



## Low Level Design Document

Designing, Developing and Establishing LRI Data Centre, LRI Portal and LRI Decision Support System in Karnataka State,  
India

Version 1.1

Prepared by

Ceinsys Tech Limited



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## Revisions

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## Review & Approval

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1.0	WDD	Oct 2018



## 1. INTRODUCTION

This document contains the detailed design information about LRI GeoPortal which is intended for those involved in the development and upgradation of LRI GeoPortal. Each module is described based on SRS and Class diagrams to ensure that the programmers should be able to code the program from the document. Traditionally LLD describes the class diagrams with the methods and relations between classes and program specs. However in order to ensure ease of development by the developers, the details of each requirement, description of the modules and code snippets as applicable are provided along with Logical flow diagrams and corresponding data tables. Hence class diagrams are not made as part of this document. Since the entire source code and corresponding documentation to be submitted as part of the overall solution delivery, this document will be further updated along with manuls for maintance and system administration.

### 1.1 REFERENCE DOCUMENTS

- User Need Study Report
- Functional Requirements & System Requirement Study
- Hardware Architecture Document
- Real World Object Catalog
- Conceptual Data Model & Class diagrams

### 1.2 GLOSSARY OF TERMS

Abbreviations	
2D	Two Dimensional
3D	Three Dimensional
API	Application Programming Interface
ATMA	Agricultural Technology Management Agency
B-C Ratio	Benefit-Cost Ratio
CRAC	Computer Room Air Conditioners
CSV	Comma Separated Values
DC	Data Centre
DL	Digital Library
DO	Designated Officer
DMZ	Demilitarized Zone
DR	Disaster Recovery
DRC	Disaster Recovery Centre
DSS	Decision Support System
e-Gov	e-Governance



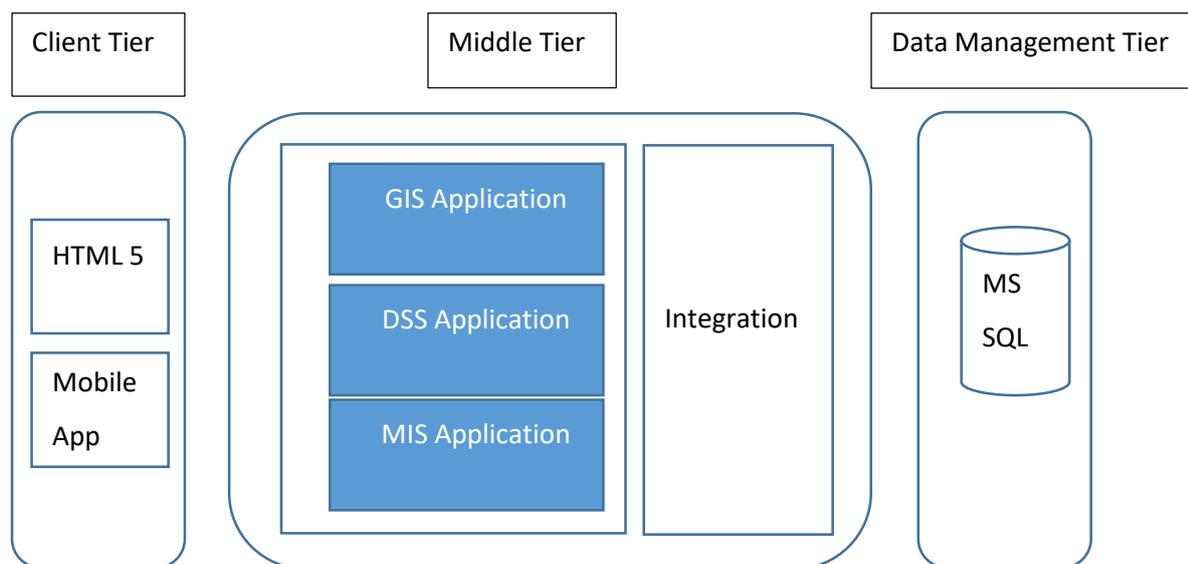
FRS	Functional Requirement Specifications
GAP	Good Agricultural Practices
G-DSS	GIS based Decision Support System
GIS	Geographic Information System
GoK	Government of Karnataka
GP	Geo Portal
GUI	Graphic User Interface
HOPCOMS	Horticultural Producers Cooperative Marketing Society
HVAC	Heating, ventilation and air conditioning
ICT	Information & Communication Technologies
IP	Internet Protocol
IUFR	Interim Unaudited Financial Report
IVRS	Interactive Voice Response System
IWMP	Watershed Management Programme
KCC	Kisan Call Centres
KGIS	Karnataka Geographic Information System
KML	Keyhole Markup Language
KVK	Krishi Vigyan Kendras
KSNDMC	Karnataka State Natural Disaster Monitoring Centre
LRI	Land Resource Inventory
MIS	Management Information System
MZ	Militarized Zone
NSDI	National Spatial Data Infrastructure
OGC	Open Geospatial Consortium
PDF	Portable Document Format
PIN	Personal Identification Number
PoP	Package of Practices
PSU	Public Sector Undertaking
RDBMS	Relational Database Management System
RSK	Raitha Samparka Kendras
SAC-SMA	Sacramento Soil Moisture Accounting
SAN	Storage Area Network
SCC	State Call Centres
SDK	Software Development Kit
SMS	Short Message Service
SRS	Software Requirement Specifications
SWS	Sub Watershed
UPS	Uninterruptible power sources
URL	Uniform Resource Locator
URN	Unique Reference Number / Unique Registration Number
USB	Universal Serial Bus
WDD	Watershed Development Department
MWS	Micro Watershed
HTML	Hypertext Markup Language



## 2. DESIGN OVERVIEW

The Business Process workflow used in the system can be broken down into three tiers:-

- 1) The Client Tier with the HTML and the messages that are interchanged
- 2) The middle tier which comprises of service mix and the Server with the business Logic
- 3) The Back end tier with the database.



*Figure 2-1 : An overview of Solution Design*

## 3. SOLUTION ARCHITECTURE OF LRI PORTAL

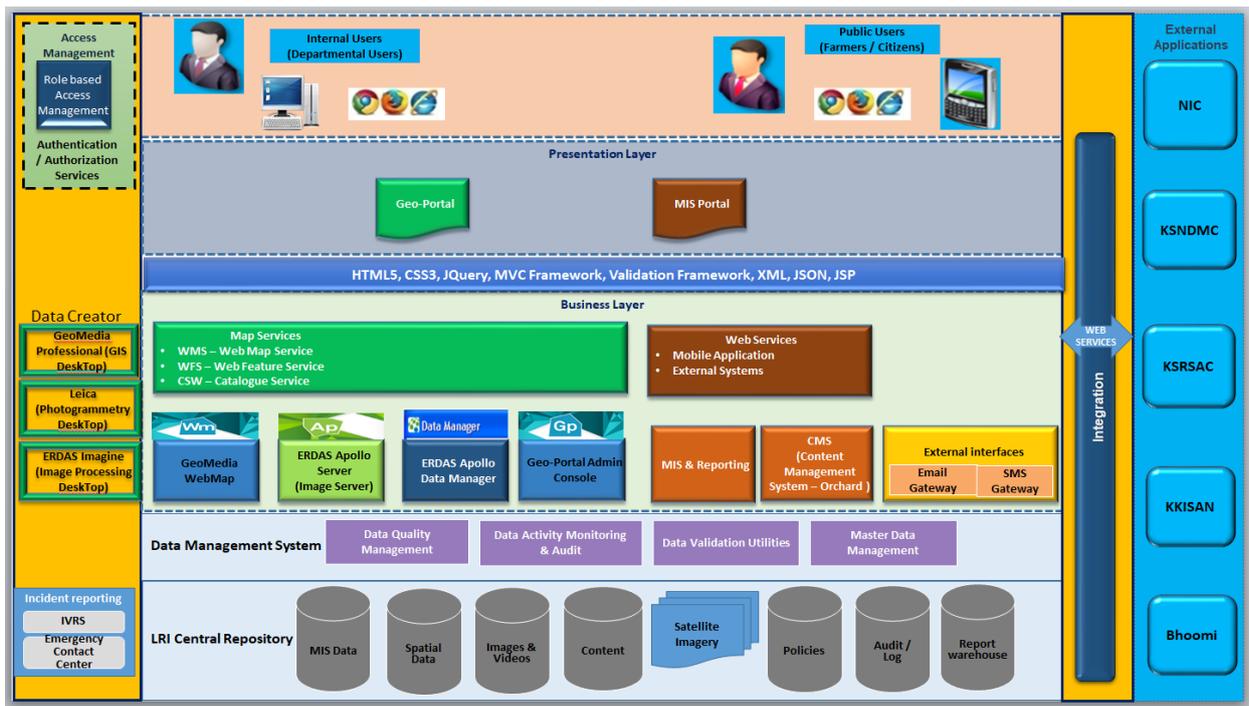


Figure 3-1 Architecture Diagram

Land Resource Inventory Digital Library portal comprises of LRI Digital Library, GeoPortal, Decision Support Systems and LRI and Clearing House. The overall solution and interfaces is built around industry standard Intergraph’s GeoSpatial Server – Professional WorkGroup Bundle consisting of Apollo, WebMap & GeoPortal Servers. The data creator suite comprises of GeoMedia, Leica Photogrammetry and ERDAS Imagine

### 3.1 ERROR HANDLING

As the architecture is three tires, exception handling was done on each layer separately. The layer that was faced with an exception, raise a new exception to the upper layer if needed. The final layer which is UI decides the proper message to show to PATH users and with the current implementation, UI usually redirect the user to a special page that contains the proper message.

Following best practices/methods shall be adopted for error handling in LRI Geo-Portal.

- MVC HandleErrorAttribute
- Controller.OnException method
- HttpApplication Application\_Error event

There are two critical things that will be addressed with error handling:

1. Gracefully handling errors and show users a friendly error page
2. Logging errors so that those can be tracked and better handled

#### MVC HandlerErrorAttribute to Customize Responses



- The `HandleErrorAttribute` inherits from `FilterAttribute` and will be applied to an entire controller or individual controller action methods. It works perfectly for **tailoring specific error pages** for a specific MVC controller or action method. The `HandleErrorAttribute` gives further fine-grained control.

### MVC Controller `OnException` to Customize Responses

`OnException` provides more flexibility. It works with all HTTP status codes, and not just 500 level responses. It also gives you the **ability to log the errors!**

`OnException` will be implemented in the scenarios where there is need to present Geo-Portal users' custom MVC views or custom log exceptions. It provides more flexibility than `HandleErrorAttribute` and does not require `customErrors` to be enabled in `Web.Config` file.

### HttpApplication `Application_Error` as Global Exception Handler

HttpApplication's `Error` even provides the best mechanism to collect and log all unhandled application errors.

