage

- 5.12 The fourth scenario previously described and as shown on MPAD Drawing No. 012 with additional drainage improvements to the northern side of Te Puna Station Road has been modelled. This in the 50-year event only, to verify engineer consensus of the superiority of this option. The modelling revealed that flood levels in the 50-year storm dropped a further 50mm to over 100mm at all four locations, corroborating the collective engineering assessment of this mitigation option.

6. RESPONSE TO ISSUES RAISED IN SUBMISSIONS

- 6.1 I have reviewed relevant submissions on the Application that raise matters relating to flooding effects.
- 6.2 I note that the submissions filed by 50 of the submitters on this Application are identical in form and substance.² I acknowledge that these submissions were made by individual submitters, however for ease of reference and given the likeness of these submissions, I will refer to these submitters as "Submitter Group 1", rather than by referring to their individual submitter number.
- 6.3 The submissions which raise issues regarding flooding effects are generally concerned that:
- (a) The Site is in a low-lying area and in a flood plain;³ and
 - (b) That the proposed raising of the Site platform will lead to discharges of stormwater from the Site on to Te Puna Station Road, and onto neighbouring properties.⁴
- 6.4 In response to these submissions, I comment the following.

² Submitters #3, #4, #6, #8, #9, #10, #11, #12, #14, #15, #16, #17, #19, #20, #21, #22, #23, #24, #27, #28, #29, #31, #32, #33, #37, #40, #41, #42, #45, #47, #48, #51, #52, #57, #58, #61, #62, #63, #64, #66, #71, #72, #100, #105, #111, #112, #127, #187, #194 and #195.

³ Submitters #7, #13, #43, #49, #55, #73, #75, #76, #81, #87, #89, #91, #104, #110, #118, #123, #124, #136, #138, #139, #143, #150, #160, #161, #162, #167, #170, #171, #172, #120, #173, #189, #196, #214, #221, #249, #259, #264, #268 and Submitter Group 1.

⁴ Submitters #73, #113, #115, #116 and #126.

- 6.5 The floodplain location of the Site, and potential for floodwater displacement effects, has been forefront to the Site design evolution. The proposed landform has been iterated over time, so as to ensure the proposed solution does not increase flood levels in the wider catchment area. To achieve this the proposed platform area to be immediately delivered has been reduced significantly compared to what is expressly indicated in the Structure Plan.
- 6.6 This recognises the impact of climate change by increasing rainfall and the new rules applied by Council's in the past 20-years.
- 6.7 The proposed solution actually reduces flood levels for both frequent and rare storms at 3 of the 4 locations. Location D has a 10mm rise, lasting 10 minutes, in the 10-year event. As this floodwater extends from the TPIL site across Te Puna Station Road, and into the OLP Logistics Site, a similar effect would occur in respect of Te Puna Station Road. I similarly consider this inconsequential to the operation of the road in comparison to the baseline flooding conditions.

7. RESPONSE TO S42A REPORT

- 7.1 I have reviewed the section 42A Reports and recommendations from the Councils, both dated 17 June 2024. Matters relating to flooding effects are addressed primarily at [7.41] - [7.59] of the BOPRC s42A Report and at [179] - [221] of the WBOPDC s42A Report.

Bay of Plenty Regional Council

- 7.2 Ms Bronwyn Rhynd (CKL) has undertaken a review of the information provided in this Application on behalf of the BOPRC and has some queries regarding the information provided.⁵
- 7.3 The Reporting Planner for the BOPRC (Ms Marcia Christian) states that Ms Rhynd has concerns with the accuracy of the floodplain Assessment model and considers that not all of the supporting data has been provided that would enable BOPRC to confirm agreement with the Floodplain Assessment.⁶
- 7.4 Ms Rhynd also considers, at [4.2] of her review that:

⁵ Bay of Plenty Regional Council section 42A Report (dated 17 June 2024) at [7.47].

⁶ CKL, Stormwater Management and Flood Modelling Review (17 June 2024).

BOPRC Section 42A Report (17 June 2024) at [7.48].

The flood modelling has been presented for only one scenario for 100yr ARI, and assumed has followed the BoPRC guidelines, which are the design standard combinations for floods and sea level...

