ITEM	2
MANAGER'S REPORT NO.	17
COUNCIL MEETING	90/03/05

RE: AGRICULTURAL DRAINAGE/MAINTENANCE PLAN, BURNABY BUSINESS PARK'S INDUSTRIAL DEVELOPMENT PROPOSAL IN THE BIG BEND AREA

ACTING MUNICIPAL MANAGER'S RECOMMENDATION:

1. THAT the recommendations of the Director Planning & Building Inspection be adopted.

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TO: MUNICIPAL MANAGER

1990 February 26

FROM: DIRECTOR PLANNING & BUILDING INSPECTION

Our File: 02.120.5
RZ #81/89

SUBJECT: AGRICULTURAL DRAINAGE/MAINTENANCE PLAN, BURNABY BUSINESS PARK'S INDUSTRIAL DEVELOPMENT PROPOSAL IN THE BIG BEND AREA

PURPOSE: To provide Council with information regarding the management of agricultural drainage for the lands adjacent to Burnaby Business Park's proposed industrial development in the Big Bend area.

RECOMMENDATION:

1. THAT staff submit a further report outlining the prerequisite conditions for amending the Comprehensive Development zone for the proposed industrial development by Burnaby Business Park Ltd. in the Big Bend area for submission to a Public Hearing.

2, THAT a copy of this report be sent to Mr. Art Cowie, Project Manager, Abbey Woods Property Services Ltd., 501-1525 Robson Street, Vancouver, B.C. V6G 1C3.

SUMMARY

This report provides Council with information regarding a plan for management of agricultural drainage for the lands adjacent to Burnaby Business Park's proposed industrial development in the Big Bend area. The consultant hired by the Municipality to review this plan has concluded that the requirement of safeguarding and where possible, enhancing drainage of agricultural lands, has been met.

It is recommended, therefore, that staff proceed with the preparation and submission of a further report outlining the prerequisite conditions for development of the proposed industrial project by way of an amendment to the CD zone for submission to a Public Hearing.

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REPORT

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1.0 BACKGROUND

Council, on 1989 September 25, received a report (Manager's Report No. 60, Item #2) advising of the proposed industrial development of a 47 acre site owned by Burnaby Business Park Ltd. in the Big Bend area (Figure 1 attached). This report noted that the site abuts the Agricultural Land Reserve and therefore, the environmental impacts of this industrial development on the adjacent agricultural lands must be addressed.

Of particular importance is the impact of fill placement on the existing groundwater and drainage patterns on the agricultural capability of the ALR lands. A major drainage channel presently runs through the site as shown on the attached Figure 2. It was noted that it will be necessary for the developer to prepare a drainage management plan to specifically address the methods by which the groundwater and drainage will be accommodated.

On 1969 October 23, Council authorized the engagement of Mr. M.G. Driehuyzen, B.Sc., P.Ag., to assist the Municipality in the development of terms of reference for and assessment of a plan (Manager's Report No. 68, Item #12).

On 1989 November 14, a rezoning report (R.Z. #81/89) was submitted providing additional information on the proposed guidelines for the comprehensive industrial development of the site. This report noted that it was staff's understanding that Council does not want to advance this rezoning application to a Public Hearing until such time as it is satisfied the proposed industrial development and its associated changes in site elevations and drainage patterns will not have a detrimental effect on the adjacent agricultural lands. In consideration of this, Council was advised that staff would report back to Council once the applicant has submitted the agricultural drainage management plan and it has been reviewed by our Consultant.

Given Council's satisfaction that the proposed industrial development would not have a detrimental effect on the adjacent agricultural lands, it was noted that staff would submit a further report, providing a complete outline of all proposed prerequisite conditions to a rezoning prior to its advancement to a Public Hearing.

2.0 EXISTING SITUATION

Aplin and Martin Consultants Ltd. were engaged by the applicant to prepare the agricultural drainage management plan based on the Terms of Reference outlined in Appendix "A" attached. Norecol Environmental Consultants Ltd. were also engaged to prepare a report summarizing the agricultural lands and their capability for agriculture and to review drainage system options for the development, as designed by Aplin and Martin.