## 3.2 WEB SERVICES

### 3.2.1 REST WEBSERVICES

REST Webservices will be developed for accessing LRI Geo-Portal functionalities desired on the mobile application. Following is the sample REST web service request and response details:

#### 3.2.1.1 REQUEST

Login

Returns json data about a login user id.

**URL :** `api/checkUser`

**Method:** POST

##### 3.2.1.1.1 REQUEST FORMATS

- `application/json, text/json`

Sample:

```
{
  "Username": "Vishal1",
```



```
"Password": "v@123"
}
```

- **application/xml, text/xml**

Sample:

```
<UserModel xmlns:i="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://schemas
.datacontract.org/2004/07/WDDServices.Models.ViewModel">
  <Password>v@123</Password>
  <Username>Vishal1</Username>
</UserModel>
```

### 3.2.1.1.2 RESPONSE

Success: 200 Ok

application/json

Sample:

user id :1170

Failed: 400 Bad Request

- **application/json**

Sample:

```
{
  "Message": "Object reference not set to an instance of an object."
}
```

### 3.2.1.2 ERROR RESPONSE

The response to an error scenario consists of an *Error* element with the following attributes:

Error Attribute	Description
Code	Error Code
Message	Message describing error

## 3.2.2 SOAP



Consuming Web service from other applications such as KSNDMC, Kksian, Bhoomi, KRSAC, NIC will be thorough REST or SOAP. In case it SOAP following will be sample request and response

### 2.1.6 REQUEST

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <wsse:Security
      xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd" soap:mustUnderstand="1">
      <wsse:UsernameToken
        xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd"
        xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd" wsu:id="UsernameToken-1">
        <wsse:Username>
          admin
        </wsse:Username>
        <wsse:Password
          Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText">
          admin
        </wsse:Password>
        </wsse:UsernameToken>
      </wsse:Security>
    </soap:Header>
    <soap:Body>
      <ns2:getVersion xmlns:ns2="http://services.ws.rss.polycom.com/">
    </ns2:getVersion>
    </soap:Body>
  </soap:Envelope>
```

### 2.1.7 RESPONSE

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <ns1:getVersionResponse xmlns:ns1="http://services.ws.rss.polycom.com/">
      <return>
        6.0.0.0 rev 22241
      </return>
    </ns1:getVersionResponse>
  </soap:Body>
</soap:Envelope>
```

## 4. MODULES

Following are the modules and interfaces being deployed, the details of which are elaborated in subsequent sections.



<b>Modules &amp; Interfaces - GeoPortal</b>		
User Registration	Good Agricultural Practices (GAPs)	Announcements
User Login	Fisheries	About This Portal
Update Static Information	Livestock	Terms of Use
Update Dynamic Information	Government Policies And Initiatives	Visitor's Summary
Remainder mail/sms to farmer	Schemes and Programs	Comprehensive District Agriculture Plan (CDAP)
Registered farmer's list	Statistics	Farm Level Planning
Crop Information	Tenders	Agricultural Courses
Soil Health	Publications	Training and Extension
Diseases And Remedial Measures	Marketing Infrastructure	Procurement Points
Seed Section	Storage Facility	Monitoring Implementation
Pesticides Section	Technologies	Natural Disaster
Fertilizer Section	News/Events	Protected Cultivation
View FAQ	Directories	Farm Structure
Add New Query	Success Stories	Map
Query Acceptance And Expert Advice	District MAP	Credit Linkages
Farm Machinery	Important Links	Agricultural Insurance
Weather and Agromet Advisory	Download Forms	RTI
Flash Season Specific Information	Help	User DASHBOARDS
Harvesting	Feedback	Publish Map Services
Organic Farming	General Information Section	Get Feature Information
Irrigation	Search	Edit Feature Attribute Information
Drought Relief Land Management	Sitemap	Find Location
Map viewer	Metadata Search	Data Download
Fodder	Contact Us	Data Migration
<b>Modules &amp; Interfaces - Clearing House</b>		
Map viewer	Metadata Search	Data Download
<b>Modules &amp; Interfaces - Decision Support Systems:</b>		
DSS For Soil and Water Conservation Plan	DSS For Nutrient Management	DSS For Crop Water Requirement
DSS For Crop Selection (Based on Physical Suitability and B:C Ratio)	DSS For Surface Runoff	DSS For Water Balance Requirement
DSS For Land Capability Classification	DSS For Designing of Farm Pond size	DSS For Water Budgeting Requirement

## 4.1 USER REGISTRATION

### 4.1.1 REQUIREMENT

FR\_LRIP\_002 – Registration of farmer.

This service aims at registering the department, non-department users (farmer/citizen) and Dealer updating the farmer's database.

### 4.1.2 REQUIREMENT UNDERSTANDING

A service is required using which user (department and non-department) will be registered in LRI Geoportal. After successfully registering into Geoportal using the necessary information, mail will be sent to user's mail id and database will be updated with user information. There will be two ways to register the user.

- By using "[Don't have an account? Register](#)" link on Login page of Geoportal. This will be used by department, non-department (farmer/citizen) and Dealer users.



- By using 'Farmer Registration' available under Farmer's Corner: This will be used by non-department (farmer/citizen) users.

### 4.1.3 MODULES

- A registration option using 'Login'.
- A registration option using 'Famer's corner'.
- A web form for departmental user input.
- A web form for non-departmental (farmer/citizen) user input.
- A web form for Dealer user input.
- Validations
- Data storage
- A Web page for email activation.

### 4.1.4 MODULE DESCRIPTION

#### 4.1.4.1 REGISTRATION OPTION USING LOGIN.

- A login page will be displayed to user when user clicks in 'Login' on web portal.
- New user will click '[Don't have an account? Register](#)' link.
- A user will be prompted with 'Department', 'Citizen as Farmer' and 'Dealer' options.
- If user selects 'Department' option, the department user registration form will be displayed to user to input the department information.
- If user selects 'Citizen' option, a farmer registration form will be displayed to user for the input.
- If user selects 'Dealer' option, a dealer registration form will be displayed to user for the input.

#### 4.1.4.2 REGISTRATION OPTION USING FARMER'S CORNER

- A new user will click on farmer registration link under Farmer Corner.
- A farmer registration form will be displayed to user for the input.

#### 4.1.4.3 WEB FORM FOR DEPARTMENTAL USER INPUT

A web form will be developed, which will accept input from user in the form of textbox and Dropdown. For list of input fields, refer section 4.1.11.24.1.11.1. Mandatory fields will be marked as '\*' on web form. A 'Register' button will be provided to submit the details in to database. When user will click on 'Register' button, some validations will be performed and after successful validations input data will be stored in respective tables. Please refer 'Validations' and 'Data Storage' modules.



#### 4.1.4.4 WEB FORM FOR NON-DEPARTMENTAL (FARMER/CITIZEN) USER INPUT

A web form will be developed, which will accept input from user in the form of textbox and Dropdown. For list of input fields, refer section 4.1.11.2. Mandatory fields will be marked as ‘\*’ on web form. A ‘Register’ button will be provided to submit the details in to database. When user will click on ‘Register’ button, some validations will be performed and after successful validations input data will be stored in respective tables. Please refer ‘Validations’ and ‘Data Storage’ modules. After the successful submission of data, user will be prompted with yes or no option to update ‘Static Information’.

- If user selects no, then user will be redirected to home page.
- If user selected yes, then user will be redirected to ‘Static Information’ web form.

#### 4.1.4.5 WEB FORM FOR DEALER USER INPUT

A web form will be developed, which will accept input from user in the form of textbox and Dropdown. For list of input fields, refer section 4.1.11.3. Mandatory fields will be marked as ‘\*’ on web form. A ‘Register’ button will be provided to submit the details in to database. When user will click on ‘Register’ button, some validations will be performed and after successful validations input data will be stored in respective tables. Please refer ‘Validations’ and ‘Data Storage’ modules. After the successful submission of data, user will be redirected to ‘Additional Information’ web form where user will update information about his agency/firm/shop.

#### 4.1.5 VALIDATIONS

- A function will validate, if all mandatory fields are populated.
- Format of email and mobile number.
  - Email will be validated for ‘username@domain’ format.
  - Mobile number will be validated for numeric 10 digits.
- Validate password and confirm password.
- Validate if length of password (Minimum 6 characters).
- Validate strong password (Password should be combination of character and numbers).
- In case of validation failure, error messages will be displayed to user.
- Function will then validate if user already exists based on username, mobile number and email id. If any one of the three parameters already exists, then error message will be displayed to user.



- After successful validation, OTP (one time password) will be generated and send to user on his mobile number provided as input parameter.
- User will then enter the OTP in the 'OTP' textbox and click on 'Validate' button.
- Function will then validate the OTP.
- In case if OTP does not get match, error message will be displayed to user.
- After successful validation of OTP, unique query string (GUID) and unique userid will be generated for email verification.
- This query string and userid along with activation link will be send to user on his email provided as input parameter.

#### 4.1.6 CODE SNIPPET:

Code for sending OTP

```
public void SendSMS(string msg, string mobileno)
{
    ///SMS GATEWAY PROVIDER PATH
    string url = "http://XXXXProvider.com?phoneNumber={0}&MsgTxt={1}";
    string url1 = String.Format(url, mobileno, msg);

    //create Web Request object for the url
    HttpWebRequest req = (HttpWebRequest)WebRequest.Create(url1);

    // get the response from the web request
    HttpWebResponse res = (HttpWebResponse)req.GetResponse();

    // read the response from the WebResponse in to a stream
    Stream s = res.GetResponseStream();
    StreamReader rdr = new StreamReader(s);
    string result = rdr.ReadLine();
    s.Flush();
    s.Close();
}
```

Code for sending username and password

```
public void SendMail(string SmtServerHost, string smtpUser, string SmtPassword,
string mailFrom, string mailToList, string subject, string body)
{
    MailMessage objeto_mail = new MailMessage();
    SmtClient client = new SmtClient();
    client.Port = 25;
    client.Host = SmtServerHost;
    client.Timeout = 10000;
    client.DeliveryMethod = SmtDeliveryMethod.Network;
    client.UseDefaultCredentials = false;
```



```

client.Credentials = new System.Net.NetworkCredential(smtpUser,
Smtppassword);
objeto_mail.From = new MailAddress(mailFrom);
foreach (string toMail in mailToList.Split(','))
{
    objeto_mail.To.Add(new MailAddress(toMail));
}
objeto_mail.Subject = subject;
objeto_mail.Body = body;
client.Send(objeto_mail);
}

```

#### 4.1.7 DATA STORAGE

After successful validations, data will be stored in following tables.

##### 4.1.7.1 USER\_LOGIN\_TABLE:

For both departmental and non-departmental users.

