# Contents

<table>
<thead>
<tr>
<th>Acknowledgement</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contents</td>
<td>ii</td>
</tr>
<tr>
<td>List of tables</td>
<td>iii</td>
</tr>
<tr>
<td>List of figures</td>
<td>IV</td>
</tr>
<tr>
<td>List of plates</td>
<td>VI</td>
</tr>
</tbody>
</table>

## CHAPTER I

<table>
<thead>
<tr>
<th>Introduction</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent of land degradation</td>
<td>1</td>
</tr>
<tr>
<td>Statement of the problem</td>
<td>3</td>
</tr>
<tr>
<td>Literature review</td>
<td>4</td>
</tr>
<tr>
<td>Scope and rationale of the study</td>
<td>13</td>
</tr>
<tr>
<td>Objectives</td>
<td>14</td>
</tr>
<tr>
<td>Research question</td>
<td>14</td>
</tr>
<tr>
<td>Data used</td>
<td>15</td>
</tr>
<tr>
<td>Methodology</td>
<td>16</td>
</tr>
<tr>
<td>Geographical personality of the study area</td>
<td>21</td>
</tr>
<tr>
<td>Chapter scheme</td>
<td>26</td>
</tr>
</tbody>
</table>

## CHAPTER II

<table>
<thead>
<tr>
<th>AN ASSESSMENT OF WASTELAND RECLAMATION POLICIES AND STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
</tr>
<tr>
<td>Wind break</td>
</tr>
<tr>
<td>Sand dune stabilisation</td>
</tr>
<tr>
<td>Wastelands with or without scrub</td>
</tr>
<tr>
<td>Problem of waterlogging</td>
</tr>
</tbody>
</table>
Drainage problem 31
Strategies to mitigate the problem of waterlogging and secondary salinity in IGNP command 33
Vertical drainage 33
Vertical drainage through shallow skimming wells 34
Vertical drainage through tube wells 35
Vertical drainage through tube well (245) in stage-in command of IGNP 35
Indo Dutch project 39
Horizontal drainage 40
Field drains 40
Interceptor drains 40
Bio drainage 41
Summing up 42

CHAPTER III 44-69

WASTELAND IDENTIFICATION AND MAPPING

Introduction 44
Definitions and processes 45
Wastelands 47
Classification of wastelands 48
Existing database on wastelands and limitations 49
Preview of methodology for identification and mapping of wastelands 51
Elements of image interpretation 52
Image characteristics for identification of wastelands 54
Wastelands in Sri Ganganagar district 54
Identification and mapping of wastelands in the sample areas 59
Sample I (44 D/13) 59
Status of wastelands 60
CHAPTER IV
WASTELAND MONITORING

Introduction 70
Change detection 70
Monitoring change in the extent of wastelands in the sample area 71
Monitoring change detection of wastelands in three-sample area 72
Sample I (44 D/13) 72
Growth of wastelands during 1970-71 and 1996-97 72
Sample II (44 G/12) 75
Growth of wastelands during 1970-71 and 1996-97 76
Sample III (44 G/15) 79
Growth of wastelands during 1970-71 and 1996-97 79
Summing up 83

CHAPTER V
ANALYSIS OF WASTELAND MANAGEMENT

Methodology 85
Nature and extent of the problem 87
Physical factors 88
Poor management practices 89
Research concern 89
Socio – economic characteristics of sample households 91
Occupation 91
Literacy 91
Size of holdings 92
Nature of soil 93
Cropping pattern 98
Crop condition during rabi season: agriculture year 2002 100
Mode of irrigation 102
Management practices 104
Relationship between waterlogging and salinity 113
Quality of stagnant water 115
Pattern and distribution of waterlogged and saline land 116
Reclamation strategy 119
Cost – benefit analysis 120
Methodology 120
Immediate preventive and control measures 125
Medium term solution 127
Long term measures 127
Measures to prevent secondary salinity 128
Reclaiming saline / alkaline soil 128
Recommendations 129
Summing up 131

CHAPTER VI

SUMMARY AND CONCLUSIONS

References vii
Appendix viii