MANAGEMENT CONSIDERATIONS FOR FOREST AFFECTED BY THE HARRIS DAM

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CONTENTS

1.0 INTRODUCTION

This report contains management strategies which will be implemented by the Department of Conservation and Land Management during the construction of a dam on the Harris River.

It has been compiled as a project for the Forester level promotional examination. It will be used by the examiner for assessment and by local district officers as initial information for the preparation of detailed management plans.

A dam over the Harris River is being proposed by the Public Works Department to supply water for the Great Southern Towns Water Supply. The Harris River is a tributary of the Collie River which is currently dammed (Wellington Weir) and supplies 70 million m^3, and 6 million m^3 annually for the Collie Irrigation District and the Great Southern Towns Water Supply, respectively.

Clearing for agriculture in some areas of the Collie River catchment has caused salt levels in the Wellington Weir to increase over the last decade. A re-afforestation programme is not expected to significantly improve saline run off this century. Since the Harris River is the best of the tributaries for water quality, a dam there would ensure good quality water for the Great Southern Towns Water Supply, both now and in the future. Wellington Weir will continue to supply the Collie Irrigation District.

The P.W.D. have carried out feasibility studies and commissioned environmental consultants, Dames and Moore to draft an environmental review and management program for a Harris River Dam. This has been completed (May 1984). The P.W.D. have identified two suitable sites on the Harris River. The project has been submitted to the Government, and is awaiting approval and ratification.

Areas of forest affected by the dam project, and volumes of timber and gravel mentioned in this report are broadly based because of the uncertainty of the damsite and the area to be inundated. This report is biased towards the preferred site, Damsite 1 (Gary Minck P.W.D.). However, the catchment area, concepts and management strategies are relevant to both sites.

2.0 SUMMARY

A dam on the Harris River will directly affect forest areas vested in the Department of Conservation and Land Management. The subsequent change in land use for these areas will require forward planning to protect forest values and provide future management strategies.

The proposed reservoir will inundate approximately 1,000 hectares and have a catchment area of 37,600 hectares. A two year construction period is forecast by the P.W.D. Tasks to be undertaken and completed within that period include;

- dieback demarcation.
- removal of all forest produce within the proposed reservoir.
- relocation of apiary sites.
- realignment of Tallanalla Road and S.E.C. and P.W.D. service corridors.
- thinning the forest within a 500 m strip surrounding the reservoir.
- a clearing burn.

The need for pre-planning and close supervision of activities within the catchment area is recognized. This will ensure protection and conservation guidelines are implemented.

When the P.W.D. constructs a dam on the Harris River the Department of C.A.L.M. will effectively recognize and manage those tasks for which it has a responsibility.

3.0 SEQUENCE OF OPERATIONS

Immediately the P.W.D. commit themselves to the construction of a dam on the Harris River the Department of C.A.L.M. must commence a plan to effectively manage those areas of forest affected by the dam. P.W.D. sources (Richard Kontor) estimate that a two year period is needed from the time of approval to the winter in which water would begin to build up behind the wall. Operations requiring implementation are;

3.1 Mark Full Supply Level

P.W.D. surveyors will mark the F.S.L. on the ground. This is not normally a priority job but would be carried out at the Department of C.A.L.M.'s request to satisfy planning considerations. (Gary Minck P.W.D.)

3.2 Dieback Mapping (Demarcation)

Hygiene maps for Forest Blocks affected by the dam (Edward and Ross) are available from 1979 70 mm photography. Ross was reflown in 1985. Dieback demarcation from these maps would be adequate. (John Skillen C.A.L.M.). Demarcation of Darrell, Ernest and Arklow Blocks would be achieved by using the most up to date dieback information (1976 dieback maps in H.O.C.S. system) and field interpretation.

3.3 Apiary Sites

Inform apiarists of cancellations, relocation and altered access.

3.4 Access

i. Realign Tallanalla Road and seal Tallanalla Road to damsite.

ii. Confirm pipeline and powerline corridors.

iii. Plan logging access.

3.5 Commence Industry Operations

These operations should commence as soon as practicable following ratification of the dam project.

3.6 Implement Burning Plan

Harvey and Collie Districts to liase.

3.7 Conservation

Ensure conservation values are maintained outside the flooded area.

3.8 Recreation

Plan for effect of dam on existing facilities, look at new proposals.

4.0 REMOVAL OF FOREST PRODUCE

Produce above and below the F.S.L. requires consideration. A clear fall operation below the F.S.L. is mandatory. A silvicultural thinning of timber around the perimeter of the proposed reservoir would increase water production through increased run off. A logging operation prior to the completion of the dam would remove a resource otherwise unavailable because of P.W.D. constraints on turbidity and pollution.

4.1 Assessment of Forest Produce below F.S.L.

A clear fall operation below the F.S.L. would yield;

i. approximately 1,000 m^3 of mining timber (6 months supply).
ii. insignificant volumes of bridge timber and poles.
iii. approximately 2,000 m^3 of Jarrah sawlog.
iv. approximately 500 m^3 of Blackbutt sawlog.
v. approximately 500 m^3 of Chipwood.
vi. salvage sawlogs which will be offered to Saunders.
vii. fencing material and firewood.

4.2 Produce above F.S.L.

An integrated operation to remove poles, bridge timber and sawlog material will be carried out in a 500 m strip around the proposed reservoir. On the eastern side of the reservoir, the strip will be rationalised to include the section between Tulloch Road and Tallanalla Road because after inundation, access will be difficult. (Appendix 1 refers)

Approximately 2,000 hectares of forest is included in this strip. However, 1,000 hectares in Edward Block is likely to produce the majority of the timber. The remaining area has been recently cut over. The section between Tallanalla Road and Tulloch Road is pole rich and is expected to yield between 6 and 8 poles per hectare (Peter Beatty).