Column Name	Values
User_ID	System generated unique ID
UserName	Input from web form
Password	Input from web form
UserType_ID	Departement or Non-Department depend on option selected by user
MobileNumber	Input from web form
EmailID	Input from web form
IsMobileVerified	Populated this field with 'Y'
IsEmailVerified	This is null until user verify the email verification link.
	Once user activates the link, populated this field with 'Y'
EmailActivationCode	Populate this field with Query String generated for email verification
IsLoggedin	Populated this field with 'Y' if user is Active

##### 4.1.7.2 USER\_PROFILE\_DEPARTMENT:

For departmental users



Column Name	Values
ID	System generated unique ID
User_ID	Reference value from User_Login_Details table
Landline_Number	Input from web form
Department	Input from web form
Designation	Input from web form
Role	Updated by Admin
Location	Input from web form
First_Name	Input from web form
Middle_Name	Input from web form
Last_Name	Input from web form

#### 4.1.7.3 USER\_PROFILE\_FARMER:

For non-departmental (farmer/citizen) users

Column Name	Values
ID	System generated unique ID
UserID	Reference value from User_Login_Details table
First Name	Input from web form
Middle Name	Input from web form
Last Name	Input from web form
LandLine Number	Input from web form
IMEI Number	Input from web form
FarmerType	Input from web form
Address 1	Input from web form
Address 2	Input from web form
Village	Input from web form
Pin Code	Input from web form
Block,	Input from web form
District,	Input from web form



Column Name	Values
State	Input from web form
Mobile Number	Input from web form

#### 4.1.7.4 MASTER\_DEALER:

For Dealer users

Column Name	Values
ID	System generated unique ID
Dealer	Reference value from User_Login_Details table
District	Input from web form
Taluk	Input from web form
Dealer name	Input from web form
Office_Address	Input from web form
Phone_Number1	Input from web form
Phone_Number2	Input from web form
License_Number	Input from web form
License_Validity	Input from web form
Is_Active	Populated this field with 'Y' if user is Active
FirstName	Input from web form
LastName	Input from web form

#### 4.1.8 MODULE: WEB PAGE FOR EMAIL ACTIVATION

A web page will be created which will act as activation link and accept the query string and userid as input parameter. Function in web page will

- Validate the query string with 'EmailActivationCode' from user\_login\_details table for that particular userid.
- In case of validation failure, error message 'Not a valid link' will be displayed to user.
- After successful validation, message 'Email verification completed successfully' will be displayed to user.



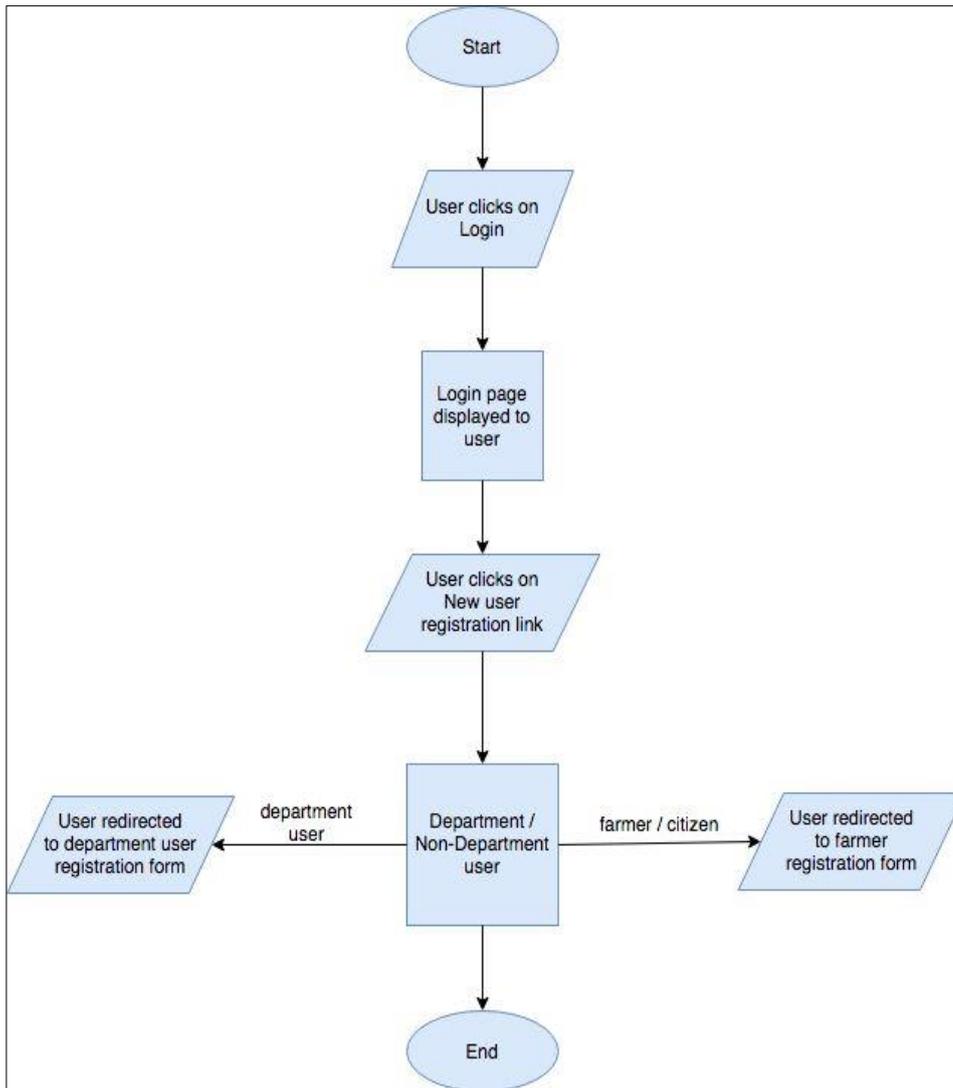
- 'IsEmailVerified' in user\_login\_details table will be updated as 'Y'.

#### 4.1.9 VALIDATION AND ERROR MESSAGES

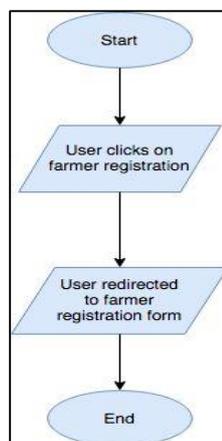
Criteria	Message
First Name not entered	Please enter First name
Last Name not entered	Please enter Last name
UserName not entered	Please enter UserName
Password not entered	Please enter Password
Confirm Password not entered	Please enter Confirm Password
Address1 not entered	Please enter Address1
Village not selected	Please select Village
Block not selected	Please select Block
District not selected	Please select District
State not selected	Please select State
Mobile Number not entered	Please enter Mobile Number
Email Id not entered	Please enter Email ID
Farmer Type not selected	Please select Farmer Type
Invalid email format. @ missing	Email ID is not in proper format. Please include '@' in email id
Invalid email format. .com missing	Email ID is not in proper format. Please include '.com' in email id
Invalid mobile format. Contains character	Mobile number should not contains characters.
Invalid mobile format. Number greater than 10 digits	Mobile number should be 10 digit
Password and Confirm Password Mismatch	Mismatch between password and confirm password
User with given email id already exists	User with <email id> already exists
User with given mobile number already exists	User with <mobile> already exists
User with given username already exists	User with <username> already exists
Invalid OTP	Invalid OTP. Please re-enter OTP