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These reports, which are available for review in the Planning and Building Inspection Department, are summarized as follows:

2.1 APLIN & MARTIN AGRICULTURAL DRAINAGE MAINTENANCE PLAN

(a) Existing Drainage System

The catchment area of the industrial lands and the majority of the agricultural lands is presently drained by an open ditch system north of Mandeville Avenue connecting to a pipe system on Tillicum Street which in turn discharges to the Fraser River (see Figure 2). The system is affected by the tidal fluctuations of the Fraser River and is interconnected to the Byrne Road drainage system by means of CNR track ditches. The Byrne Road system also discharges to the Fraser River but is supplemented by a pump station during periods of high tides and runoffs.

The Byrne Road pump station has been designed with a maximum discharge capacity of 3.8 cubic metres per second (cms) whereas the design inflow, for a 10 year average return period (the 10 year storm), for the designated Byrne Street catchment area is 2.4 cms. The capacity for increased flows to the Byrne Road pump station is therefore present.

The developed industrial lands have all been "flood-proofed" to elevation 3.6m G.S.C., 0.6m above the highest recorded flood level. During periods of high tides and peak rainfalls, the site runoff is unable to discharge into the Fraser River and the water level rises in the upstream drainage ditches. The ditches effectively act as storage reservoirs until the tides drop below the level of water in the ditches. As the ditches and adjacent agricultural lands are approximately 1.0m lower than the industrial lands, the former two act as buffers to any water accumulation in the industrial lands.

(b) Proposed Development Effects

In developing the industrial site, a rerouting of the Emily Street and Mandeville Street ditches which pass through the site would be required. Three rerouting alternatives are possible, two of which are peripheral to the agricultural lands and one which is within the central portion of the agricultural lands.

A staff review in conjunction with Mr. Driehuyzen concluded that a central routing was the most advantageous from an agricultural perspective. A central alignment would minimize the length of cross ditches to the main drainage channel and would eliminate the risk of non-intended users discharging to the main drainage channel. This latter feature would be in keeping with the management plan terms of reference requirement of separate industrial and agricultural drainage systems. A ditch rerouting alignment which meets this criteria is shown in Figure 3 attached. The ditch would drain towards Byrne Road, thereby discharging into the Byrne Road drainage system and utilizing the excess capacity of the Byrne Road pumping station. The increased catchment area to the Byrne Road drainage system is shown on Figure 3.

A culvert crossing will be necessary at the proposed ditch intersection with Byrne Road. In the design of this system, staff will require the inclusion of devices to ensure that no backflows will occur from the Byrne Road ditch to the agricultural lands. The relocated ditch will be designed below the elevations necessary to maintain the design flows thereby providing for water for irrigation purposes. The ditch design will require consideration of present drainage patterns within the agricultural lands as well as future drainage patterns.

The industrial site drainage would remain tributary to the Tillicum Street system at the Mandeville Street intersection. A pipe installation would be necessary between Mandeville Street and the south side of the CNR right-of-way. Provision would be required to collect any drainage from the agricultural lands which might continue to flow towards the Tillicum Street/Mandeville Street intersection. Regrading of the agricultural lands during their development would minimize the long term duration of water flow to this point.

To keep the industrial land drainage totally separate from the agricultural land, any pipe interconnection with the agricultural ditches north of Mandeville Street will need to be removed. This will only be possible, however, at the time of development of the agricultural lands. A physical barrier would also need to be constructed to ensure separation of the Tillicum Street industrial drainage from the Byrne Street system.

2.2 NORECOL REVIEW OF AGRICULTURAL CAPABILITY OF ALR LANDS AND DRAINAGE SYSTEM PROPOSALS

This report assesses the soils and agricultural capability of the site and the surrounding area, reviews management issues and examines crop options. Reference is made to the fact that the peat soils are limited to agriculture by poor drainage and soil acidity. However, it concludes that artificial drainage systems could make these soils suitable for a range of vegetable crops, and blueberry or cranberry production. Cranberry and blueberry production has certain requirements which, in the opinion of Norecol, make these alternatives less attractive.

The proposed drainage plan allows for a water table depth of 0.5m. This depth of unsaturated soil is sufficient for the production of many vegetable crops. Additional drainage tiles and/or ditches will be required between separate lots of land, depending on the individual farmer's preferences and crops.

Long term soil management issues would include careful drainage to preserve the land resource and avoid subsidence and decomposition of the organic surface materials and soil pH amelioration. The report notes that eventually these lands would subside below the surrounding surface. The statement is made that this has implications from an area drainage perspective and could mean that the lands will need to be pumped to maintain a non-flooded condition and to protect their long term agricultural viability.