4.3 Apiary Sites (Appendix 2)

One apiary site in Collie District (1346) and one in Harvey District (1071) will be inundated.

There are a further six apiary sites within 1.5 km of the F.S.L. These will be cancelled and relocated if possible.

Some apiary sites in Quarantine will have their access altered.

i.e. The reservoir will prohibit traditional access to areas east of Tallanalla Road. Alternative access from the Collie-Williams Roads to apiary sites within this area will be subject to 7 Way Test approval.

4.4 Timing and Persons Responsible for Removal of Produce

A two year construction phase will end with a clearing burn within the proposed reservoir. Forest produce within the reservoir and 500 m surrounding strip must be removed by then.

Within the two year period following ratification the Department of C.A.L.M. will cancel affected apiary sites, notify Permit holders and relocate where possible. Apiary site holders will be advised of altered access.

Western Collieries will commence removing the mining timber from the proposed reservoir. Operations will commence at the dam wall and work north.

As soon as the mining timber operation is far enough advanced Bunnings will commence removal of poles, bridge timber, sawlog and chipwood.

A salvage sawlog operation by Saunders and a minor forest produce operation will follow Bunnings.

An integrated sawlog, pole and chipwood operation by Bunnings within a 500 m strip above the reservoir will commence during the first summer. This will be a dry soil, hygienic operation. Removal will be controlled by retention marking for 10 m^2/hectare of basal area (Bradshaw Prescription).

5.0 PROTECTION

The catchment area for damsite 1 is 37,600 hectares. 80% is within D.R.A. Access into D.R.A. has been restricted, and controlled burning is the only major activity carried out since 1976. The remainder of the catchment is outside of D.R.A. (West of Tallanalla Road). It has recently been logged and control burnt.

5.1 Fire

The catchment area of the dam has had rotational protection burns by Collie and Harvey Districts. The P.W.D. plans a clearing burn below the F.S.L. prior to the dam's completion.

a. Burning History (Appendix 3)

	Last Burnt
Darrell Block	81/82
Edward Block	79
Ross Block	81
Arklow Block	82/83
Ernest Block (east)	84
Ernest Block (west)	77

b. Burning Plan

The immediate requirement is to burn east of the proposed reservoir during the first spring. H.4 is currently proposed for 1985 spring. (Appendix 4 refers)

H.4 will not burn to the reservoir perimeter. However the unburnt section between H.4 and the reservoir is going to be logged. This section will then be burnt the spring before the autumn clearing burn. This plan will provide adequate protection for that burn.

Note Because H.4 in 1985 will burn part of the strip proposed for logging, dieback demarcation must be carried out in this area before 30th September 1985.

Future burns around the reservoir will be planned to satisfy P.W.D. and the Department of C.A.L.M.'s guidelines for fire protection within catchments, and adjacent to reservoirs.

5.2 Disease

80% of the catchment is currently within D.R.A.

Quarantine permits will be issued for that area below the F.S.L. No constraints on soil movement will apply within this area. D.R.A. boundaries may be moved to the F.S.L. on the eastern perimeter but this requires parliamentary approval (Jim Adams). The eastern boundary of the dam would remain D.R.A. and limited access is consistent with P.W.D. constraints.

Dieback is present in all of the area to be inundated. Movement of soil in this area is accepted. However, it is extremely important that proper hygiene measures are enforced when machinery moves from the reservoir area into surrounding bush.

Blackberry eradication will be carried out in forest areas of the catchment prior to inundation. This will require survey and subsequent treatment.

6.0 ACCESS (Appendix 5)

6.1 Pre-construction access

A sealed access road from Collie to the damsite is proposed by the P.W.D. (Doug Cherry). Currently, 2 kilometres to the preferred damsite remains unsealed.

Existing access in Darrell and Edward Blocks will adequately service logging operations.

6.2 Post-construction access

a. Tallanalla Road

Tallanalla Road will have to be realigned and constructed from the preferred damsite, north to Trees Road, as the current alignment will be inundated. The P.W.D. will be responsible for the realignment and construction. Road selection must give consideration to landscape values, be consistent with dieback hygiene guidelines and be subject to approval by the Department of C.A.L.M. Road construction will be consistent with the Department of C.A.L.M. specifications for Arterial roads (Engineering Pamphlet Foresters' Manual).

Tallanalla Road is part boundary of Edward, Ernest, Darrell and Arklow Forest Blocks. Following inundation of the reservoir and the realignment of Tallanalla Road, the F.S.L. of the reservoir could be used as the new boundaries for these Forest Blocks.
(Appendix 5 details)

b. S.E.C. Line Muja Northern Terminal 330 kV

This line passes through the proposed reservoir and realignment will be necessary in Arklow Forest Block and Private Property east of the Harris River. The S.E.C. have supplied particulars of location and cost to the P.W.D.
(Gary Minck)

c. Pipeline

The P.W.D. proposes to construct a pipeline from the damsite to the West Bingham pumping station. This pipeline will be situated within reserves of the Harris River and the east branch of the Collie River.

d. Severed Access

Western access to Darrell and Edward Blocks will be inundated. The Collie-Williams Road, Norm Road and Yourdamung Road will provide eastern access.

e. Recreation

Downstream access from Tallanalla Road to the Harris River through Arklow Block, is already available, if that part of the river below the dam wall is developed for recreational purposes.

7.0 GRAVEL AND SAND

A preliminary search has been undertaken by the P.W.D. for gravel and sand deposits (Richard Kontor P.W.D.). Gravel for roading and sand supplied for concrete and core filter are adequate. However, a supply of sandy gravel for the core of the dam has not yet been located.

7.1 Requirements (Richard Kontor)

Clay gravel is required for Tallanalla Road realignment, logging access roads and S.E.C. and pipeline corridors.

70,000 m^3 of sand is required for the core of the dam wall to act as a filter.