#### 4.1.10 LOGICAL FLOW DIAGRAM

#### 4.1.10.1 REGISTRATION OPTION USING LOGIN

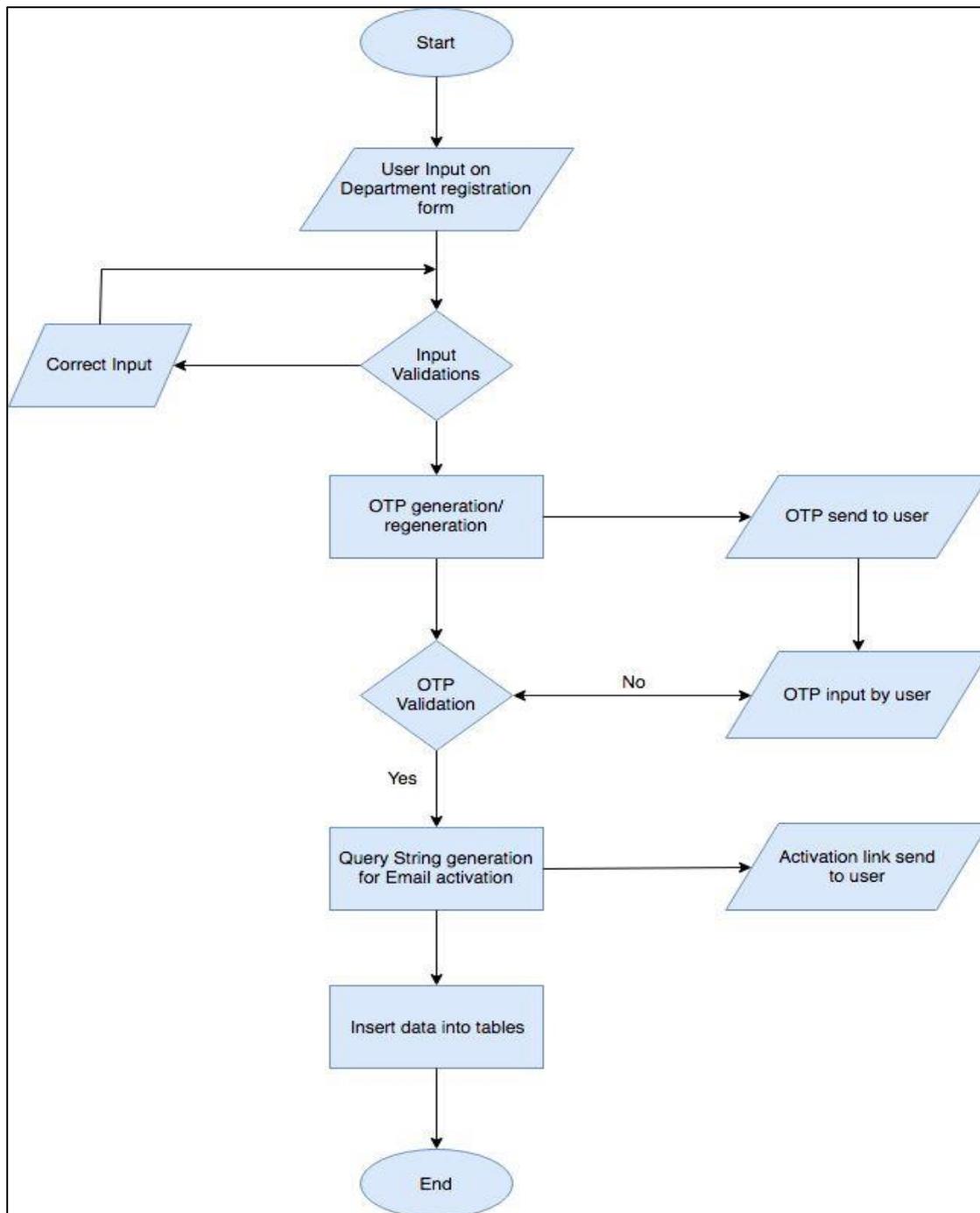


#### 4.1.10.2 REGISTRATION OPTION USING FARMERS CORNER



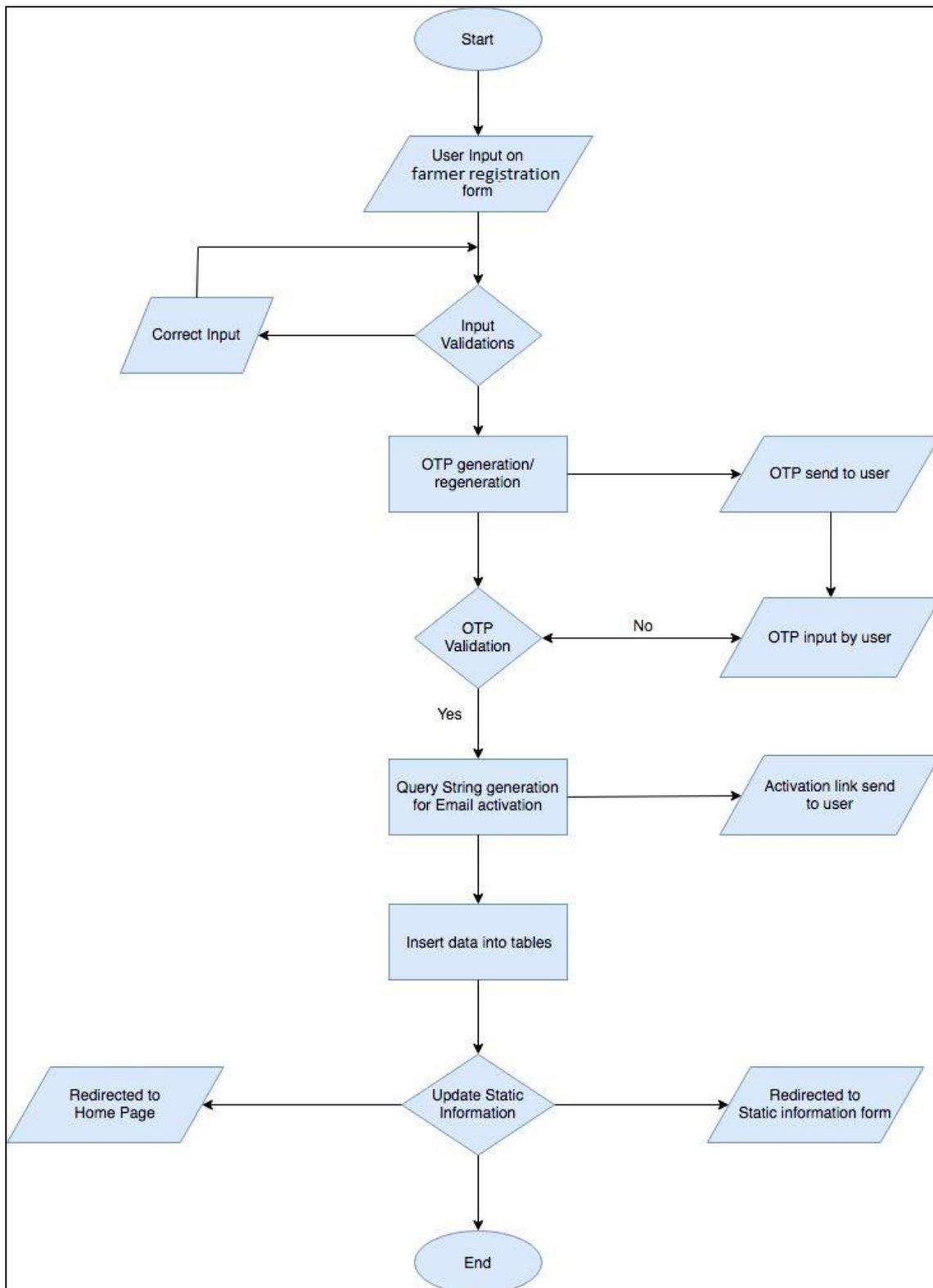


### 4.1.10.3 WEB FORM FOR DEPARTMENT USER WITH VALIDATIONS AND DATA STORAGE

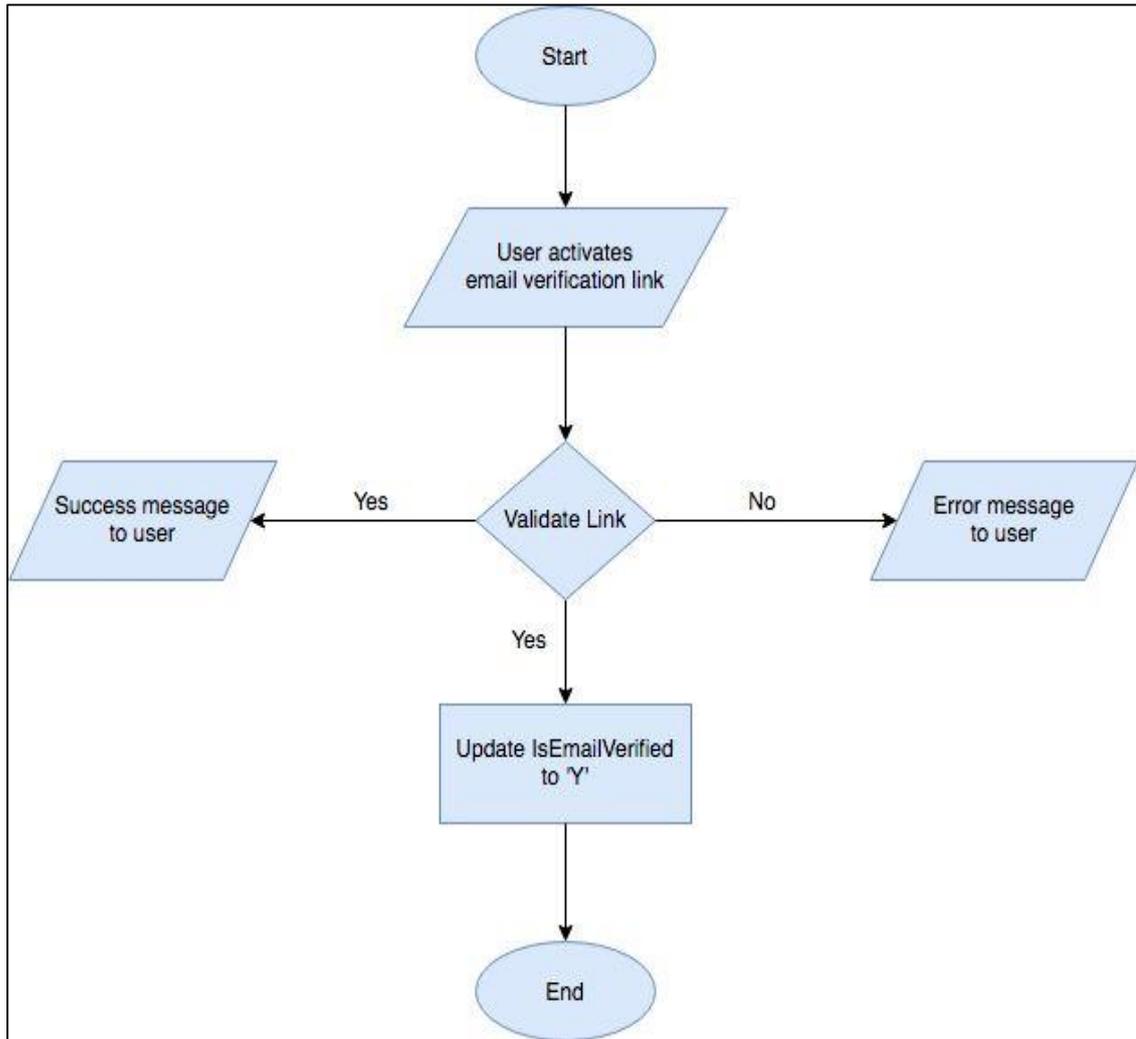




#### 4.1.10.4 WEB FORM FOR FARMER/CITIZEN WITH VALIDATIONS AND DATA STORAGE



#### 4.1.10.5 WEB PAGE FOR EMAIL ACTIVATION



#### 4.1.11 TECHNICAL DESCRIPTION

##### 4.1.11.1 INPUT FIELDS ON DEPARTMENT USER REGISTRATION WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
First Name	Yes	Textbox	
Middle Name	No	Textbox	
Last Name	Yes	Textbox	
User Name	Yes	Textbox	
Password	Yes	Textbox	
Confirm Password	Yes	Text box	
Mobile Number	Yes	Textbox	
Landline Number	No	Textbox	
Email ID	Yes	Textbox	
Department	Yes	Dropdown	



Attribute Name	Mandatory	Input Type	Remark
Designation	Yes	Dropdown	
Location	Yes	Dropdown	

#### 4.1.11.2 INPUT FIELDS ON NON-DEPARTMENT (FARMER/CITIZEN) USER REGISTRATION WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
ID	No	Textbox	
UserID	No	Textbox	
First Name	Yes	Textbox	
Middle Name	No	Textbox	
Last Name	Yes	Textbox	
LandLine Number	No	Textbox	
IMEI Number	No	Textbox	
FarmerType	Yes	Textbox	
Address 1	Yes	Textbox	
Address 2	No	Dropdown	
Village	Yes	Dropdown	
Pin Code	Yes	TextBox	
Block,	Yes	Dropdown	
District,	Yes	Dropdown	
State	Yes	Dropdown	
Mobile Number	Yes	Textbox	

#### 4.1.11.3 INPUT FIELDS ON DEALER USER REGISTRATION WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
DealerID	Yes	Textbox	
District	Yes	Dropdown	
Taluka	Yes	Dropdown	



Attribute Name	Mandatory	Input Type	Remark
Dealer_Name	Yes	Dropdown	
Office_Address	Yes	Dropdown	
Phone_Number1	Yes	Textbox	
Phone_Number2	No	Textbox	
License_Number	Yes	Textbox	
FirstName	Yes	Textbox	
LastName	Yes	Textbox	

#### 4.1.11.4 TABLE DEFINITIONS USED FOR THIS REQUIREMENT.

##### 4.1.11.4.1 *USER\_LOGIN\_DETAILS*

Column Name	Data type	Remark
User_ID		Primary Key /Unique Id with Sequence
UserName	nVarchar	
Password	nVarchar	
UserTypeID	Integer	Reference key from MASTER_USER_TYPE table
Mobile_Number	Integer nVarchar	
Email_ID	nVarchar	
IsEmailVerified	Bit	
IsMobileVerified	Bit	
EmailActivationCode	uniqueidentifier	
IsLoggedIn	Bit	