Therefore, this assessment has assumed that Case 2 scenario has been presented, with the commentary of the coastal inundation to cover Case 1 within Golovin's report. Therefore, the worst case is that the whole of the site is inundated during 100yr event to RL3.8m.

Given that the site development relies on the 50yr and 10yr flood levels there is no presentation for the outcomes of Case 1 and Case 2 for these rainfall events to ensure that the levels and top water level differences presented, in the Golovin report, are the critical levels.

7.5 In response to this, I note the following:

- (a) The report cited by Ms Rhynd presented 100-year (RCP 8.5 climate-change scenario) modelling for two scenarios (baseline and proposed), rather than one;
- (b) 'Case 1' of the BOPRC Hydrological and Hydraulic Guidelines (with additional sensitivity of a 20-year sea level/coastal storm surge flood tidal boundary used for the 10-year event also, when only strictly required for the 50 and 100-year rainfall flood events) was agreed to be used in modelling scenarios with Mark Pennington in early 2023. In summary, 10, 50 and 100 year rainfall flood events coinciding with 20-year storm surge flood/sea level as a tidal boundary.
- (c) 'Case 2' considers the reverse - the coincidence of less intense rainfall flood events at the same time as high sea level/coastal storm surge flood events.
- (d) 100-year RCP8.5 coastal storm surge flood data is readily available from WBOPDC, from whom the RL 3.8m MVD coastal inundation level was obtained. At this level, Te Puna Station Road is over 1m under water, and the entire valley/floodplain east towards the Wairoa River/Hakao Stream and mouth of Tauranga Harbour is in considerable flood. The 20-year coastal storm surge event has a level of RL 2.37m MVD. All downstream drainage infrastructure is inundated in this smaller event (as well as the larger 100-year event),

therefore any coinciding rainfall event flooding is going to occur on top of the coastal storm surge flooding levels. As such, I do not consider the finer grain coastal flooding levels elsewhere in Case 2 necessary to model.

- (e) The modelling demonstrates that under the proposed scenario, there are reductions in combined flooding risk in these 'Case 1' 50 and 100-year coinciding events, with no material change in flood risk for the coinciding 10-year event, in comparison to baseline levels;
- (f) No evidence or assessment has been presented in the report of Ms Rhynd (or Mr Pennington, or in the planning assessments incorporating these technical assessments of Ms Christian or Ms Perring) that challenges or questions the assessment commentary concerning change to coastal flooding risk, therefore my assessment to-date (of meaningless impacts to neighbours where coastal flood risks are concerned) remains unchanged.

7.6 Ms Rynd's, in the stormwater management and flood modelling review ("**CKL Review**"), states that:⁷

The flood effects have been presented in visual context for 50yr event in Section 4.2, Golovin report, however there is very little detail on the flood depth or velocity for assessing risk. Usually flood modelling outcomes include these parameters to ensure that the development can deliver a solution that addresses risk (if risk is present).

7.7 More fulsome data for the 10, 50 and 100-year events has been provided in this evidence. It should be noted that my approach to determining flood effects is to firstly determine the change in flood levels or depth that land of interest would experience. This is the absolute focus of my investigations, modelling and reporting in this instance, and I therefore disagree with Ms Rhynd that flood depth changes have not been evaluated. Should there be a reduction in flood levels, it is a reduction in water affecting the land and therefore I see no reason to investigate velocity changes alongside a lower flood depth.

7.8 Mr Rhynd also considers there are some details in the stormwater management plan and supporting drawings for the Site that have inconsistencies with the flood modelling outcomes from the Floodplain

⁷ CKL, Stormwater Management and Flood Modelling Review (17 June 2024) at [4.3].

Assessment.⁸ I understand that the WSP general earthworks pattern is adopted, whilst seeking to minimise gradient change across the raised platform area and deferring the 'Future Development Area', and that TPIL have committed to delivering the landform to comprise usable industrial land at RL 3m MVD, being above my modelled 100-year (RCP 8.5-climate adjusted) existing flood risk level for the Site and surrounds. In other words, the levels I have modelled supersede any finished levels presented by WSP information. I note this is reflected on multiple plans issued by Mr Murphy to both Councils as part of formal mitigation package in June 2024.

