Att. Gavin Fisher.

DEPARTEMENT VAN WATERWESE EN BOSBOU : OOS KAAPSTREEK
DEPARTMENT OF WATER AFFAIRS AND FORESTRY : EASTERN CAPE REGION

Waterbronbestuur
Water Resource Management

PRIVAATSAK / PRIVATE BAG X68, CRADOCK, 5880
FAX. NO. (048) 881 3545 / TEL. NO. (048) 881 3005

DATUM / DATE : 1999 -12- 13	FAX. TRANS. NO. : F95'88 199
AAN / TO : DERICK JORDAAN	
AANDAG / ATTENTION :	KAMER / ROOM :
FAX. NO. : 022 – 487 2470	VAN / FROM : PHILIP DE WET
LêER / FILE :	BLADSYE / PAGES : 1

KOPIEëR ASB. - FAKSIMILIEë VERVAAG / COPY PLEASE - FACSIMILIES FADE

VOORGESTELDE DAM

Verwys asseblief na u telefoniese gesprek met Mnr. De Wet van hierdie kantoor, wat soos volg bevestig word:

1. 'n Dam groot genoeg om in die waterbehoeftes van u bestaande hoenderboerdery te voorsien, sal waarskynlik deur hierdie Departement goedgunstig oorweeg kan word. Dit sal beteken dat u nie meer water uit dieselfde bron as tans sal onttrek nie – u sal slegs die punt van onttrekking verskuif vanaf die Bergrivier na die voorgestelde dam.

2. Daar word voorgestel dat u 'n bekwame raadgewende ingenieur aanstel, wat die volgende take moet verrig:

(i) Bereken waterbehoeftes van u bestaande hoenderboerdery.
(ii) Bereken die jaarlikse onttrekking van water wat voorheen uit die Bergrivier plaasgevind het.
(iii) Doen 'n hidrologiese berekening van die Gemiddelde Jaarlikse Afloop vir die opvanggebied van die voorgestelde dam.

(iv) Bereken watter opgaarvermoë die voorgestelde dam moet hê om teen 'n aanvaarbare versekering in die waterbehoeftes van die hoenderboerdery te voorsien.

(v) Sluit 'n dam-simulasie by die berekeninge in om te bevestig dat die opgaarvermoë van die voorgestelde dam die waterbehoeftes van die hoenderboerdery sal bevredig.

(vi) Doen 'n opmeting en voorsien 'n plan van die voorgestelde dam.

3. Hierdie verslag van die raadgewende ingenieur moet dan aan hierdie kantoor voorsien word vir oorweging. Let asseblief daarop dat u nie vir 'n groter dam as wat benodig word vir u bestaande hoenderboerdery moet aansoek doen nie, aangesien die voorgestelde dam in die opvanggebied van die Loeriedam gelee is, wat onder waterstres gebuk gaan.

4. U moet in gedagte hou dat u ook by die Departement van Omgewingsake moet aansoek doen om goedkeuring van die voorgestelde werke, en dat die Departement van Waterwese en Bosbou se goedkeuring u nie onthef van gemelde Departement se goedkeuring en vereistes nie.

Kontak gerus Mnr. Philip de Wet van hierdie kantoor vir meer inligting, indien nodig.

Die uwe

E Kaap

STREEKDIREKTEUR : WATERBRONBESTUUR
OOS-KAAP

EGGLAND DAM.

REGARDS

MEUL / SMIT.

DEPARTMENT OF ECONOMIC AFFAIRS, ENVIRONMENT AND TOURISM
CHIEF DIRECTORATE: ENVIRONMENT AFFAIRS

ANNEXURE ONE - RECORD OF DECISION ZNO 329/25/4/054-99

1. Description

The project entails the construction of an earth walled dam on an unnamed non-perennial tributary of the Berg River. This is located in quaternary catchment L90C, which feeds into the Gamtoos River via the Loerie Dam.

The subject site is located in a small steep sided valley. Total stream length from source to confluence is approximately 1 250 m, when measured on the 1:50 000 map sheet. Vegetation varies from grassy fynbos on the upper slopes to forest in the valley. There is considerable invasion of the catchment by invasive alien species.

In order to construct the dam wall it will be necessary to construct an access road of approximately 300 m long. This will traverse the steep side slope of the valley. The existing pump point on the Berg River will be moved to the vicinity of the dam wall, and a pipeline installed from there to the farmyard.

According to the scoping report wall height will be 7 m, however during consultation with the Department of Water Affairs it was discovered that a wall height of 20 m had been applied for. Subsequently the applicant confirmed that the intended wall height was indeed 7 m. It is projected that the total volume of the dam will be 150 000 m^3, inundating an area of 3-4 ha.