##### 4.1.11.4.2 *USER\_PROFILE\_FARMER*

Column Name	Data type	Remark
ID	NUMBER	Primary Key /Unique Id with Sequence
User_ID	NUMBER	Reference Key from USER_LOGIN_DETAILS table
First_Name	VARCHAR(50)	
Middle_Name	VARCHAR(50)	
Last_Name	VARCHAR(50)	
Landline_Number	NUMBER	



Column Name	Data type	Remark
Mobile_Number	NUMBER	
IMEI_Number	VARCHAR(100)	
Farmer_Type	Integer	
Address_1	VARCHAR(100)	
Address_2	VARCHAR(100)	
State	Integer	
District	Integer	
Block	Integer	
Village	Integer	
Pin_Code	Integer	
Father_Name	VARCHAR2(50)	
Mother_Name	VARCHAR2(50)	
Gender	Integer	
DOB	DATE	
Marital_Status	Integer	
Voter_ID	VARCHAR2(50)	Integer
Ration_Card	VARCHAR2(50)	
Aadhar_Card	VARCHAR2(50)	
Driving_License	VARCHAR2(50)	
KCC_No	VARCHAR2(50)	
NPR	VARCHAR2(50)	
Fisherman_Biometric_Card	VARCHAR2(50)	
Personal_Identification_Mark	VARCHAR2(50)	
Education_Qualification	Integer	Values from table Education_Qualification_Picklist
Other Qualification	VARCHAR2(50)	
Cast	Integer	
Religion	Integer	
Minority	Bit	
Photo_ID	Integer	
Economical_Status	Integer	

#### 4.1.11.4.3 USER\_PROFILE\_DEPARTMENT

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id with Sequence
User_ID	Integer	Reference Key from USER_LOGIN_DETAILS table
First_Name	nVarchar	
Last_Name	nVarchar	
Landline_Number	nVarchar	
Department_ID	Integer	
Designation_ID	Integer	
Location_ID	Integer	



Column Name	Data Type	Remark
Role_ID	Interger	

## 4.2 USER LOGIN

### 4.2.1 REQUIREMENT

By entering username and password, user will be able to Login to the geoportal. The login page will also have the “Forgot Password”, “Forgot Username” and “New User Registration” links.

### 4.2.2 REQUIREMENT UNDERSTANDING

A login page will be developed using which user will be able to log into the application and access the functionalities depend on access role. Along with login option, forgot password, forgot username and new user registration facilities will be available on login page.

### 4.2.3 MODULES

- web form for input
- Login Verification
- Forgot Password
- Forgot Username
- New User Registration

#### 4.2.3.1 WEB FORM FOR INPUT

- User will click on ‘Login’ on landing page of the application.
- System will redirect page to login page.
- User will then input the username and password and click on ‘Login’ button.
- Function will verify the login information. Please refer module login verification for details.
- If user forgot the user name then, user will click on ‘Forgot Username’. Please refer module forgot username for details
- If user forgot the password then, user will click on ‘Forgot Password’. Please refer module forgot password for details.
- User will click on ‘Don't have an account? Register’ in case user is new. Please refer section 4.1 User Registration for more details.



#### 4.2.3.2 LOGIN VERIFICATION

- Function will validate username and password in User\_Login\_Details. If username does not exist then error message will be displayed to user. If password does not match, then error message will be displayed to user.
- Function will also check User Type. If usertype\_id is 'non-department' (citizen/farmer), then function will get default roles from configuration file. If usertype\_id is 'department', then function will get role\_id from **User\_Profile\_Department** table.
- Using this role\_id, function will fetch role from User\_Roles table. According to the role, respective functionalities will be enabled for user. List of roles and functionalities will be maintained in configuration file.
- Record will be inserted in the User\_Access\_Logs for the successful login.

#### 4.2.3.3 FORGOT PASSWORD

- When user clicks on forgot password, system will redirect the page to 'Forgot Password' page.
- User will enter registered username. Function will check if provided username exists in User\_Login\_Details. If does not exist then error message will be displayed to user. System will fetch mobile number and email id associated with the user name.
- The page will have the check box for selecting registered mobile number and email ID to send the OTP.
- User will select Radio Button of Mobile or Email ID and click on submit button
- After successful verification, function will generate the OTP (one time password) and will send to user on registered mobile number/ email.
- User will then enter the OTP in the 'OTP' textbox and click on 'Validate' button.
- .Net function will then validate the OTP. Same code from section ' User Registration' will be used to generate and validate the OTP.
- In case if OTP does not match, error message will be displayed to user.
- After successful validation of OTP, user can reset the password.
- Function will update the new password in **User\_Login\_details** for respected user.



#### 4.2.3.4 FORGOT USERNAME

- When user clicks on forgot username, system will redirect the page to 'Forgot Username' page.
- User will enter registered email id on submit button.
- Function will get username for provided email id. If email id does not exist then error message will be displayed to user.
- If email id exists, then function will send the username on registered mail id

#### 4.2.3.5 NEW USER REGISTRATION

Details: Refer section 'User Registration'.

#### 4.2.3.6 VALIDATION AND ERROR MESSAGES

Criteria	Message
Username not entered	Please enter UserName
Password not entered	Please enter Password
UserName not exists	Not a valid Username
Password not exists	Not a valid Password
Invalid email format. @ missing	Email ID is not in proper format.
	Please include '@' in email id
Invalid email format. .com missing	Email ID is not in proper format.
	Please include '.com' in email id
Email ID not exists	Not a valid Email ID
Invalid OTP	Invalid OTP. Please re-enter OTP

#### 4.2.4 TECHNICAL DESCRIPTION

##### 4.2.4.1 INPUT FIELDS ON LOGIN WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
UserName	Yes	Textbox	
Password	Yes	Textbox	

**4.2.4.2 INPUT FIELDS ON FORGOT PASSWORD WEB FORM.**

Attribute Name	Mandatory	Input Type	Remark
UserName	Yes	Textbox	
Mobile Number	No	Radio Button	Either one must be selected by user
Email ID	No	Radio Button	

**4.2.4.3 INPUT FIELDS ON FORGOT USERNAME WEB FORM.**

Attribute Name	Mandatory	Input Type	Remark
Mobile No	Yes	Textbox	

**4.2.4.4 TABLE DEFINITIONS USED FOR THIS REQUIREMENT.****4.2.4.4.1 USER\_LOGIN\_DETAILS**

Column Name	Data Type	Remark
User_ID		Primary Key /Unique Id with Sequence
UserName	nVarchar	
Password	nVarchar	
UserTypeID	Integer	Reference key from MASTER_USER_TYPE table
Mobile_Number	nVarchar	
Email_ID	nVarchar	
IsEmailVerified	Bit	
IsMobileVerified	Bit	
EmailActivationCode	uniqueidentifier	
IsLoggedIn	Bit	

**4.3 UPDATE STATIC INFORMATION****4.3.1 REQUIREMENT**

FR\_LRIP\_003– Update Static Information. This service aims at updating the Farmers Database.

*With Reference to FRS Document*



### 4.3.2 REQUIREMENT UNDERSTANDING

- A service is required using which farmer/citizen will update the static information.
- Static information includes personal details, family details, farm details, Agriculture details, financial details and other details. This information will be updated in database tables for respective user.
- After the update, email will be sent on user’s registered email-Id.
- Service will be available under Farmer’Corner - > Update Static Information.

### 4.3.3 MODULES

After successful login, user will click on ‘Update Static Information’. A web page with following tabs will be displayed to user.

- Personal Details
- Farm Details
- Agriculture Details
- Financial Details
- Other Details

### 4.3.4 PERSONAL DETAILS

Text boxes and dropdowns with predefined list will be provided to user to enter/select/view the personal information. User will also be able to upload and view the photo. A grid view will be provided to view, add, edit and delete the details of family members. Mandatory fields will be marked as “\*”. “Save & Next” button will be provided on tab using which user will save the details in database tables and move to next tab. Validations will be done for required fields before adding/updating in following tables. If required fields are not populated then error message will be displayed to user.

Function will first add/update the data in Photo table and then other tables.

#### 4.3.4.1 USER\_PROFILE\_FARMER:

In this table, data will be updated in following fields against the UserID of selected user.

Column Name	Values
Father_Name	Father Name text box



Column Name	Values
Mother_Name	Mother Name text box
Gender	Gender Radio Option. Male or Female
DOB	DOB date picker
Marital_Status	Marital Status DropDown. Married, Single
Voter_ID	Voter ID text box
Ration_Card	Ration Card text box
Aadhar_Card	Aadhar Card text box
Driving_License	Driving License text box
KCC_NO	KCC NO text box
NPR	NPR text box
Fishermen_Biometric_Card	Fishermen Biometric Card text box
Personal_Identification_Mark	Personal Identification text box
Educational_Qualification	Educational Qualification dropdown
Other_Education	Other Education text box
Economic Status	Economic Status drop down
Photo_ID	ID value from Photo table

#### 4.3.4.2 FARMER\_FAMILY\_MEMBER:

In this table, data will be added/updated in following fields against the ID from user\_profile\_farmer table. A new row will be added for each member as per number of rows in grid view.

Column Name	Values
ID	System generated value using the sequence for each member
Farmer_ID	ID value from user_profile_farmer table. This shall be same for each member of selected user
First_Name	First Name column of datagrid view
Middle_Name	Middle Name column of datagrid view
Last_Name	Last Name column of datagrid view
Gender	Gender column of datagrid view
Relationship	Relationship column of datagrid view
Age	Age column of datagrid view
Educational_Qualification	Educational_Qualification column of datagrid view
Other_Qualification	Other_Qualification column of datagrid view



Column Name	Values
Income	Income column of datagrid view
Photo_ID	ID value from Photo table

#### 4.3.4.3 FARMER\_PHOTO:

Photo of each user and Photo of each family member will be added /updated in this table

ColumnName	Values
ID	System generated value using the sequence
FarmerID	ID value from user_profile_farmer table. This shall be same for each member of selected user
Photo	Image Source

#### 4.3.4.4 CODE\_SNIPPET:

Following queries will be used to fetch the personal details from database table

- Select upf.Father\_Name, upf.Mother\_Name, upf.Gender, upf.DOB, upf.Marital\_Status, upf.Voter\_ID, upf.Ration\_Card, upf.Aadhar\_Card, upf.Driving\_License, upf.KCC\_NO, upf.NPR, upf.Fishermen\_Biometric\_Card, upf.Personal\_Identification\_Mark, upf.Educational\_Qualification, upf.Other\_Education, pht.photo from user\_profile\_farmer upf,photo pht where upf.photo\_id = pht.id and upf.id = <userid>*
- select ffm.First\_Name, ffm.Middle\_Name, ffm.Last\_Name, ffm.Gender, ffm.Relationship, ffm.Age, ffm.Educational\_Qualification, ffm.Other\_Qualification, ffm.Income, pht.photo from farmer\_family\_member ffm,user\_profile\_farmer upf,photo pht where ffm.farmer\_id = upf.id and ffm.photo\_id = pht.id and upf.userid = <userid>*

#### 4.3.5 FARM DETAILS TAB

- On this tab user can add multiple farm details. A main grid view will display the number of farm records of the logged user. When user selects the individual row of grid view, complete details of farm will be displayed in respective text boxes, drop downs and grid view of the form. Initially if there is no record of farm, main grid view will not be visible to user. When user enters the farm details and save, a grid view with the information will be displayed to user.
- If user will be able to add multiple farm details using add button on grid view.



