Memorandum

To:	SCL	File No:	4223022-m-e-c002.docx
Attention:	WBOPDC		
From:	Stephen Bos		
Date:	11 May 2023		
Subject:	Tinex Group Ltd – 245 Te Puna Station Road – Stormwater Queries		

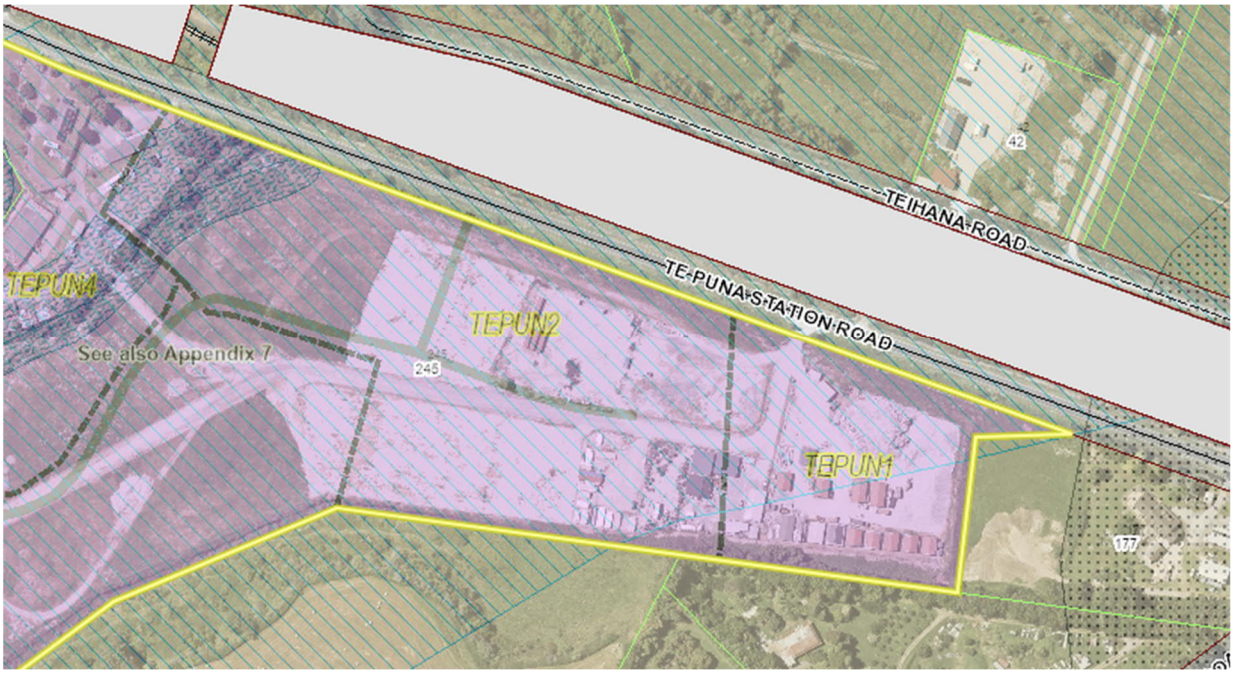
Further to the additional RFI received from the WBOPDC the following response is provided in terms of the relevant stormwater queries:

Stormwater Management

1. The stormwater assessment provided is lacking in technical evidence. Please provide:
   a) calculations to demonstrate that the stormwater impact from the current users on the overall catchment is minimal.
   b) Topographic Plans showing the existing land contours/spot heights, and overland flow paths.
   c) Additional information that further qualifies the statement that "*from the discharge location, the flows disperse across the full site area such that mitigation of the additional flow is considered to occur prior to exiting the individual yard site*".

Stormwater management Response

The site is currently zoned Industrial, and the site lies within the Te Puna Industrial Park, with layout as below. A detailed site survey of the area is attached to this response that shows the layout and topographical details of the site.



The site has been formed and used in its current state for a number of years, as per the 2019 aerial noted below

Under the WBOPDC District Plan for Industrial land, storage is a permitted activity subject to Structure Plan requirements being met.

Inputs into the greater catchment are being specifically addressed by the stormwater modelling consultant (Dr Steve Joynes) and it is reasonable to consider that the larger catchment can accommodate the authorised zoning discharge from the site. From the modelling results the location of the site (towards the lower end of the catchment) and the singular effect of the runoff from the base site is not considered to be the primary cause of flooding or stormwater issues within the catchment. Reference can be made to the works from Dr Steve Joynes to confirm this statement. Further current modelling works are underway to identify potential remedial works that result in the upstream water levels being lowered to ensure the level of effects on all parties are minimised and remain as the Structure Plan Baseline Intends. The modelling being undertaken accepts that the Industrial site is fully developed to a typical standard as would be expected for an industrial zoned area (minimum runoff coefficient of 0.8).

In regard to the final statement and the rationale that site mitigation of the existing flow is provided by utilisation of the flat site and the sheet flow effect by discharging to ground this is further expanded as follows:

- Through past site activities, in isolation and not considering the filling undertaken to raise the site, the site area currently being used for industrial storage activities has been metalled and is predominantly 'flat'. Grades are in the order of 0.25% are noted (as per the attached survey plan).