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With regard to the foregoing, specific measures have been incorporated into the drainage plan to provide a centralized major drainage channel connecting to the Byrne Road pump station, which has sufficient capacity to effectively handle area wide drainage requirements. This is seen as a positive step towards alleviating concerns expressed regarding area drainage and water implications.

3.0 REVIEW BY MUNICIPAL CONSULTANT

Mr. M.G. Driehuyzen, a soils and drainage specialist hired by the Municipality to assist in assessing the drainage management plan, has advised that "After careful perusal of the reports, it is my considered judgement that in general the requirement of safeguarding and, where possible, enhancing drainage of agricultural lands which are part of the Burnaby Business Park property have been met. I am satisfied that with proper implementation of the plan to high standards, runoff from the industrial lands will not affect the agricultural lands. Furthermore, redirection of the main agricultural drainage channel into a more central location provides enhanced access of all agricultural lands to a pumped outlet. Not only will this measure benefit the undeveloped agricultural lands but also those lands which are now in production and are presently not well served with a suitable outlet."

4.0 CONCLUSION

In view of the foregoing, staff recommends that we proceed with the preparation and submission of a further report outlining the prerequisite conditions for development of the proposed industrial project by way of an amendment to the CD zone for submission to a Public Hearing.

A.L. Parr
DIRECTOR PLANNING &
BUILDING INSPECTION

PB/mcb
Attachs: (5)

cc: Director Engineering

APPENDIX "A"

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1989 November 15

BURNABY BUSINESS PARK
TERMS OF REFERENCE FOR AGRICULTURAL DRAINAGE MANAGEMENT PLAN
REZONING APPLICATION 81/89

1.0 TERMS OF REFERENCE FOR AGRICULTURAL DRAINAGE MANAGEMENT PLAN

The following terms of reference for an agricultural drainage management plan have been prepared to address the industrial/agricultural relationship of the Burnaby Business Park development in the Big Bend area. The plan must specifically address the methods by which the groundwater and drainage within the industrial and agricultural lands will be accommodated in order to enhance or not adversely impact the surrounding agricultural lands.

The plan should show a separate drainage system for the industrial lands and for the agricultural lands. The criteria are as follows:

a. Field Water Table Depth:

The industrial development must ensure that a minimum water table depth of 0.5 metre within the agricultural lands will not be compromised. This would allow for optimum growth of most vegetable and field crops and provide sufficient soil trafficability. This depth criterion may be exceeded during periods of high precipitation (refer to Item c below), provided that the minimum water table depth is met within 24 hours of storm cessation.

b. Baseflow Water Depth:

The industrial development must ensure that channels serving agricultural drainage will provide for a minimum freeboard of 1.2 metres for normal baseflow conditions. Guidelines for tolerance of exceeding this minimum baseflow criterion during infrequent, severe storms are provided in Item c.

c. Tolerance to Saturation:

Although soil saturation is harmful to soil and crops most of the time, damage varies according to season. Since most vegetable crops are harvested before winter, tolerance to saturation is highest during this time.

The industrial development must not impact the agricultural lands in such a way that the following maximum periods of soil saturation are exceeded:

Season:		Maximum Saturation Period (based on 10-year design storm)
Winter	(Nov. to Feb.)	7 days
Spring	(Mar. to Apr.)	1 day
Summer	(May to Aug.)	1 day
Fall	(Sept. to Oct.)	1 day

d. Upgrading of Drainage Channels:

The plan must specify which drainage channels (on-site, upstream or downstream of the development) may require upgrading to meet the criteria set forth above.

e. Development Runoff and Discharge:

The industrial development site must be designed to handle storm flows as per Municipal regulations, and must have a drainage system that is separate from the system for the agricultural lands. This would include a flood-proofed outlet system from the industrial lands to the Fraser River. The design must not permit runoff and/or discharge of water onto agricultural lands and must not adversely affect agricultural drainage of the surrounding area.

f. Freedom from Obstruction of Agricultural Drainage:

The industrial development must not cause obstruction or debilitation of drainage channels and facilities serving the drainage of agricultural lands.

g. Drainage Control on Organic Soil:

Within the agricultural lands where organic soils are greater than 0.4 metre in depth, the plan must identify measures that would prevent excessive rates of decomposition of organic material.