- Text boxes and dropdowns with predefined list will be provided to user to view and enter/select farm details. Multiple check boxes will be provided for irrigation infrastructure details. Grid view will be provided to view, add, edit and delete livestock details related to particular farm. Mandatory fields will be marked as '\*'. A 'Save' button will be provided on tab to save the details in database tables. When user click the button, validations will be run before data is saved in database tables.
- After completion of entering of all farm detail, user will click on 'Next' button, which will take user to next (Equipment Details) tab.
- Also there will be 'Previous' button on this tab which will take user to previous (Personal Details) tab.

#### 4.3.5.1 FARM\_DETAILS:

In this table data will be added / updated in following fields against a farmer\_id. This farmer\_id will be id from user\_profile\_farmer table against logged in userid.

Column Name	Values
ID	System generated value using the sequence for each member
Farmer_ID	ID value from user_profile_farmer table. This shall be same for each member of selected user
Survey_Number	Survey No. text box
Revenue_Village	Revenue Village text box
Subdivision_Number	Survey No. text box
Sub_Survey_Number	Sub Survey No text box
Farm_Size	Farm Size from text box
Soil_Type	Soil Type Drop down
Land_Type	Land Type drop down
Type_Of_Cultivation	Cultivation Type drop down
ManPower	ManPower drop down
Type_Of_Area	Area Type drop down
Crop_Details	Crop Details text box
Crop_Cycles	Crop Cycles text box
Crop_Grown	Crop Grown text box
Type_Of_Irrigation	Irrigation Type drop down
Type_Of_Planting	Planting Type drop down



#### 4.3.5.2 FARM\_IRRIGATION\_INFRASTRUCTURE:

In this table, data will be added/updated in following fields against the farm\_id from farm\_details table.

Column Name	Values
ID	System generated value using the sequence for each member
Farm_ID	ID value from farm_details table. This will be same for each member of selected user
Type	Check box value

#### 4.3.5.3 FARM\_LIVESTOCK\_DETAILS:

In this table, data will be added/updated in following fields against the farm\_id from farm\_details table.

Column Name	Values
ID	System generated value using the sequence for each member
Farm_ID	ID value from farm_details table. This will be same for each member of selected user
Livestock_ID	Animal column of datagrid view (from Master_Livestock).
Age	Age column of datagrid view
Number_Of_Livestocks	No. of animals column of datagrid view

#### 4.3.5.4 MASTER\_LIVESTOCK

Column Name	Values
ID	System generated value using the sequence for each member
Species	
Animal	
Breed	

#### 4.3.5.5 CODE\_SNIPPET:

Following queries will be used to fetch the farm details from database table.

- *Select fd.Survey\_Number, fd.Revenue\_Village, fd.Subdivision\_Number, fd.Sub\_Survey\_Number, fd.Farm\_Size, fd.Soil\_Type, fd.Land\_Type,fd.Type\_Of\_Cultivation,fd.ManPower,*



*fd.Type\_Of\_Area, fd.Tuber\_Crops, fd.Crop\_Details, fd.Crop\_Cycles,fd.Crop\_Grown from farm\_details fd, user\_profile\_farmer upf where fd.farmer\_id = upf.id and upf.userid = <userid>*

- *Select type from farm\_irrigation\_infrastructure fii, farm\_details fd, user\_profile\_farmer upf where fii.farm\_id = fd.id and fd.farmer\_id = upf.id and upf.userid = <userid>*
- *select Livestock,Age,Number\_Of\_Livestocks from farm\_livestock\_details fid, farm\_details fd, user\_profile\_farmer upf where fid.farm\_id = fd.id and fd.farmer\_id = upf.id and upf.userid = <userid>*

### 4.3.6 EQUIPMENT DETAILS

- On this tab, grid view will be provided to user to add, edit and delete the details about farm equipment.
- Second Grid view will be provided to add, edit and delete the source of agriculture inputs like agencies/dealers, Check boxes will also be provided in grid view to select type of product (i.e. Seed, fertilizer, pesticide) which user buys from dealer/agency.
- Third grid view will be provided to add, edit and delete the details about market accessed for produce.
- A button 'Save & Next 'will be provided on tab using which user will save the details in database tables and move to next tab. When user click the button, data will be saved in following tables.
- A 'Previous' button will be provide on tab which will take the user to previous (Farm Details) tab.

#### 4.3.6.1 FARMER\_EQUIPMENT\_DETAILS:

In this table data will be added/updated in following fields against the farmer id. This farmer\_id will be id from user\_profile\_farmer table against logged in userid.

Column Name	Values
ID	System generated value using the sequence for each member
Farmer_ID	ID value from user_profile_farmer table. This will be same for each member of selected user
Equipment_Name	Equipment Name column of Grid view
Equipment_Number	Equipment Number column of Grid view
Equipment_Make	Equipment Make column of Grid view



#### 4.3.6.2 SOURCE\_AGRICULTURE\_INPUT:

In this table data will be added/updated in following fields against the farmer id. This farmer\_id will be id from user\_profile\_farmer table against logged in userid.

Column Name	Values
ID	System generated value using the sequence for each member
Farmer_ID	ID value from user_profile_farmer table. This will be same for each member of selected user
Agency_Name	Agency Name column of Grid view
Agency_Address	Agency Address column of Grid view
Seed	Seed column of Grid view
Fertilizer	Fertilizer column of Grid view
Pesticide	Pesticide column of Grid view

#### 4.3.6.3 MARKET\_ACCESS:

In this table data will be added/updated in following fields against the farmer id. This farmer\_id will be id from user\_profile\_farmer table against logged in userid.

Column Name	Values
ID	System generated value using the sequence for each member
Farmer_ID	ID value from user_profile_farmer table. This will be same for each member of selected user
Market_Name	Market Name column of Grid view
Market_Address	Market Address column of Grid view

#### 4.3.6.4 CODE\_SNIPPET:

Following queries will be used to fetch the equipment and other details from database table.

- *select fed.Equipment\_Name,fed.Equipment\_Number,fed.Equipment\_Make from farmer\_equipment\_details fed,user\_profile\_farmer upf where fed.farmer\_id = upf.id and upf.userid = <userid>*
- *select sai.Agency\_Name,sai.Agency\_Address,sai.Seed,Fertilizer,Pestiside from source\_agriculture\_input sai, user\_profile\_farmer upf where sai.farmer\_id = upf.id and upf.userid = <userid>*



- *select ma.Market\_Name,ma.Market\_Address from market\_access ma, user\_profile\_farmer upf where ma.farmer\_id = upf.id and upf.userid = <userid>*

#### 4.3.7 FINANCIAL DETAILS TAB

- This tab will include grid view to add, edit and delete the user's multiple bank details.
- Second grid view will be provided to add, edit and delete the multiple Insurance details. A separate dropdown will be provided to select economic status of user.
- Third grid view will be provided to add annual income of user from different sources.
- A button 'Save & Next 'will be provided on tab using which user will save the details in database tables and move to next tab. When user click the button, data will be saved in following tables.
- A 'Previous' button will be provide on tab which will take the user to previous (Equipment Details) tab.

##### 4.3.7.1 FARMER\_BANK\_DETAILS:

In this table data will be added/updated in following fields against the farmer id. This farmer\_id will be id from user\_profile\_farmer table against logged in userid.

Column Name	Values
ID	System generated value using the sequence for each member
Farmer_ID	ID value from user_profile_farmer table. This shall be same for each member of selected user
Bank_Name	Bank Name column of Grid view
Other_Name	Name of other than Bank
MICR_Number	MICR Number column of Grid view
Branch_Name	Branch Name column of Grid view
Account_Number	Account Number column of Grid view
Loan_Taken	Loan Taken column of Grid view
Loan_Amount	Loan Amount column of Grid view
Kisan_Credit_Card	Kisan Credit Card column of Grid view

##### 4.3.7.2 FARMER\_INSURENCE\_DETAILS:

In this table data will be added/updated in following fields against the farmer\_id. This farmer\_id will be id from user\_profile\_farmer table against logged in userid.



Column Name	Values
ID	System generated value using the sequence for each member
Farmer_ID	ID value from user_profile_farmer table. This will be same for each member of selected user
Agency_Name	Agency Name column of Grid view
Insurance_Type	Insured Type column of Grid view
Insured_On	Insured On column of Grid view
Policy_Number	Policy Number column of Grid view
Maturity_Date	Maturity Date column of Grid view
Premium	Premium column of Grid view
Payment_Mode	Payment Mode column of Grid view

#### 4.3.7.3 FARMER\_ANNUAL\_INCOME:

In this table, data will be added/updated in following fields against the farmer\_id. This farmer\_id will be the id from user\_profile\_farmer table against logged in userid.

Column Name	Values
ID	System generated value using the sequence for each member
Farmer_ID	ID value from user_profile_farmer table. This shall be same for each member of selected user
Economical_Status	From Farm text box
Livestock_Income	From LiveStock text box
Fisheries_Income	From Fisheries text box
Other_Activities	Other activity column of grid view
Name_Of_Income_Source	Name of Source
Income	Total amount

#### 4.3.7.4 FARMER\_OTHER\_INCOME\_SOURCE

In this table, data shall be added/updated in following fields against the farmer\_id. This farmer\_id shall be the id from user\_profile\_farmer table against logged in userid.

Column Name	Values
ID	System generated value using the sequence for each member
Farmer_ID	ID value from user_profile_farmer table. This shall be same for each member of selected user



Column Name	Values
Source_Name	From Farm text box
Income	Income Activity of grid view

#### 4.3.7.5 CODE\_SNIPPET:

Following queries will be used to fetch the bank and insurance details from database table.

- *select fbd.ID, fbd.Farmer\_ID, fbd.Bank\_Name, fbd.MICR\_Number, fbd.Branch\_Name, fbd.Account\_Number, fbd.Loan\_Taken, fbd.Loan\_Ammount, fbd.Kisan\_Credit\_Card from farmer\_bank\_details fbd, user\_profile\_farmer upf where fbd.farmer\_id = upf.id and upf.userid = <userid>*
- *select fid.ID, Farmer\_ID, fid.Agency\_Name, fid.Insured\_Type, fid.Insured\_On, fid.Policy\_Number, fid.Maturity\_Date, fid.Premium, fid.Payment\_Mode from farmer\_insurance\_details fid, user\_profile\_farmer upf where fid.farmer\_id = upf.id and upf.userid = <userid>*

#### 4.3.8 OTHER DETAILS

- With this tab user will be able to input the details about source of knowledge, House Information, Cast information and extra information like society membership.
- To input details about the source of knowledge, multiple check boxes will be provided.
- To input the house information, text boxes and radio options will be provided.
- Drop Down will be provided to enter the cast information
- Grid view will be provided to add/delete/update information about the society membership.
- “Save” button will be provided on tab using which user will save the details in database tables. When user click the button, data will be saved in following tables.