20,000 m^3 of sandy gravel is required for the core of the dam wall to act as a course filter.

7.2 Location and Availability

An adequate supply of clay gravel for roadworks will be taken from below the F.S.L west of the Harris River. Rehabilitation will not be necesary. (Appendix 6 details)

An adequate supply of sand suitable for core filter has been located in Proprietary Block. (Appendix 7 details). This area is in the Collie Coal Basin. Griffin Coal intend to "Open Cut" mine this area in the future. Rehabilitation will not be necessary due to the proposed open cut. A small volume of timber will be available for Saunders' salvage mill.

Sandy gravel suitable for course filter for the core of the dam has not yet been located by the P.W.D. There are deposits of sandy gravel in Mungalup Block. The Department of C.A.L.M. has not been approached regarding these supplies. I have notified Mr. Richard Kontor of the possibility of supply from this area.
(Appendix 8 details)

8.0 CONSERVATION

Although approximately 1,000 ha (mainly Jarrah Marri forest with some areas of Blackbutt, Paper Bark and Flooded Gum) will be inundated by the proposed reservoir, it is not expected to have a detrimental effect on Flora and Fauna in the surrounding catchment. However, some factors require consideration and action to conserve forest values during and following dam construction.

8.1 Limit Dieback Spread

The Department of C.A.L.M. will be involved in an advisory and training capacity to ensure minimum spread of Phytophthora cinnamomi by contractors and the P.W.D. Consideration should be given to;

i. the location and demarcation of Phytophthora cinnamomi.
ii. hygiene measures and restrictions above the F.S.L.
iii. washdown stations.
iv. washdown procedures.
v. roading. Locate roads low in profile and close roads not to be used.

8.2 Soil Erosion

Massive soil disturbance below the F.S.L. is unavoidable but after filling, this will stabilise. Soil disturbance above the F.S.L. during the construction stage will result in erosion and turbidity, if correct procedure (contour logging, erosion control drains and stream reserves) is not enforced.

a. Logging above F.S.L.

Some initial turbidity may occur but will stabilise after the first winter. Demarcation and subsequent exclusion from cutting of streams and location of landings and haul roads reduce turbidity. Strict supervision will be necessary to ensure adequate erosion control measures are implemented as logging is completed.

b. Dam Construction

Dames and Moore have reinforced P.W.D. guidelines. These include;

i. restricting clearing operations to only those areas that must be disturbed during construction.

ii. utilising, where possible, the area upstream from the dam wall and below the F.S.L., for borrow material and construction facilities.

iii. upgrading and using existing roads and fire trails for access during logging, clearing and construction.

iv. careful planning of infrastructure units to minimise road construction, and competent design of roads and tracks to minimise soil erosion.

v. minimising soil erosion by re-profiling disturbed ground surfaces and using soil erosion control banks to redirect and control surface run off.

vi. revegetating disturbed areas outside the storage area as soon as possible after construction is completed.

8.3 Regeneration of Disturbed Areas

Natural revegetation (native plants) will occur around the perimeter of the reservoir.

Disturbed areas, around and below the dam wall, will be regenerated as soon as possible within 12 months of completion. Recreational facilities will be provided by the P.W.D. This is consistent with P.W.D. policy.

9.0 RECREATION

The Collie District hosts a large number of recreational purposes. The Wellington Dam area is the main provider of recreational facilities. Picnicking and marroning being major attractions. The P.W.D. restrictions on boating, camping and swimming have not allowed the full potential of the dam, for recreation, to be realised. A dam on the Harris River would provide restricted recreational facilities, but would release the Wellington Weir for more diverse activities.

9.1 Existing Facilities

The Harris River area does not provide any developed facilities. Scenic drives along Tallanalla Road, marroning and bushwalking account for a limited use by recreationalists. East of Tallanalla Road (Harris River) has been Quarantined since 1976 and this has limited the opportunities for recreation.

The Wellington Weir has Private Property adjoining 90% of its shoreline (Worsley Timber Company) and access is limited and restricted to those areas.

Access around the upper reaches of the dam through State Forest and Pine Plantations is maintained by the Department of C.A.L.M. Access is available in all seasons and roads and tracks can be negotiated in most 2 wheel drive vehicles. The Department of C.A.L.M. facilities above the dam wall include;

- maintenance of roads and tracks.
- construction and maintenance of picnic sites (barbeques and rubbish removal).

The Department of C.A.L.M. facilities below the dam wall include;

- maintenance of roads and tracks.
- construction and maintenance of picnic and camping areas. Including ablution blocks, rubbish disposal and barbeque tables.
- design and manufacture of signs and pamphlets for walk trails, picnic sites and scenic drives.
- bank stabilization to improve camping areas and reduce erosion.

The P.W.D. facilities provided at the dam wall include parking and barbeque area and toilet block.

9.2 Future Facilities

No facilities in the Harris River Dam area will be developed by the Department of C.A.L.M. This is consistent with the P.W.D.'s requirements. Some tourist roads for sight seeing, and picnicking facilities at the dam wall (similar to Wellington Dam) will be provided by the P.W.D.

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10.0 CONCLUSION

The considerations detailed within offer a basis for the preparation of detailed management plans for those forest areas affected by the construction of a dam on the Harris River.

They detail tasks to be implemented. They also provide some background information so that the scope and timing of various tasks may be recognised.

The major task, for which the Department of C.A.L.M. will be responsible, is the removal of forest produce. A two year dam construction phase appears to be adequate time to achieve this and other tasks.

Final development of these management considerations awaits ratification of the Harris Dam Project. This in turn is awaiting the results of an Environmental Protection Authority report and Federal Government funding.