2. Place of Activity

Portion 1 of the Farm Diepkloof 429, Thornhill in the District of Hankey, amended to Remainder of Portion 4 of the Farm Bergsig Noord 431 (see attached map).

3. Contact Details of Applicant

Name: Pioneer Food Group
Address: P.O. Box 700
Malmesbury
7299
Telephone: 022-4872270
Fax: 022-4872470

Contact Person: Mr. Derik Jordaan

4. Contact Details of Consultant

Name: Blue Horizon Consulting
Address: P.O. Box 22727
Port Elizabeth
6000
Telephone: 041-7761171
Fax: 041-7761171

Contact Person: Mr. Gavin Fisher

5. Details of Site Visit

The site was visited by Pat Jennings in the company of Pieter Retief, Dept Water Affairs and Forestry during 1999.

6. Decision of Relevant Authority

Authorisation is granted subject to compliance with the conditions set out in Section 7.

7. Conditions of Authorisation

A GENERAL

1. Authorisation is subject to compliance with all other relevant legislation, particularly the National Water Act.
2. Authorisation is granted for the construction of an earth walled dam at approximately 33° 53' 13" S and 25° 07' 14" E on Remainder Portion 4 of the farm Bergsig Noord 431 (see

EGGLAND POULTRY FARM – EGGLAND - THORNHILL
REPORT ON PROPOSED EARTH DAM

1. GENERAL

The proposed scheme entails the building of an earth dam in a tributary of the Bergriver on the farm generally known as Eggland. The registered name of the property involved is Remainder of portion 4 of the farm Bergsig Noord 431 (Extent 83,129 ha). The farm is situated ± 45 km in a westerly direction of Port Elizabeth and the location of the proposed dam is at latitude 25°07' East and longitude 33°52'50" South.

The current farming enterprise entails approximately 250 000 lay-chickens. Water for drinking and cooling purposes is currently pumped from the Bergriver. The purpose of the dam is to alleviate or possibly replace the pumping operations from the river.

2. LEGAL ASPECTS

A water license from the Department of Water Affairs and Forestry has been obtained for the proposed works. The Department of Environmental Affairs has also granted permission for the construction of the dam. A section 9(c) permit regarding Dam safety regulations must however still be obtained from the Department of Water Affairs and Forestry. Your are therefore requested to complete the necessary application forms in this regard.

3. CATCHMENT HYDROLOGY

The size of the proposed dam's catchment area is ± 40 ha. The catchment area comprises mainly of grassland.

All hydrological data mentioned and used in calculations in this report were obtained from the Water Research Commision (WRC) Report no. 298/5.1/94 (Volume V).

The catchment area of the dam falls inside quartenary catchment L90C. The mean annual rainfall (MAP) for this quartenary catchment, which size is 319 km^2, is given as 607 mm and the mean annual runoff (MAR) as 108 mm. It is therefore clear that the proposed dam's catchment area is minute (0,15 %) in relation to the size of the quartenary catchment under which it sorts. With this in mind, we decided to adjust the MAP for the dam's catchment to 700 mm. The corresponding MAR for the catchment under these circumstances is given as 150 mm. The **mean** annual runoff volume for the

dam is therefore calculated at 60 000 m^3. The monthly distribution of the MAR and the corresponding calculated volumes are given in Table 1.

Table 1 – Monthly distribution of MAR

Month	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
% distribution	11,6	9,80	5,80	3,90	3,80	8,60	6,50	8,60	7,00	8,60	12,50	13,30	100
Volume ($x\ 10^3\ m^3$)	6,96	5,88	3,48	2,34	2,28	5,16	3,90	5,16	4,20	5,16	7,50	7,98	60,0

4. WATER REQUIREMENTS

According to our Departmental guidelines, the drinking water requirement for 1000 lay-chickens is 300 litre/day. The water requirement for cooling purposes is assumed to be 500 litre/day per 1000 lay-chickens. It is furthermore assumed that cooling will only be applicable for 5 months of the year i.e. October to March. The monthly water requirements for a 250 000 lay-chicken enterprise are summarized in Table 2.

Table 2 – Monthly water requirements for 250 000 lay-chickens (Eggland)

Month	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Drinking ($x\ 10^3\ m^3$)	2,33	2,25	2, 32	2,32	2,10	2,32	2,25	2,32	2,25	2,32	2,33	2,25	27,36
Cooling ($x\ 10^3\ m^3$)	-	3,75	3,88	3,88	3,50	3,88	-	-	-	-	-	-	18,89
Total Volume ($x\ 10^3\ m^3$)	2,33	6,00	6,20	6,20	5,60	6,20	2,25	2,32	2,25	2,32	2,33	2,25	46,25

5. WATER BALANCE CALCULATIONS

If the values of tables 1 and 2 are examined, it is clear that the monthly runoff volumes, based on the **mean** annual runoff, are insufficient for the months November to March despite the fact that the **annual** runoff volume exceeds the **annual** required volume. This aspect becomes more accentuated when calculations are performed when drought cycles are taken into consideration. Depending on the yield assurance decided upon, the calculation, generally referred to as a dam simulation, entails a monthly water balance of inflows **less** losses. The inflows are adjusted according to the drought interval decided upon and the losses include aspects like evaporation and withdrawal from the dam and if applicable, upstream losses in the catchment area of the dam. In essence, it entails the calculation of the required storage capacity that needs to be provided to fulfill the required needs.