##### 4.3.8.1 FARMER\_SOURCE\_KNOWLEDGE:

In this table, data will be added/updated in following fields against the farmer\_id. This farmer\_id will be the id from user\_profile\_farmer table against logged in userid.



Column Name	Values
ID	System generated value using the sequence for each member
Farmer_ID	ID value from user_profile_farmer table. This will be same for each member of selected user
State_Agriculture_Departments	From State Agriculture Department check box
KVK	From KVK check box
SAU	From SAU check box
ICAR	From ICAR check box
Helpline	From Helpline check box
Meetings	From Meetings check box
Trainings	From Trainings check box
TV	From TV check box
Radio	From Radio check box
SMS	From SMS check box
Progressive_Farmers	From Progressive Farmers check box
Extension_Workers	From Extension Workers Check boc

#### 4.3.8.2 FARMER\_HOUSE:

In this table data will be added/updated in following fields against the farmer\_id. This farmer\_id will be id from user\_profile\_farmer table against logged in userid.

ColumnName	Values
ID	System generated value using the sequence for each member
Farmer_ID	ID value from user_profile_farmer table. This will be same for each member of selected user
House	House Radio Option
House_Type	House Type Radio Option
House_Size	House Size text box

#### 4.3.8.3 USER\_PROFILE\_FARMER:

In this table, data will be updated in following fields against the UserID of selected user.

Column Name	Values
Cast	Cast dropdown
Religion	Religion text box



Column Name	Values
Minority	Minority Radio Option

#### 4.3.8.4 FARMER\_MEMBERSHIP:

In this table data will be added/updated in following fields against the farmer id. This farmer\_id will be id from user\_profile\_farmer table against logged in userid.

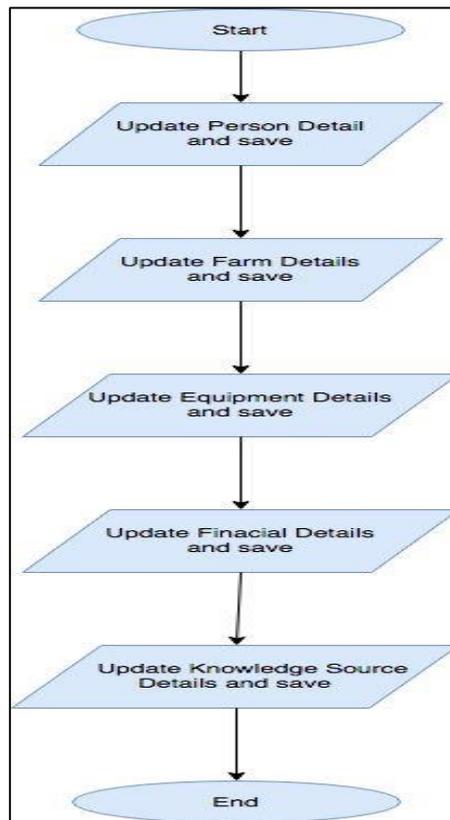
Column Name	Values
ID	System generated value using the sequence for each member
Farmer_ID	ID value from user_profile_farmer table. This will be same for each member of selected user
Membership	Membership text box
Agency_Name	Agency Name text box
Address	Address text box
Membership_Number	Membership Number text box
Issue_Date	Issue Date date picker
Validity_Date	Validity Date date picker

#### 4.3.8.5 CODE\_SNIPPET:

Following queries will be used to fetch the source of knowledge details from database table.

- *select upf.Cast,upf.Religion,upf.Gender,upf.Minority, from user\_profile\_farmer where upf.id = <userid>*
- *select fh.House,House\_Type,fh.House\_Size from farmer\_house fh,user\_profile\_farmer upf where fid.farmer\_id = upf.id and upf.userid = <userid>*
- *select fm.Agency\_Name,fm.Address,fm.Membership\_Number,fm.Issue\_Date,Validity\_Date from farmer\_membership fm,user\_profile\_farmer upf where fid.farmer\_id = upf.id and upf.userid = <userid>*

#### 4.3.9 LOGICAL FLOW DIAGRAM



### 4.3.10 TECHNICAL DESCRIPTION

#### 4.3.10.1 INPUT FIELDS ON PERSONAL DETAILS TAB

Attribute Name	Mandatory	Input Type	Remark
<b>Personal Details Section</b>			
Gender	Yes	Radio Button	
Age (Date of birth)	Yes	Date Picker	
Marital status	Yes	Drop Down	
Father's name	Yes	Text Box	
Mother's name	No	Text Box	
Photo	No	Image	
Identification( Voter id, Ration Card, AADHAAR, Driving License, KCC No., NPR,	At least One	Text Box	Separate text box for each identification



Attribute Name	Mandatory	Input Type	Remark
Fishermen Biometric card)			
Personal Identification Mark	No	Text Box	
Educational Qualification	Yes	Drop Down	Values from Master_Education_Qualification table
<b>Family Details Section - Grid View for multiple entries</b>			
First Name	Yes	Text Box	
Middle Name	No	Text Box	
Last Name	Yes	Text Box	
Gender	Yes	Drop Down	Values from Master_Gender
Relationship with farmer	Yes	Drop Down	Values from Master_Relationship
Age	Yes	Text Box	
Educational qualification	Yes	Drop Down	Values from Master_Education_Qualification
Employed	Yes	Check Box	
Income	Yes	Text Box	If Employed then income is mandatory
Photo	No	Image	

#### 4.3.10.2 INPUT FIELDS ON FARM DETAILS TAB

Farm Details will be displayed in grid view for more than one farm details records.

Attribute Name	Mandatory	Input Type	Remark
<b>Land Details Section</b>			
Survey No	Yes	Text Box	
Revenue Village	Yes	Text Box	
Survey No	Yes	Text Box	
Sub Survey No	Yes	Text Box	
Farm_Size (Acres/Hectares)	Yes	Text Box	
Soil_Type	Yes	Drop Down	Values from Master_Soil_Type
Land_Type	Yes	Drop Down	Values from Master_Land_Type



Attribute Name	Mandatory	Input Type	Remark
Irrigation_Infrastructure	Yes	Check Boxes	Value from Master_Irrigation_Infrastructure
Type_Of_Cultivation	Yes	Drop Down	Values from Master_Cultivation table
ManPower	Yes	Drop Down	Values from Master_Manpower table
Type of area	Yes	Drop Down	Values from Master_Area_Type table
Planting Materials	No	Drop Down	Value from Master_Planting_Material
Tuber Crops	No	Text Box	
Crop Details	No	Text Box	
Crop Cycles	No	Text Box	
Crop Grown	No	Text Box	
<b>LiveStock Details Section - Grid view for multiple entries</b>			
Number of animals owned	Yes	Text box	
Species	Yes	Dropdown	Values from Master_livestock
Animal	Yes	Dropdown	Values from Master_livestock
Breed	Yes	Dropdown	Values from Master_livestock
Age	Yes	Text Box	

#### 4.3.10.3 INPUT FIELDS ON EQUIPMENT DETAILS TAB

Attribute Name	Mandatory	Input Type	Remark
<b>Equipment Details Section- Grid view for multiple entries</b>			
Name of equipment	Yes	Text Box	
Number	No	Text Box	
Make	No	Text Box	
<b>Source Of Agriculture Input Section- Grid view for multiple entries</b>			
Name of dealer/agency	Yes	Text Box	
Address of Dealer/Agency	No	Text Box	
Product	Yes	Check Boxes	Check box for Seed, Fertilizer, Pesticide
<b>Market Accessed For Produce Section - Grid view for multiple entries</b>			
Market_Name	Yes	Text Box	
Market_Address	No	Text Box	

**4.3.10.4 INPUT FIELDS ON FINANCIAL DETAILS TAB**

Attribute Name	Mandatory	Input Type	Remark
<b>BankDetails Section- Grid view for multiple entries</b>			
Bank Name	Yes	Text Box	
MICR Number	Yes	Text Box	
Branch Name	Yes	Text Box	
Account Number	Yes	Text Box	
Loan Taken	Yes	Check Box	
Loan Amount	No	Text Box	If Loan Taken is checked then Loan Ammount is mandatory
Kisan Credit Card Holder	Yes	Check Box	
<b>Insurance Details Section - Grid view for multiple entries</b>			
Name of the agency	Yes	Text Box	
Type of insurance	Yes	Dropdown	
Insured on	Yes	DatePicker	
Policy no	Yes	Text Box	
Date of maturity	Yes	DatePicker	
Premium	Yes	Text Box	
Mode of payment	Yes	Dropdown	
<b>Annual Income Section -</b>			
From Farm	No	Text Box	
From Livestock	No	Text Box	
From Fisheries	No	Text Box	
Other activity	No	Gridview text box	
Income	No	Gridview text box	

**4.3.10.5 INPUT FIELDS ON SOURCE OF KNOWLEDGE TAB**

Attribute Name	Mandatory	Input Type	Remark
State Agriculture Department	No	Check Box	
KVK	No	Check Box	
SAU	No	Check Box	



Attribute Name	Mandatory	Input Type	Remark
ICAR	No	Check Box	
Helpline	No	Check Box	
Meetings	No	Check Box	
Trainings	No	Check Box	
TV	No	Check Box	
Radio	No	Check Box	
SMS	No	Check Box	
Progressive Farmers	No	Check Box	
Extension Workers	No	Check Box	
<b>House Details Section</b>			
House	Yes	Check Box	
Type of House	Yes	Check Box	
Size of House	Yes	Text Box	
<b>House Details Section</b>			
Cast	Yes	Drop Down	Values from Master_Cast
Religion	Yes	Drop Down	Values from Master_Religion
Minority	Yes	Radio Button	
<b>Membership Information Section - Grid view for multiple entries</b>			
Membership in societies	Yes	Drop down	
Name of Agency	Yes	Text Box	
Address of Agency	No	Text Box	
Membership Number	No	Text Box	
Date of Issue	No	Date time	
Date of Validity	No	Date time	