11.0 RECOMMENDATIONS

Given a decision to go ahead with the Harris Dam I recommend that the contents of this report be implemented. Particularly;

i. early liaison with the Public Works Department to mark the Full Supply Level on the ground.

ii. information to apiary site holders who will be affected.

iii. liaison with the State Energy Commission and the Public Works Department to confirm access.

iv. providing the Region with F.D. 49B's for cutting and informing the industry of available resource.

v. Harvey and Collie Districts to liaise on protection plan.

vi. ensuring conservation values are maintained.

Regardless of a decision being made dieback demarcation must be carried out in Edward Block prior to 30th September, 1985. (Items 3.2 and 5.1 (b) refer).

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Preliminary Draft Report
Harris Dam Project
Environmental Review and Management Programme

2. Forester's Manual

3. Inspector Bradshaw's Prescription

4. Communications in Writing,
Training Handbook,
Public Service Board,
Canberra.

ACKNOWLEDGEMENTS

Frank Batini - Inspector Environment Protection C.A.L.M.

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John Clarke - S.D.F.O. Harvey District Manager C.A.L.M.

Frank Vince - Snr. D/F Procurement C.A.L.M.

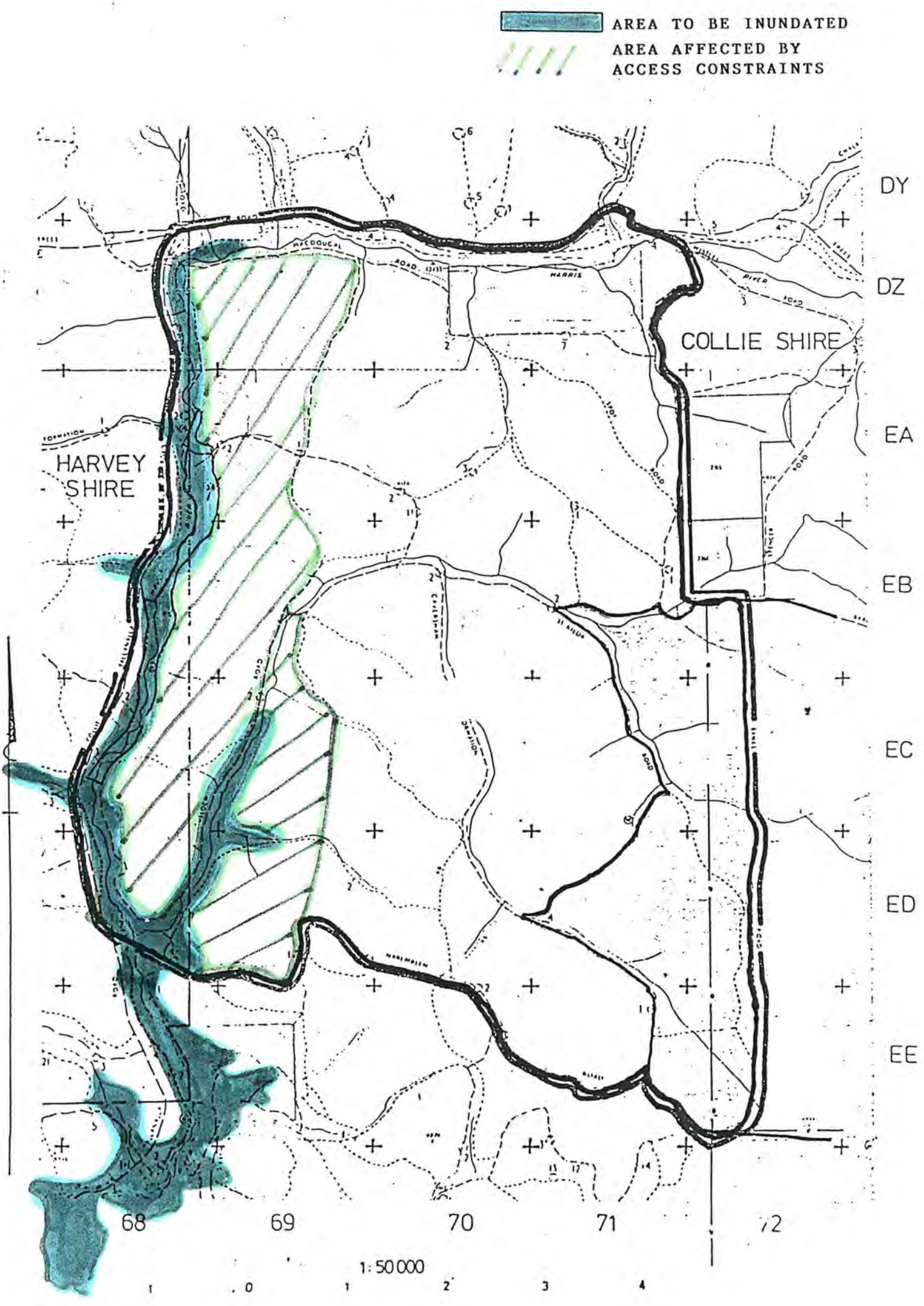
Jim Adams - Registrar C.A.L.M.

Doug Cherry - District Officer P.W.D.

Richard Kontor - Engineering Research P.W.D.

Gary Minck - Investigative Engineer P.W.D.