2.0 REGULATIONS

The industrial development must also meet the drainage requirements of all applicable Municipal bylaws, including the following:

. Subdivision Control Bylaw
. Watercourse Bylaw
. Sewer Connection Bylaw
. Fill Bylaw

As well, the drainage requirements of the Ministry of Agriculture & Fisheries and the Ministry of the Environment must be met.

SL/

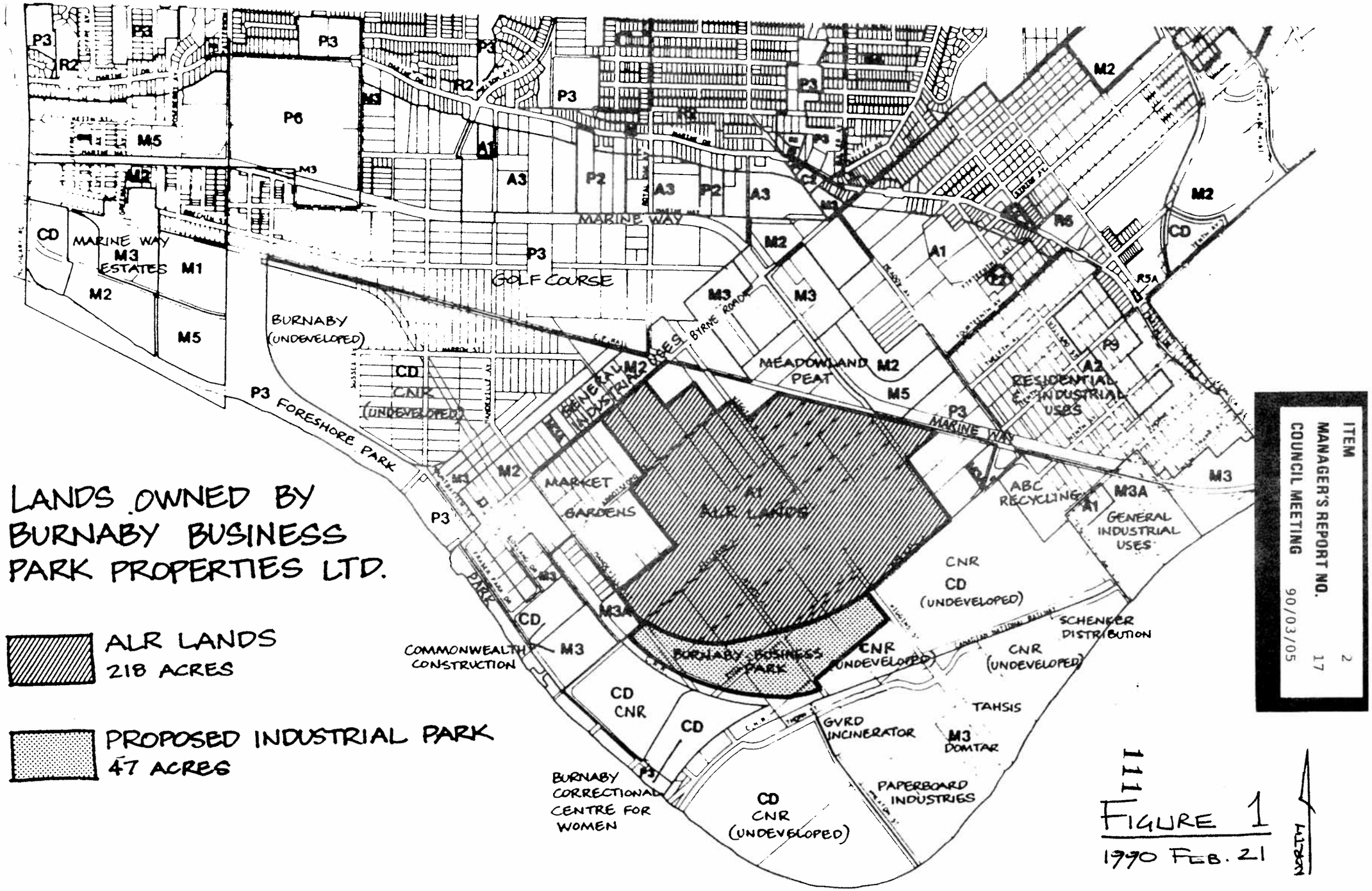
LANDS OWNED BY BURNABY BUSINESS PARK PROPERTIES LTD.
ALR LANDS 218 ACRES
PROPOSED INDUSTRIAL PARK 47 ACRES
MARINE WAY
GOLF COURSE
BURNABY (UNDEVELOPED)
P3 FORESHORE PARK
BYRNE ROAD
MEADOWLAND PEAT
RESIDENTIAL & INDUSTRIAL USES
MARKET GARDENS
ALR LANDS
ABC RECYCLING
GENERAL INDUSTRIAL USES
CNR CD (UNDEVELOPED)
SCHENKER DISTRIBUTION
COMMONWEALTH CONSTRUCTION
BURNABY BUSINESS PARK
TAHSIS
GVRD INCINERATOR
DOMTAR
PAPERBOARD INDUSTRIES
BURNABY CORRECTIONAL CENTRE FOR WOMEN
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FIGURE 1
1990 FEB. 21
NORTH