7.9 Ms Rhynd also has concerns over the practicality of the third culvert solution under Teihana Road, and whether there is sufficient space for this without potentially undermining neighbouring KiwiRail infrastructure.⁹

7.10 This is addressed in the evidence of Mr Murphy, however I understand engineering design of the culvert has been progressed by Harrison Grierson consultants.

7.11 Ms Rhynd states the following in respect of the wetland (which Ms Rhynd considers is located within the 10 year flood level and assumed extents):

The stormwater management attenuation requirement of 80% of predevelopment flows during 100yr rainfall event for the fully developed site is not reflected in the flood modelling. There is a question as to why this parameter is currently adopted, as the wetland is located within the flood plain and unable to attenuate flow if it is fully inundated.

7.12 The mitigation of stormwater run-off and water quality for the Site is entirely built into the earthworks platform area and thus the pond/wetland is outside the floodplain.

7.13 I understand that Ms Christian notes that Ms Rhynd agrees overall that there is a solution for managing permanent stormwater from the Site so that effects of flooding on neighbouring properties can be mitigated.¹⁰ My findings support this conclusion.

7.14 Ms Christian notes that the BOPRC expects caucusing to occur with the

⁸ BOPRC Section 42A Report (17 June 2024) at [7.49]. CKL, Stormwater Management and Flood Modelling Review (17 June 2024) at [4.3].

⁹ BOPRC Section 42A Report (17 June 2024) at [7.50]. CKL, Stormwater Management and Flood Modelling Review (17 June 2024) at [4.2].

¹⁰ BOPRC Section 42A Report (17 June 2024) at [7.51].

Applicant to work through the matters raised in the technical review.¹¹ Caucusing between the stormwater and flooding experts, and the reporting planners, is expected to occur prior to the hearing on 2 July 2024. Outcomes of this caucusing will be reported to the Commissioners by a Joint Witness Statement.

- 7.15 Ms Christian comments that if the installation of the third culvert at Teihana Road and a 45m wide OLFP through 245 Te Puna Station Road remain pre-requisites to any infilling on the Site once all engineering related matters to the stormwater management plan and flooding have been ironed out then the reporting planner considers a condition requiring the Applicant to carry out these works is appropriate.¹² I consider that this is appropriate.
- 7.16 The Reporting Planner for BOPRC considers that the Future Development Stage in the south-east of the Site (ie the additional 2.21 ha which may be developed at a later stage) has not been considered in the flood modelling and therefore there is no certainty as to the effects.¹³ Ms Rhynd has therefore not been able to provide technical assessment on this part of the proposal at this point.¹⁴ In respect of this, the Applicant has proposed a condition to only allow works in the future development stage only after the Applicant has provided final landform information and demonstrated through modelling, that the infilling of that area does not exceed the baseline levels as modelled in the Floodplain Assessment.¹⁵ The Reporting Planner supports this condition. I consider that such a condition is appropriate in this situation.

Western Bay of Plenty Regional Council

- 7.17 Ms Perring requests the Applicant to provide an assessment of the following rules and effects:¹⁶
- (a) The effect of the proposed activity (including its location and design) on the capacity of ponding areas and function of overland flow paths.
 - (b) The appropriate minimum finished floor level of the proposed building.

¹¹ BOPRC Section 42A Report (17 June 2024) at [7.52].

¹² BOPRC Section 42A Report (17 June 2024) at [7.53].

¹³ BOPRC Section 42A Report (17 June 2024) at [7.55].

¹⁴ BOPRC Section 42A Report (17 June 2024) at [7.57]. CKL, Stormwater Management and Flood Modelling Review (17 June 2024) at [4.4].

¹⁵ BOPRC Section 42A Report (17 June 2024) at [7.56].

¹⁶ WBOPDC Section 42A Report (17 June 2024) at [202]-[203].

Explanatory Notes: This is the combination of the flood/coastal inundation level plus an additional freeboard height as stipulated in Development Code. Council can provide specific flood/coastal inundation levels and minimum floor levels to assist with preparing applications.