APPENDIX 1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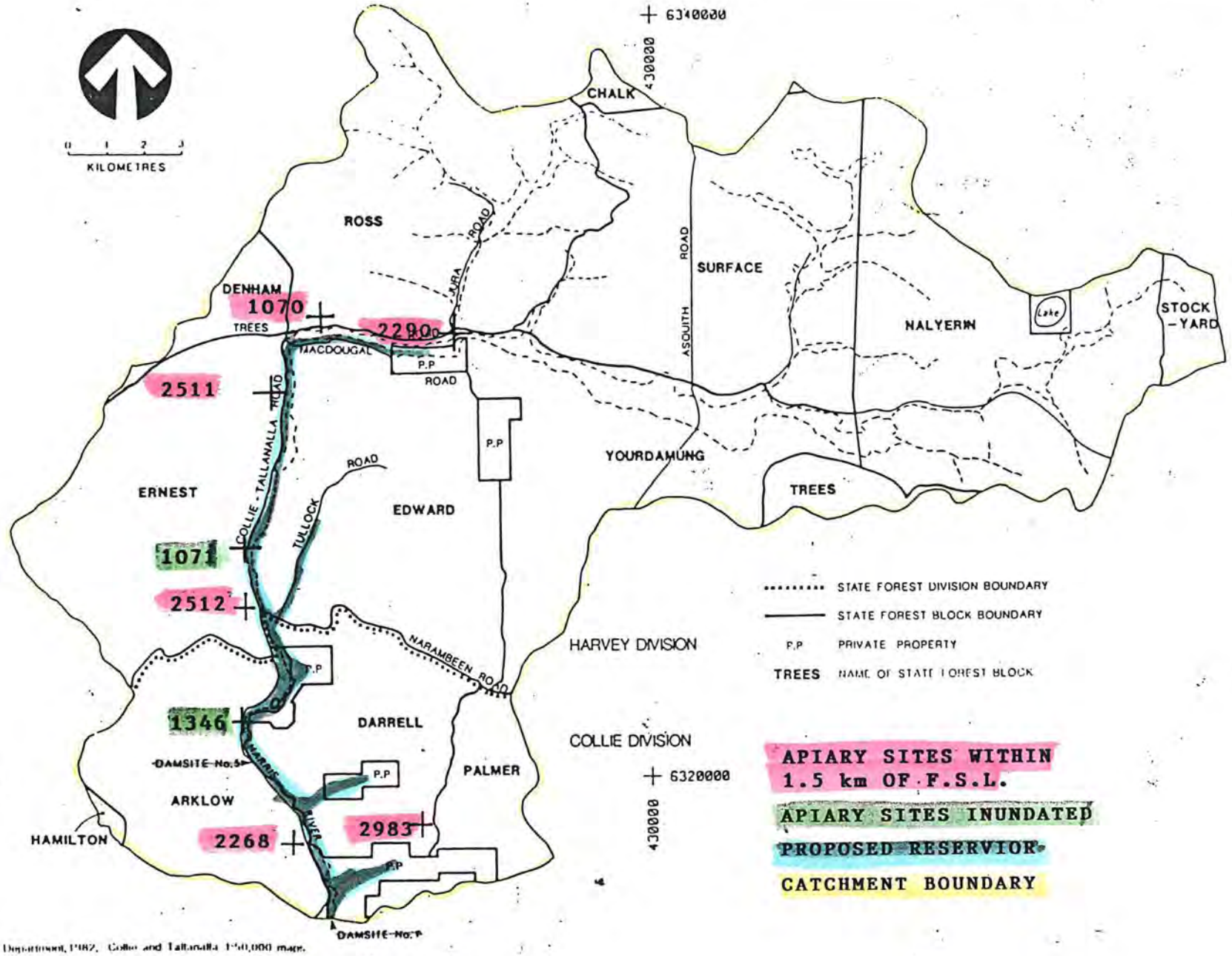
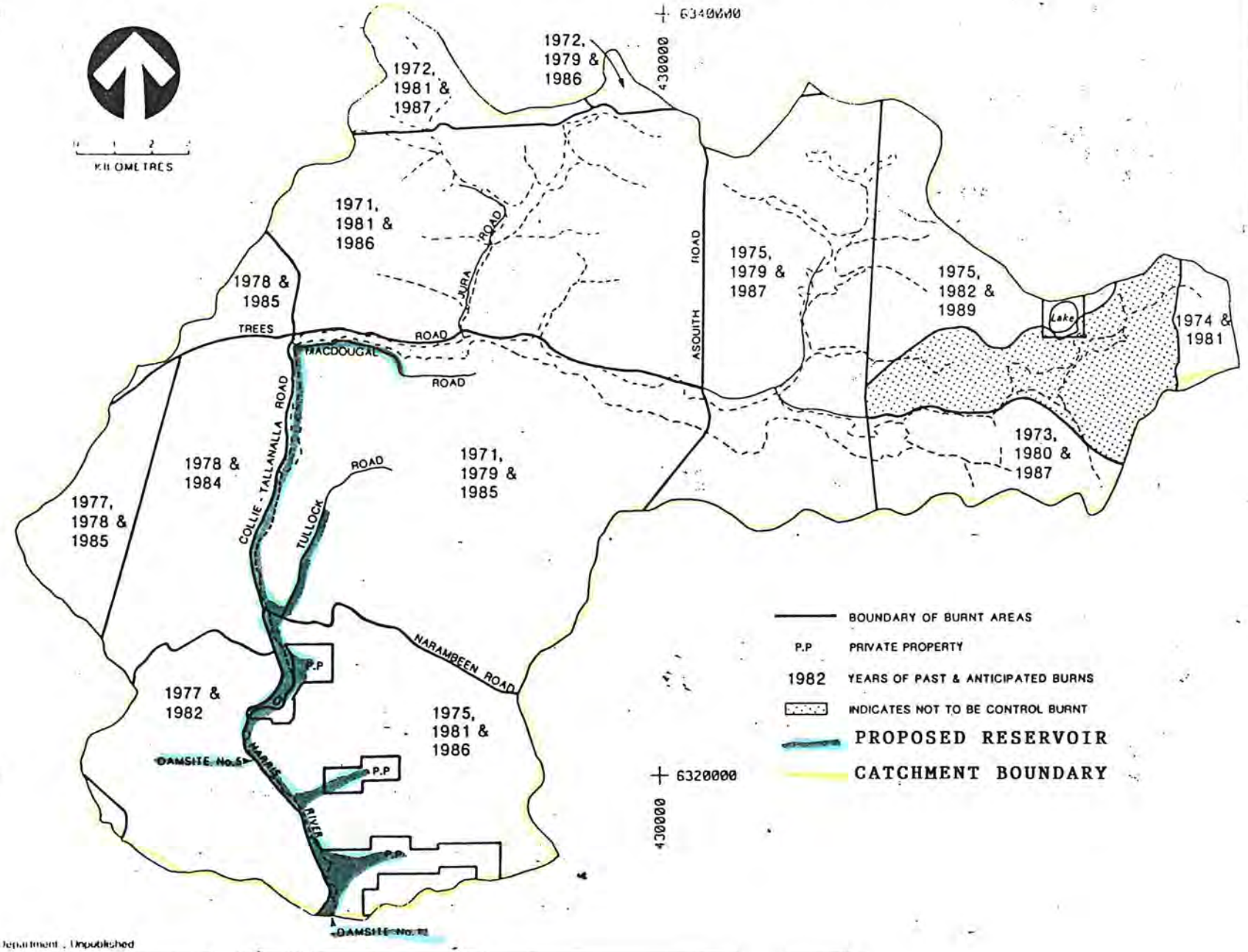