In this case however, we decided that the maximum storage capacity of the dam should not exceed 50 000 m^3. This capacity is already approximately 80 % of the MAR, which is generally assumed to be a cut-off point. In this case it was therefore decided to rather calculate the amount of lay-chickens

that could be maintained from a dam with a storage capacity of 50 000 m^3. Dam simulation calculations for 3 different yield assurances were performed for above assumption. The results are summarized in Table 3.

Table 3 – Dam simulation results for a 50 000 m^3 dam

Recurrence interval	Assurance	Maximum Lay-Chickens
1 : 10 year	90 %	170 000
1 : 20 year	95 %	136 000
1 : 50 year	98 %	113 000

From the results of the simulation calculations, it can be derived that it seems improbable that the dam will be able to replace the pumping station.

6. PROPOSED WORKS

6.1 Soil investigation and results

Four profile pits were prepared, sampled and analysed for embankment construction and foundation purposes. A detail report was prepared by Biopite Engineering Geologists CC and must be made available to potential contractors approached for quotations.

It should be noted that the clayey material is medium expansive and marginally dispersive. Recommendations in this regard are given in the soil report. This aspect also requires that proper control must be exercised during construction.

6.2 Filters (Chimney, Blanket and Strips)

Details of the proposed filters are shown on the "Standard Specifications" plan. Clean river sand must be used in all the cases and it must be properly compacted during placement.

6.3 Important dimensions

Relative heights (RL):

Embankment crest	50,50 m
High Flood level	49,60 m
Spillway base	49,00 m
Full supply level	49,00 m
Outlet pipe	43,50 m
Iron peg (ST 1)	51,090 m
Iron peg (ST 2)	48,121 m
Iron peg (ST 3)	46,977 m
Iron peg (ST 4)	46,871 m

Iron peg (ST 5)	46,660 m
Iron peg (ST 6)	47,203 m
Iron peg (ST 7)	45,199 m
Iron peg (ST 8)	43,746 m
Iron peg (ST 9)	42,381 m
Iron peg (ST 10)	43,688 m

Volumes:

Storage capacity	50 000 m^3
Embankment fill	13 500 m^3
Spillway cut	500 m^3
Cut-off trench	1 050 m^3
Drains (River sand)	1 800 m^3

Areas:

Full supply area	18 800 m^2
Catchment area	40 ha
Stone pitching	135 m^2

Outlet works:

Diameter of outlet pipe	200 mm minimum
Length of outlet pipe	50 m
Concrete volume	33 m^3

General:

Spillway width	10 m
Embankment slopes – Upstream	1 : 4
Downstream	1 : 2
Embankment crest width	3,0 m
Calculated flood (1:100 year)	6,0 m^3/s
Latitude	33°52'50" South
Longitude	25°07' East
Gross mean annual runoff (MAR)	60 000 m^3
Maximum embankment height	10,50 m
Maximum water depth	8,35 m

The specifications pertaining to relative heights, volumes, areas, outlet works and general are also stipulated on plan EC 0100/01. All heights indicated on this plan are relative to one another.

6.3 Embankment

The position of the embankment is shown on plan EC 0100/01. Any of the iron pegs (ST 1 to ST 10) can be used as reference to peg out the embankment position and to correlate heights during and after construction. The centre-line position is proposed at iron peg ST 5. The embankment should be constructed in layers not exceeding 150 mm. Please take note of the specifications on the "Standard Specifications" plan regarding the optimum moisture content (OMC) to obtain proper compaction. The soil report should give specific details about this aspect.

Protection of the embankment to prevent erosion must receive special attention. Planting of kikuyu after construction is one of the options available.

6.4 Spillway

The spillway width is specified as 10 m. The in- and outlet dimensions of the spillway should be 15 m and 20 m respectively. Spillway details are shown on both plans. Please take note of the stone pitching area. The entire spillway should be planted with kikuyu after construction.

6.5 Outlet works

Specifications pertaining to the outlet pipe construction are given on the "Standard Specifications" plan. It is important to note that the entire pipe should be cast in reinforced concrete. Reinforcement should be continuous throughout construction joints.

The relative height of the outlet pipe is specified at 43,50 m. When the dam is full (RL 49,00), the utilizable water depth will be 5,50 m. The storage volume below the outlet pipe will be approximately 1 000 m^3 which is only ± 2 % of the total storage capacity of the dam.