Council will consider granting consent for sheds and garages (used for non-habitable purposes) without meeting minimum finished floor levels provided the owner of the property and building enters into an agreement with Council confirming the owner:

- acknowledges that the building is subject to the risk of inundation from flooding or coastal inundation;
 - accepts the risks of any damage to the building and/or its contents arising from that hazard; and
 - undertakes not to take any action (legal or otherwise) against Council in relation to the issue of a resource consent without imposing the required minimum finished floor levels.
- (c) Verifiable new information which demonstrates that the subject site is not in fact susceptible to the identified hazard.

- 7.18 The proposed activity has been demonstrated to firstly deliver a meaningful, and actually improve, operation and capacity of overland flowpaths and flood hazard in the wider area in the higher-risk 50 and 100-year events. Properties east and south of the Site will also see a reduction in flood hazard in the 10-year event.
- 7.19 The s42A report clarifies¹⁷ that the need for building platforms to be ‘free from inundation’ relates to being free from inundation in the 100-year rainfall event. This is precisely the driving factor in determining the RL 3m MVD finished contour to the industrial yard spaces.
- 7.20 I therefore consider the proposed development to appropriately address points (a) and (b) cited by Ms Perring above, generating considerable positive benefits in terms of flood hazard reduction to surrounding land whilst delivering appropriate flood protection to the Site by ensuring future building platforms are above the 100-year flood level (as adjusted for climate change).

¹⁷ WBOPDC Section 42A Report (17 June 2024) at [80], in relation to Rule 12.3.4.1a.

- 7.21 Ms Perring also states that, aside from risk to buildings, there are other potential on-site effects to consider, including risk to human safety during flood events, potential damage to property and land, and potential damage to the natural environment from water contamination.¹⁸ Ms Perring goes on to state that without a set filling level, the degree, duration, and frequency of on-site flooding effects cannot be determined.¹⁹ TPIL has responded to this by committing to filling the interior of the Site, to accommodate future yards and buildings, to above the 100-year flood level at 3m MVD. The potential for water contamination is not within the scope of my expertise, and I defer to the evidence of Dr Harris, Mr Harris, Mr Curtis and Mr Whyte in this regard.
- 7.22 Mr Mark Pennington (water engineer, Tonkin & Taylor) has assessed the offsite flooding effects based on information received by 29 May 2024, however Mr Pennington has not considered the effects of lowered fill platforms.²⁰ Mr Pennington considers that the flood effects assessment indicates a potential way to advance the Project without causing adverse flood effects on neighbouring properties, however notes that this depends on a landform that does not currently exist and requires removal of fill material from a neighbouring property. Mr Pennington states that if the effects assessment were to be based on the existing landform (as opposed to a baseline landform), the modelling shows a trivial increase in flood level of 8mm in a 50 year event on adjacent property, and effects in other events for this landform are not assessed.²¹
- 7.23 Mr Pennington considered that the following effects have not been assessed:
- (a) the flooding risk to the property to the north; and
 - (b) the flooding effect of the southern road-side drain being relocated to between Te Puna Station Road and the road-side bund on the Site, instead of being on the Site, inside of the bund (as is required by the Structure Plan).
- 7.24 Regarding flood risk effects on the property to the north, being the OLP Logistics site. As addressed at paragraphs 5.5-5.8 of my evidence above, this has been explored further. The Structure Plan landscape bund was found to

¹⁸ WBOPDC Section 42A Report (17 June 2024) at [204].

¹⁹ WBOPDC Section 42A Report (17 June 2024) at [207].

²⁰ WBOPDC Section 42A Report (17 June 2024) at [212].

²¹ WBOPDC Section 42A Report (17 June 2024) at [213].

be causing an 80mm flooding effect upon OLP Logistics land, by removal of bunds proposed along the northern boundary this reduces flooding effects to a 10mm increase above baseline levels lasting a total of 10 minutes in a 10-year storm event. Reductions in flood hazard of 51mm (50-year event) and 27mm (100-year event) would be delivered to the OLP Logistics land as a result of the proposal. There are therefore positive effects in terms of reductions in the 50 and 100-year events, and an inconsequential brief effect during the 10-year event, in relation to this property.

7.25 Regarding the precise location of the southern roadside drain. The Structure Plan only requires re-location or re-construction of the roadside drain (ie to same profile and capacity as currently exists) to the inside of the TPIL boundary. Given there is no change in the performance of this drain across existing and proposed scenarios, I do not consider it necessary to update my model further.