[illegible]. Lands Department, 1982. Collie and Tallanalla 1:50,000 maps.



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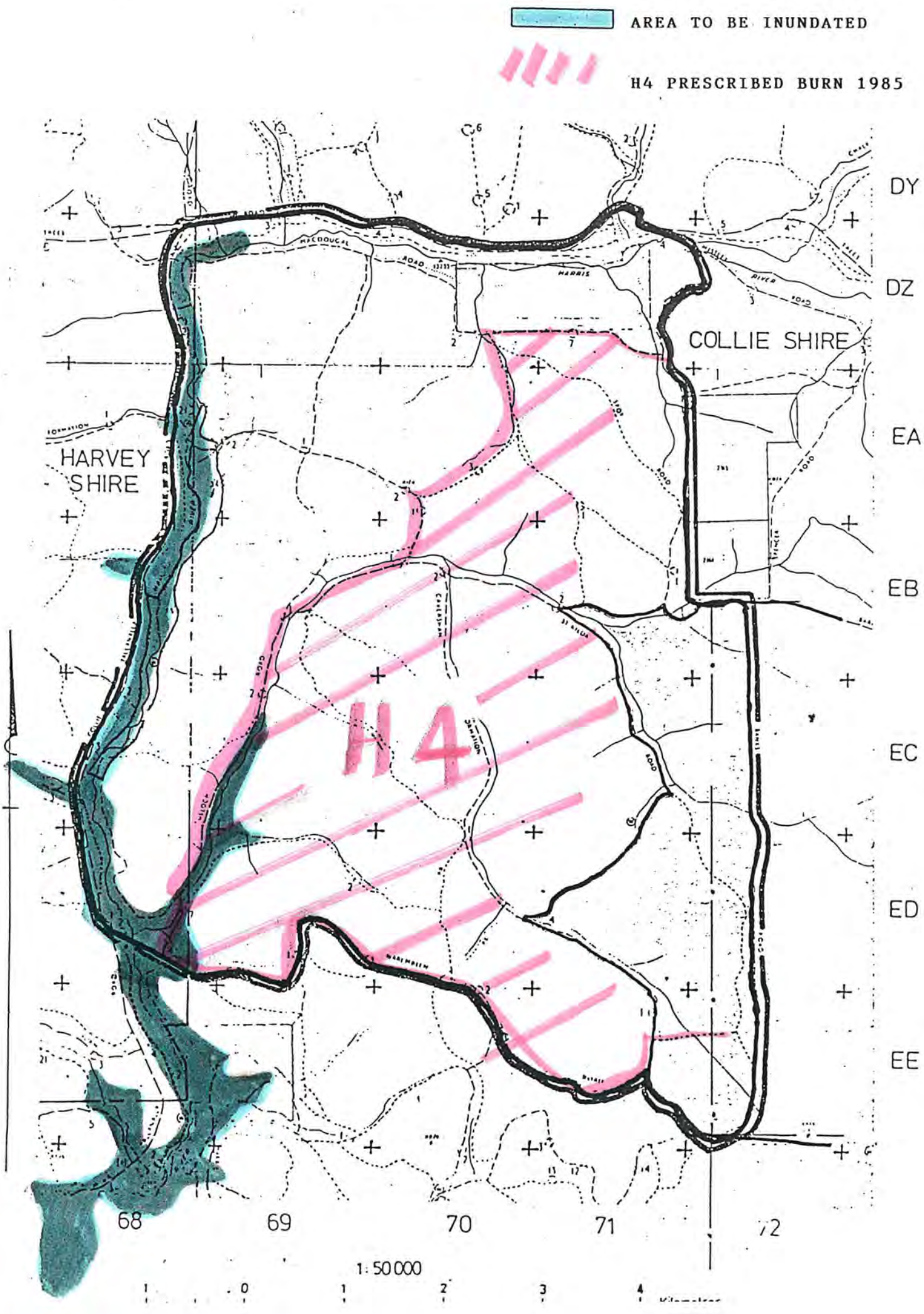
APPENDIX 4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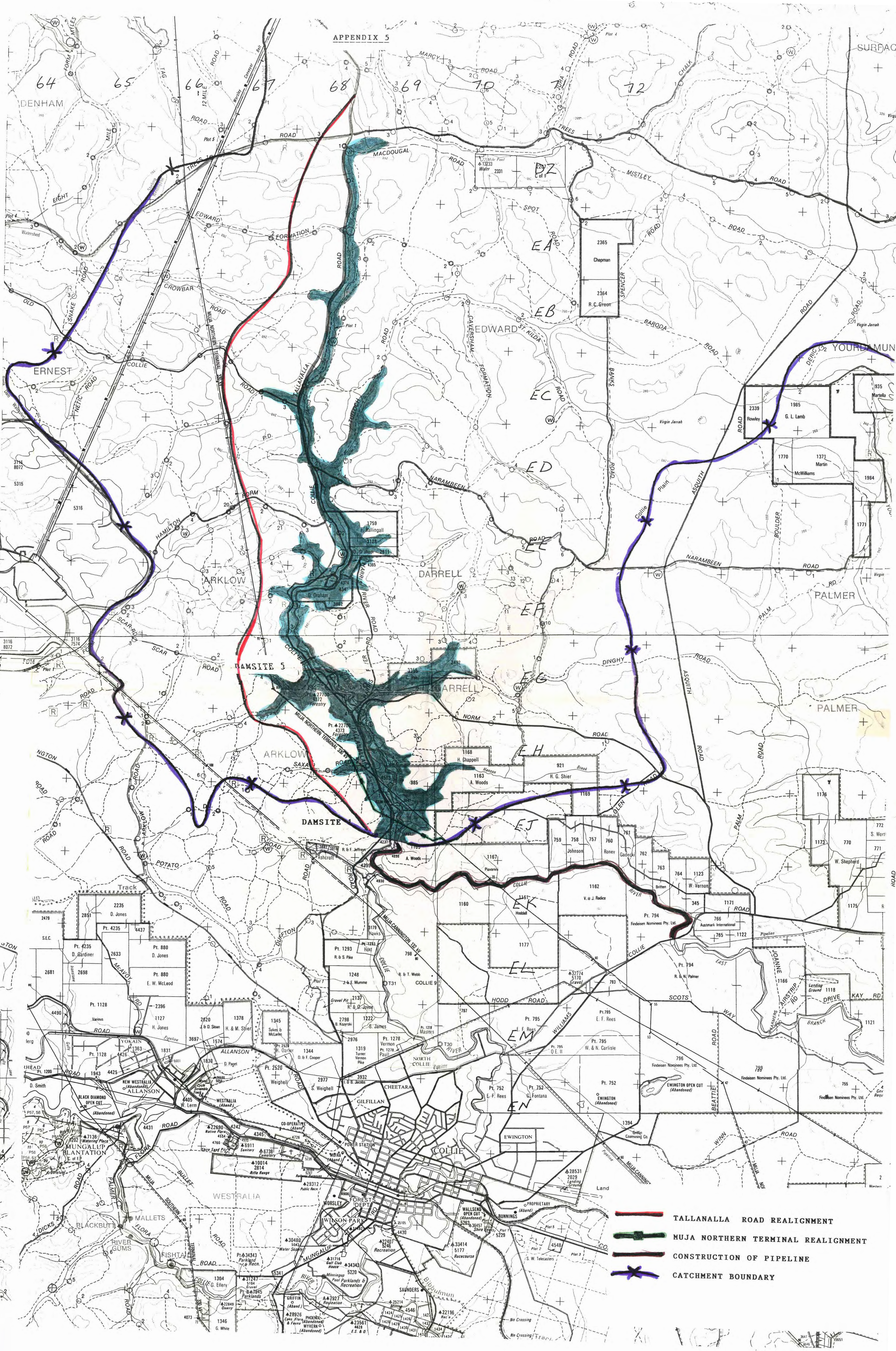