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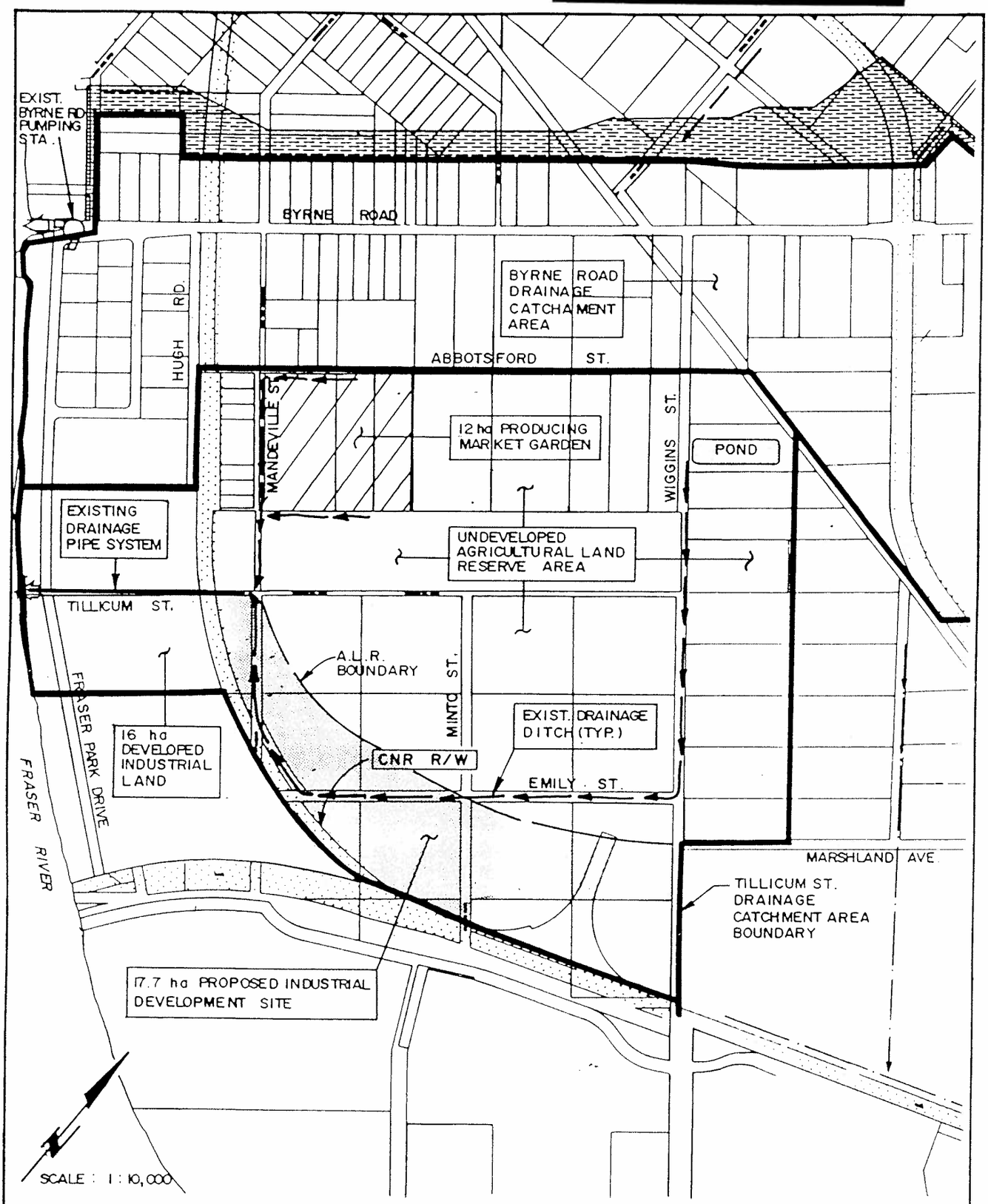