7.26 Further comments in relation to flooding by Ms Perring include that:

- (a) there is a reasonably viable solution to mitigate the effects of filling on off-site flooding;²²
- (b) the Applicant should include assessment of flooding in the other event sizes and spot points for the actual environment (which includes the illegal fill, but which TPIL would clear a 45m wide OLFP through), as this is currently only done for the 50 year modelled scenario (which demonstrates an 8mm increase in existing flood existing flood levels at the three spot points measured);²³
- (c) the Teihana Road construction should be drafted as a pre-commencement condition and ensure that the remainder of the stormwater requirements should be included in a condition to ensure that all this work is completed prior to any filling;²⁴ and
- (d) Ms Perring is not satisfied that there has been sufficient assessment of the effects of the future development area for this to be incorporated into the current Application.²⁵

²² WBOPDC Section 42A Report (17 June 2024) at [216].

²³ WBOPDC Section 42A Report (17 June 2024) at [217].

²⁴ WBOPDC Section 42A Report (17 June 2024) at [220].

²⁵ WBOPDC Section 42A Report (17 June 2024) at [221].

- 7.27 In response to these comments:
- (a) I confirm my professional opinion that there is a viable solution to deliver a net benefit in terms of reduced flood risk to surrounding land by way of the proposed development, based on the modelling I have undertaken as discussed in this evidence; and
 - (b) this evidence includes the 10 and 100-year storm events for the third scenario of Tinex unconsented fill remaining whilst the 45m-wide OLFP through the Tinex property is delivered.
- 7.28 The WBOPDC did not recommend any flooding management conditions.
- 7.29 I have reviewed the proposed consent conditions from the BOPRC which were included as an attachment to the section 42A Report by the BOPRC.
- 7.30 The conditions for the resource consent to undertake a discretionary activity to disturb land and soil as a result of earthworks include the following:²⁶

Condition 4.5

Earthworks authorised under this consent must not commence until the following works have been completed:

1. Installation of a third 1,600-millimetre culvert, or an equivalent approved by the Bay of Plenty Regional Council, under Teihana Road as shown on BOPRC Consent Plan RM22-0010/04 – Pre-Requisite Works Locations; and
2. A 45-metre wide overland flowpath has been created on 245 Te Puna Station Road, as shown on BOPRC Consent Plan RM22-0010/04 - Pre-Requisite Works Locations.

Condition 4.7

- (a) Earthworks within the “Future Development Area”, as identified in BOPPC Consent Plan RM22-0010/01 must not commence until: the consent holder submits the following for certification from an Environmental Engineer:
 1. Earthworks cut and fill plan, and

²⁶

BOPRC Recommended conditions 4.5 and 4.7.

2. Stormwater management plan for the “Future Development Area” that meets the requirements of the Bay of Plenty Regional Council “Stormwater Management Guidelines for the Bay of Plenty Region – Guideline 2012/01” and the Bay of Plenty Regional Council “Hydrological and Hydraulic Guidelines – Guideline 2012/02”, and
3. Detailed flood modelling that demonstrates flooding effects do not exceed the outcomes in BOPRC Consent Appendix RM22-0010/D – Flooding Assessment, the Golovin “Floodplain Assessment, 297 Te Puna Station Road, RD6, Tauranga”, dated May 2024.
 - (b) Certification is to ensure earthworks and stormwater management for the “Future Development Area” meets the criteria of condition 4.6(a).
 - (c) No works in the “Future Development Area” can commence until certification has been received in writing from the Bay of Plenty Regional Council.

7.31 I consider conditions 4.5 and 4.7 to be appropriate.

8. CONCLUSION

8.1 On the basis of the above and subject to the mitigation measures proposed, I consider that the Application will not result in an increase in material off-site flooding effects. The proposal delivers a net benefit to landowners and occupiers upstream and downstream in terms of reduced flood hazard risk in the 50 and 100-year rainfall storm events, and to properties east and south in the 10-year event. A 10mm effect lasting 10 minutes during the 10-year event at the OLP Logistics property is considered inconsequential in terms of flood hazard.

Steven Anthony Joynes

26 June 2024