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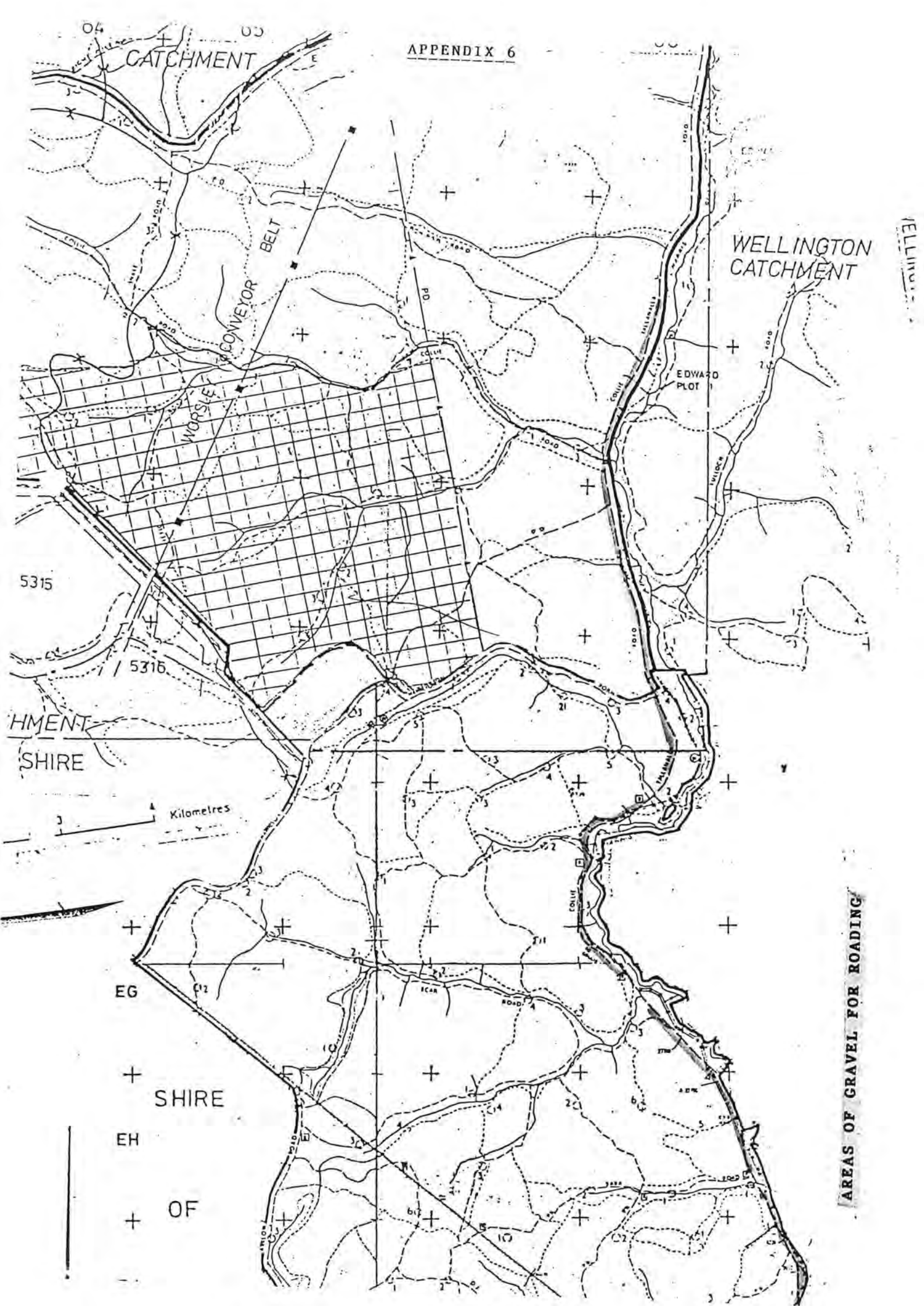
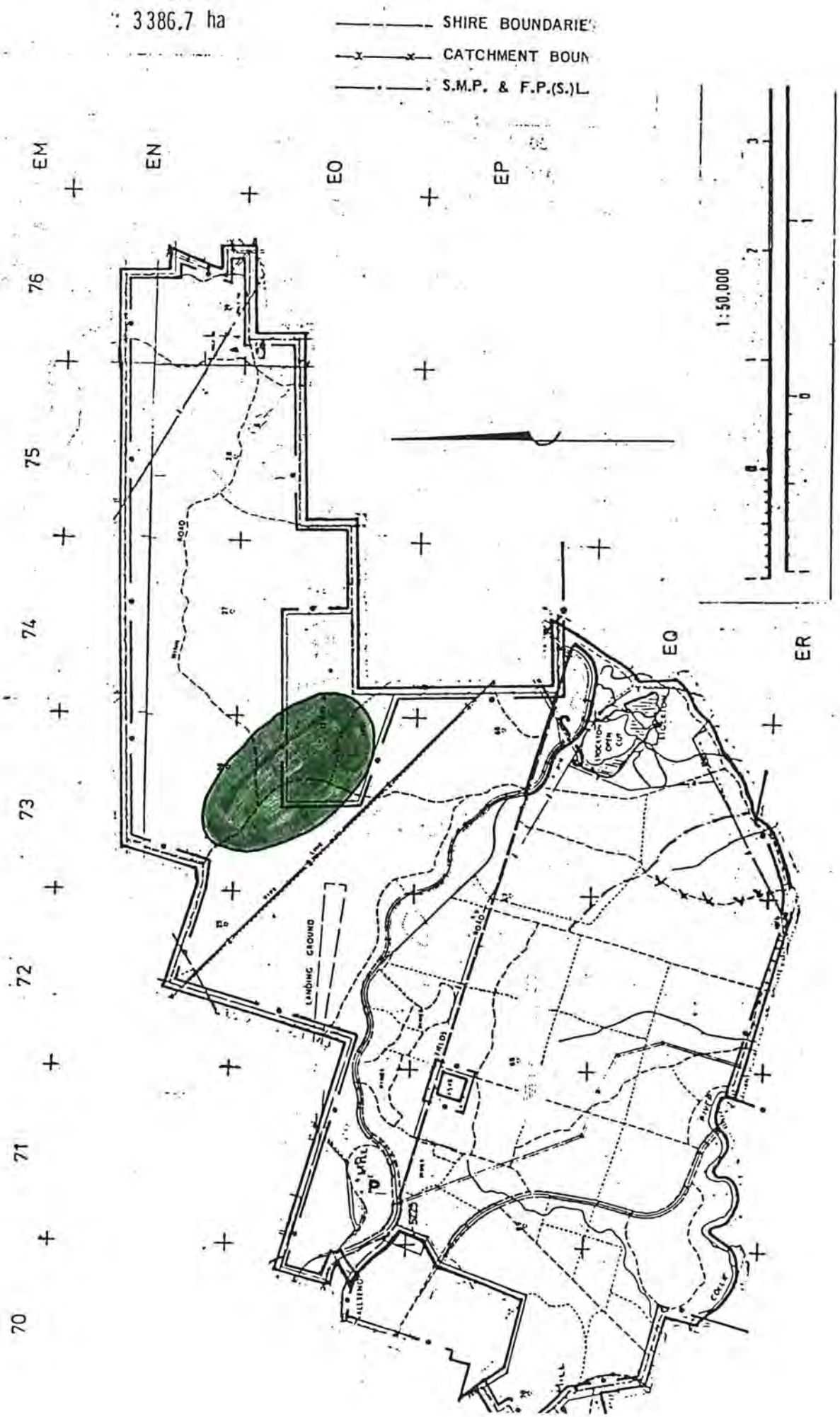
APPENDIX 6


CATCHMENT
WELLINGTON CATCHMENT
WORSLEY CONVEYOR BELT
EDWARD PLOT
5315
5316
SHIRE
Kilometres
SHIRE
AREAS OF GRAVEL FOR ROADING

DIVISION : COLLIE APPENDIX 7
BLOCK : PROPRIETARY
AREA UNDER F.D. CONTROL : 3361.7 ha
AREA OF V.C.L. : 25.0 ha
TOTAL BLOCK : 3386.7 ha



APPENDIX 8

DIVISION	: COLLIE
BLOCK	: BRISTOL
AREA UNDER F.D. CONTROL	: 6 523.1 ha
AREA OF V.C.L.	:
TOTAL BLOCK	: 6 523.1 ha

AREA OF SANDY GRAVEL FOR COURSE FILTER