- The expected runoff coefficient from the site is taken as 0.35 as per NZBC E1 / VM 1 tables 1 and 2

Developed surface types	
Fully roofed and/or sealed developments	0.90
Steel and non-absorbent roof surfaces	0.90
Asphalt and concrete paved surfaces	0.85
Near flat and slightly absorbent roof surfaces	0.80
Stone, brick and precast concrete paving panels	
– with sealed joints	0.80
– with open joints	0.60
Unsealed roads	0.50
Railway and unsealed yards and similar surfaces	0.35

Table 2: Slope Correction for Run-off Coefficients
Paragraph 2.1.3

Ground slope	Adjust C by:	
0-5%	subtracting	0.05
5-10%	no adjustment	
10-20%	adding	0.05
20% or steeper	adding	0.10

- The site usage is noted as storage with all activities discharging onto ground where they flow overland to a drainage outfall point.
- Clause 2.3 of NZBC E1 notes that the time of concentration for stormwater to enter the system (in this case the site outfall) is taken as T_{entry} + T_{flow}
- Clause 2.3.2 a) is identified as 5 minutes as per the description below

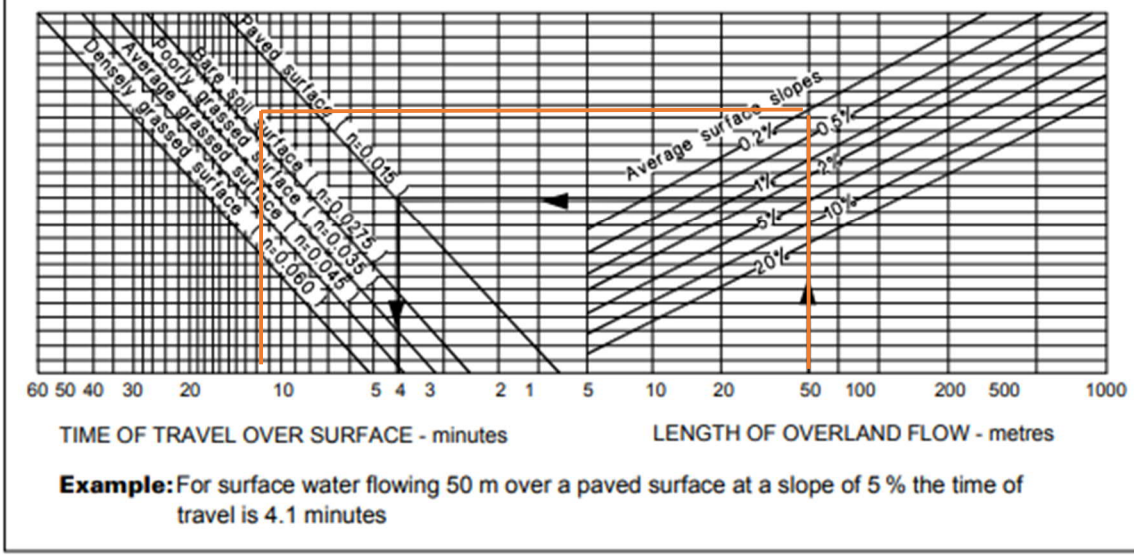
The time of entry t_e:

a) Where the catchment area has a well defined and regularly repeated pattern for directing the *surface water* to the *drain* or open channel, the time of entry may be taken as:

t_e = 5 minutes for commercial or industrial areas where greater than 50% of the surface of the catchment area feeding the *drain* or open channel consists of roofed, asphalt, concrete, paved or metalled surfaces.

Time of flow is considered to be a minimum of around 12 minutes as per the extract from the graph below.

Figure 1: Times for Overland Flow
Paragraph 2.3.2 b) i)



Example: For surface water flowing 50 m over a paved surface at a slope of 5 % the time of travel is 4.1 minutes

The overall time of concentration is therefore considered to be in the order of 17 minutes, which is at least equivalent for the undeveloped original site.

As there is no piped stormwater system within the site, all runoff from the site users (stored buildings / pools and vehicles etc) is considered to outflow to ground and then via overland flow to open water table drains to then discharge at the site boundary. As such there is no expectation of a faster or greater runoff than the metalled undeveloped site as per the permitted industrial zoning for the site.

We trust this suitably responds to the queries raised. Please contact the undersigned if you have any further queries.

Yours faithfully
STRATUM CONSULTANTS LTD

Stephen Bos
CPEng, CMEngNZ, BE(hons), NZCE (civil/Struct)

No.	Date	By	Issue/Revision
C	-	-	-
B	-	-	-
A	01.05.23	MJH	DRAFT

NOTES/KEY:

DRAWN:	MJH
CHECKED:	-
DESIGNED:	-
SURVEYED:	-
OFFICE:	TE PUKE
CONTACT:	07 573 7717

Tinex Group Ltd
245 Te Puna Station Road
Te Puna

Existing Site Plan
Lot 2 DP 22158

ORIGINAL DWG. SIZE A1

SCALE: **1:1000**

DRAWING No.
423022-T-P-D001

SHEET No. **13**

ISSUE **A**

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