7. SUMMARY COMMENTS

- From a theoretical point of view it seems improbable that the proposed dam will enable replacement of the existing pumpstation. Despite this, the applicant wants to evaluate it in practice.

- Construction should be properly controlled because of the in-situ materials. Please take note of all conditions in the soil report. The conditions specified in this report automatically forms part of the specifications.

- Please take note of all notes and specifications on both plans. Alternative proposals can be discussed with the designer.

DEPARTMENT OF WATER AFFAIRS AND FORESTRY: EASTERN CAPE
Private Bag X 7485, King William's Town

Private Bag X 68
CRADOCK
5880

Enq : J.S. Venter
Tel : 048 - 8813005
Fax : 048 - 8813545
Ref : 12/2/L900/15
E-mail : Venterj@dwaf.ecape.gov.za

2001 -08- 13

N. Botha
Eggland Poultry (Pty) Ltd
P.O. Box 1694
JEFFREYSBAY
6330

Sir

PROPOSED DIEPKLOOF DAM: LICENCE TO CONSTRUCT

1. Your application for a licence to construct the abovementioned Category I dam, has reference.

2. Hereto attached is Licence 12/2/L900/15, which authorises you to proceed with the proposed work.

3. Please note that an inspection by this office is required halfway through construction as well as after the completion thereof. It will be appreciated if you could notify Mr J. Venter of this office at the relevant stages in order to be able to conduct the required inspections.

4. Please complete the attached form (*Registration of an existing dam*) and send it to this office for the registration of the dam, within 120 days of the date on which it becomes capable of diverting or storing water.

Yours faithfully

DIRECTOR: WATER RESOURCES MANAGEMENT:EASTERN CAPE

DEPARTMENT OF WATER AFFAIRS AND FORESTRY: EASTERN CAPE
Private Bag X 7485, King William's Town

LICENCE **12/2/L900/15**

LICENCE HOLDER: **Eggland Poultry (Pty) Ltd**

DAM NAME: **DIEPKLOOF DAM SITUATED ON THE REMAINDER OF PORTION 4 OF THE FARM BERGSIG NOORD 431**

LICENCE TO CONSTRUCT A DAM WITH A SAFETY RISK, ISSUED IN TERMS OF CHAPTER 12 OF THE NATIONAL WATER ACT, 1998 (ACT 36 OF 1998), READ WITH REGULATIONS 4, 5 AND 6 OF THE REGULATIONS PUBLISHED IN GOVERNMENT NOTICE R1560 OF 25 JULY 1986:

1. AUTHORISATION

By virtue of the powers delegated to me by the Minister of Water Affairs and Forestry, I, Zolile Hamilton Keke, in my capacity as Director: Water Resource Management: Eastern Cape in the Department of Water Affairs and Forestry, hereby in terms of Regulations 4, 5 and 6 of the abovementioned Regulations, authorise the Licence Holder to construct the abovementioned Category I dam up to a maximum capacity of 50 000 m^3 and a maximum height of 10.4 m, subject to the following conditions and requirements as prescribed in the Regulations:

2. CONDITIONS AND REQUIREMENTS

2.1 Any deviation from the expected conditions of the foundation or the expected quality of the construction material that becomes apparent during construction of the dam, shall be reported to the Regional Director without delay.

2.2 Any design adjustment that, in the opinion of the Regional Director, may be necessary on the grounds of new information that comes to

light during the construction phase, shall be reported to the Regional Director without delay.

2.3 Any information in connection with the construction work that may be requested by the Regional Director shall be supplied without delay.

2.4 Any assistance called for by the Regional Director in conducting an investigation, obtaining information or carrying out inspections needed in connection with the evaluation of the safety of the construction work, shall be given.

2.5. The dam is classified as a category I dam as the hazard potential is low. If any new development downstream of the dam should take place in future, it could influence the safety risk, resulting in a re-classification of the dam to a higher category (category II or III). In such a case it will be required of you to upgrade the dam to the compulsory standards.

3. WATER RIGHTS AND ENVIRONMENTAL CONSERVATION

This licence shall not be construed as conferring exemption from complying with the following:

3.1 the provisions and requirements of Chapter 4 of the national Water Act, 1998 regarding the entitlement to water use or recognition of an existing lawful use in terms of sections 32 and 33 of the said Act; and

3.2 the provisions and regulations of Government Notices R.1182 and R.1183 of 5 September 1997, promulgated in terms of section 21 of the Environment Conservation Act, 1989 (Act 73 of 1989), regarding control over activities which may have a detrimental effect on the environment.

REGIONAL DIRECTOR: WATER RESOURCE MANAGEMENT
EASTERN CAPE

2001/05/01
DATE