EXISTING
TILLICUM ST. DRAINAGE SYSTEM

FIGURE 2

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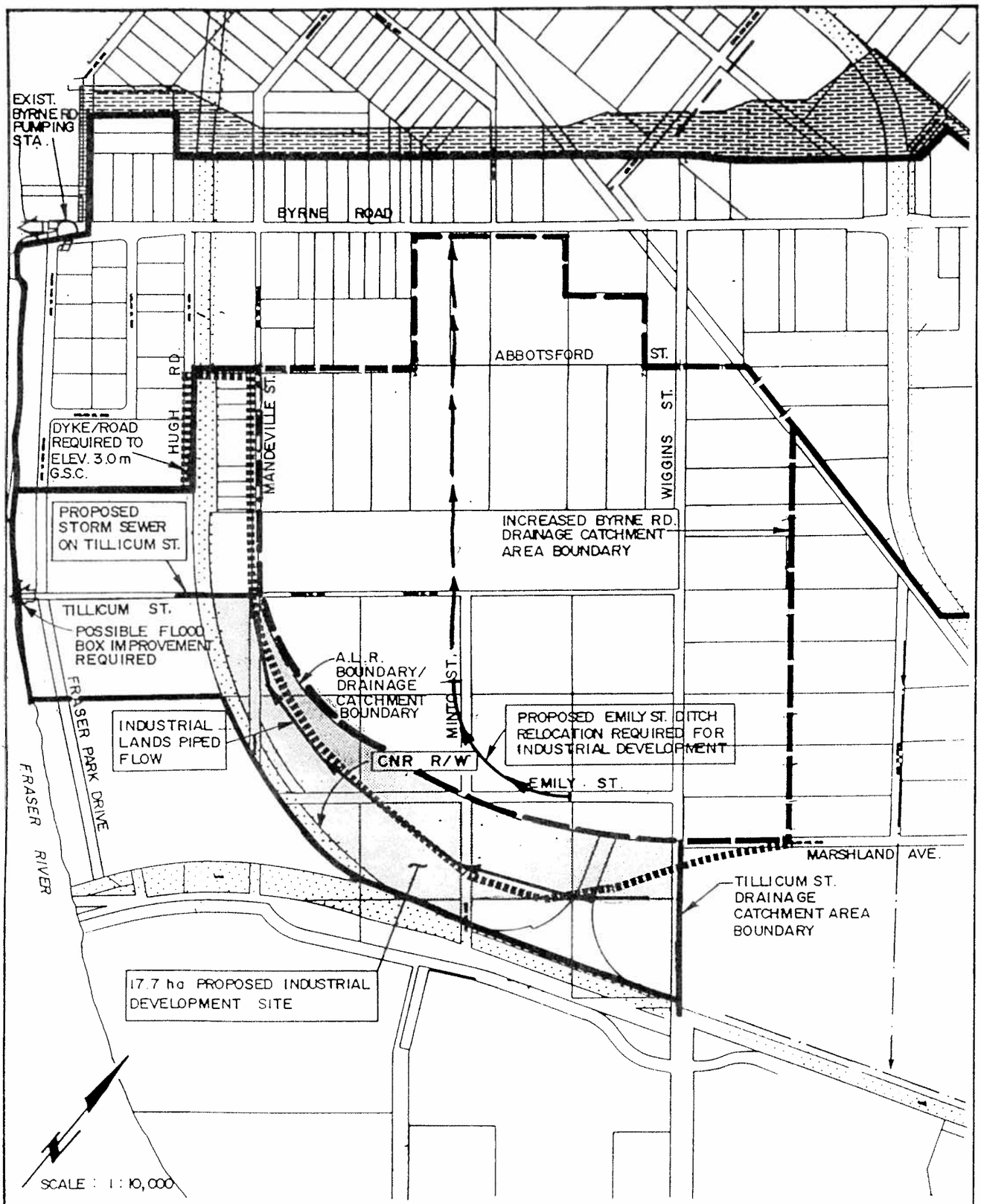

DRAINAGE IMPROVEMENTS REQUIRED FOR INDUSTRIAL LAND DEVELOPMENT

FIGURE 3