#### 4.3.10.6 FOLLOWING TABLE DEFINITIONS WILL BE USED FOR THIS REQUIREMENT

##### 4.3.10.6.1 *USER\_PROFILE\_FARMER*



Column Name	Data Type	Remark
Id	Integer	Primary Key /Unique Id With Sequence
User_Id	Integer	Reference Key From User_Login_Details Table
First_Name	Varchar(50)	
Middle_Name	Varchar(50)	
Last_Name	Varchar(50)	
Landline_Number	Integer	
Mobile_Number	Integer	
Imei_Number	Varchar(100)	
Farmer_Type	Integer	
Address_1	Varchar(100)	
Address_2	Varchar(100)	
State	Integer	
District	Integer	
Block	Integer	
Village	Integer	
Pin_Code	Integer	
Father_Name	Varchar2(50)	
Mother_Name	Varchar2(50)	
Gender	Integer	
Dob	Date	
Marital_Status	Integer	
Voter_Id	Varchar2(50)	Integer
Ration_Card	Varchar2(50)	
Aadhar_Card	Varchar2(50)	
Driving_License	Varchar2(50)	
Kcc_No	Varchar2(50)	
Npr	Varchar2(50)	
Fisherman_Biometric_Card	Varchar2(50)	
Personal_Identification_Mark	Varchar2(50)	
Education_Qualification	Integer	Values From Table Education_Qualification_Picklist
Other_Qualification	Varchar2(50)	
Cast	Integer	
Religion	Integer	
Minority	Bit	
Photo_Id	Integer	
Economical_Status	Integer	

#### 4.3.10.6.2 FARMER FAMILY MEMBER



Column Name	Data type	Remark
ID	Integer	Primary Key /Unique Id with Sequence
Farmer_ID	Integer	
First_Name	nvarchar	
Middle_Name	nvarchar	
Last_Name	nvarchar	
Gender	nvarchar	
Relationship	nvarchar	
Educational_Qualification	nvarchar	
Other_Qualification	nvarchar	
Age	nvarchar	

#### 4.3.10.6.3 FARMER\_PHOTO

Column Name	Data type	Remark
ID	Integer	Primary Key /Unique Id with Sequence
Farmer_ID	Integer	
Photo	Varbinary(max)	

#### 4.3.10.6.4 FARM\_DETAILS

Column Name	Data type	Remark
ID	System generated unique ID using sequence	Primary Key /Unique Id with Sequence
FARMER_ID	Integer	
Survey_Number	nvarchar	
Revenue_Village	Integer	
Subdivision_Number	nvarchar	
Sub_Survey_Number	nvarchar	
Farm_Size	Integer	
Soil_Type	Integer	
Land_Type	Integer	
Type_Of_Cultivation	Integer	
ManPower	Integer	
Type_Of_Area	Integer	
Tuber_Crops	nvarchar	
Crop_Details	nvarchar	
Crop_Cycles	nvarchar	
Crop_Grown	nvarchar	
Type_Of_Irrigation	Integer	
Type_Of_Planting	Integer	



#### 4.3.10.6.5 FARM\_IRRIGATION\_INFRASTRUCTURE

Column Name	Data type	Remark
ID	System generated unique ID using sequence	Primary Key /Unique Id with Sequence
FARMER_ID	Integer	
Type	Integer	

#### 4.3.10.6.6 FARM\_LIVESTOCK\_DETAILS

Column Name	Data type	Remark
ID	System generated unique ID using sequence	Primary Key /Unique Id with Sequence
Farm_ID	Integer	
Livestock_ID	Integer	
Age	nvarchar	
Number_Of_Livestocks	Integer	

#### 4.3.10.6.7 FARMER\_EQUIPMENT\_DETAILS

Column Name	Data type	Remark
ID	System generated unique ID using sequence	Primary Key /Unique Id with Sequence
Farmer_ID	Integer	
Equipment_Name	nvarchar	
Equipment_Number	nvarchar	
Equipment_Make	nvarchar	

#### 4.3.10.6.8 FARMER\_SOURCE\_AGRICULTURE\_INPUT

Column Name	Data type	Remark
ID	System generated unique ID using sequence	Primary Key /Unique Id with Sequence
Farmer_ID	Integer	
Agency_Name	nvarchar	
Agency_Address	nvarchar	
Seed	bit	
Fertilizer	bit	
Pesticide	bit	



#### 4.3.10.6.9 *FARMER\_MARKET\_ACCESS*

Column Name	Data type	Remark
ID	System generated unique ID using sequence	Primary Key /Unique Id with Sequence
Farmer_ID	Integer	
Market_Name	nvarchar	
Market_Address	nvarchar	

#### 4.3.10.6.10 *FARMER\_BANK\_DETAILS*

Column Name	Data type	Remark
ID	System generated unique ID using sequence	Primary Key /Unique Id with Sequence
Farmer_ID	Integer	
Bank_Name	Integer	
Other_Name	nvarchar	
MICR_Number	Integer	
Branch_Name	Nvarchar	
Account_Number	Integer	
Loan_Taken	Bit	
Loan_Amount	Integer	
Kisan_Credit_Card	Bit	

#### 4.3.10.6.11 *FARMER\_INSURENCE\_DETAILS*

Column Name	Data type	Remark
ID	System generated unique ID using sequence	Primary Key /Unique Id with Sequence
Farmer_ID	Integer	
Agency_Name	Integer	
Insurance_Type	nvarchar	
Insured_On	Datetime	
Policy_Number	Nvarchar	
Maturity_Date	Datetime	
Premium	Integer	
Payment_Mode	Integer	

#### 4.3.10.6.12 *FARMER\_INCOME*



Column Name	Data type	Remark
ID	System generated unique ID using sequence	Primary Key /Unique Id with Sequence
Farmer_ID	Integer	
Economical_Status	Integer	
Farm_Income	Integer	
Livestock_Income	Integer	
Fisheries_Income	Integer	
Other_Activities	Nvarchar	
Name_Of_Income_Source	Nvarchar	
Income	Integer	

## 4.4 UPDATE DYNAMIC INFORMATION

### 4.4.1 REQUIREMENT

FR\_LRIP\_004– Update Dynamic Information. This service aims at updating the Farmers Database.

### 4.4.2 REQUIREMENT UNDERSTANDING

A service is required using which farmer/citizen will update the dynamic information. Dynamic information should be updated for each season for each year. Dynamic information will include start to end information about crop i.e. crop sown, fertilizers used, pesticides used, productivity of crop, money spent on crop, income from crop etc. User will update this information in parts. This information will be updated in the database table for respective user. After the update, mail will be send on user's registered mail id.

- Service will be available under Farmer' Corner - > Update Dynamic Information.

### 4.4.3 MODULES

- Web form for information view/input related to crop

#### 4.4.3.1 MODULE DESCRIPTION

After successful login, user will click on 'Update Dynamic Information'. A web page will be displayed to user.



- Current year will be displayed to user on the web page. It will be populated automatically as per system date.
- User will be provided with drop down using which user can select the season. As per the system date, current season will be displayed in the drop down by default. User can select and change the season to update the information of last season.
- Depending upon the year and season, list of crops updated by user will be displayed in grid view. Grid view contains Crop Name, Area Used, Insured Policy Number and Policy Maturity Date columns. Edit and Delete button will provided on each row.
- Using edit button user can modify the details about the crop. Using delete button user can delete the crop record.
- A 'Add' button will be provided below the data grid to add new crop details
- When user select any row in main grid view, data related to that crop will be displayed in respective text boxes, drop downs. Initially these controls will be disabled.
- When user clicks on Add button, all these controls will be enabled and user can add the information about crop.
- When user clicks, on Edit button in grid view, controls except crop sown will be enabled and user can modify the information about the crop.
- For list of text box, drop down fields please refer section 4.4.5.1.
- Save button will be provided on the web page, using which user will add/update the information. Function will check if mandatory fields are populated. If not populated, error message will be displayed to user.
- USER\_DYNAMIC\_INFORMATION will have 'MID\_FLAG' and 'END\_FLAG' columns. These will be used for sending reminder mail/sms to user for updating dynamic information.
- At the time of adding / updating the crop record, function will check if value for certain fields are populated. If value is populated for those fields, then function will update mid\_flag and end\_flag as 'Y'.
- After successful validations, data will be added/updated in the respective tables.
- After the successful adding the information, a row for crop for that season will be displayed in main grid view.

#### 4.4.3.1.1 *USER\_DYNAMIC\_INFORMATION*



Column Name	Values
ID	System generated value using the sequence for each member
Farmer_ID	ID value from user_profile_farmer table.
Year	Auto Populated as per system date
Season	Auto Populated as per system date and season defined in database
Crop_Sown	Crop Sown drop down
Area_Sown	Area Swon text box
Variety_used	Variety Used drop down
Seeds_used	Seeds Used drop down
Fertilizers_used	Fertilizers Used drop dwon
Pest_occurrence	Pest Occurrence drop down
Pesticides_used	Pesticides used text box
Labour	Labour text box
Crop_Watersource_Used	Crop_Watersource_Used drop dwon
Crop_Machinery_Used	Crop_Machinery_Used drop dwon
Production	Production text box
Income	Income text box
Expenditure	Expenditure text box
Insurance_Agency_Name	Name of agency drop down
Insurance_Type	Type of Insurance drop down
Insured_Date	Insured On text box
Insurance_Policy_Number	Policy No text box
Policy_Maturity_Date	Date of Maturity date picker
Policy_Premium	Premium text box
Payment_Mode	Mode of Payment drop down
Warehouse_Used	Warehouse Facility text box
Processing_Facility	Processing Facility text box
Markets	Markets text box
Mid_Flag	Flag will be maintained for sending reminder Message to farmer to update the dynamic information
End_Flag	Flag will be maintained for sending reminder Message to farmer to update the dynamic information
Insurance_Taken	
Crop	
CropWiseInsurance	



Column Name	Values
Sowing_Date	

#### 4.4.3.1.2 *CROP\_WATERSOURCE\_USED*

Column Name	Values
ID	System generated value using the sequence for each member
Crop_ID	Crop ID from User_Dynamic_Information table
WaterSource Name	Water source column from grid view

#### 4.4.3.1.3 *CROP\_MACHINARY\_USED*

Column Name	Values
ID	System generated value using the sequence for each member
Crop_ID	Crop ID from User_Dynamic_Information table
Machinary_Name	Machinery name from grid view

#### 4.4.3.1.4 *MASTER\_SEASON*

Column Name	Values
ID	System generated value using the sequence for each member
Season_ID	
Season_Name	

#### 4.4.3.1.5 *MASTER\_CROP\_SOWN*

Column Name	Values
ID	System generated value using the sequence for each member
Crop_Name	

#### 4.4.3.1.6 *MASTER\_VARIETY\_USED*

Column Name	Values
ID	System generated value using the sequence for each member
Crop_Variety	

#### 4.4.3.1.7 *MASTER\_SEED\_USED*



Column Name	Values
ID	System generated value using the sequence for each member
Seed	

#### 4.4.3.1.8 *MASTER\_FERTILIZERS\_USED*

Column Name	Values
ID	System generated value using the sequence for each member
Fertilizers_Name	

#### 4.4.3.1.9 *MASTER\_AREA\_SOWN*

Column Name	Values
ID	System generated value using the sequence for each member
Area	

#### 4.4.3.1.10 *MASTER\_INSURANCE\_TYPE*

Column Name	Values
ID	System generated value using the sequence for each member
Insurance_Type	

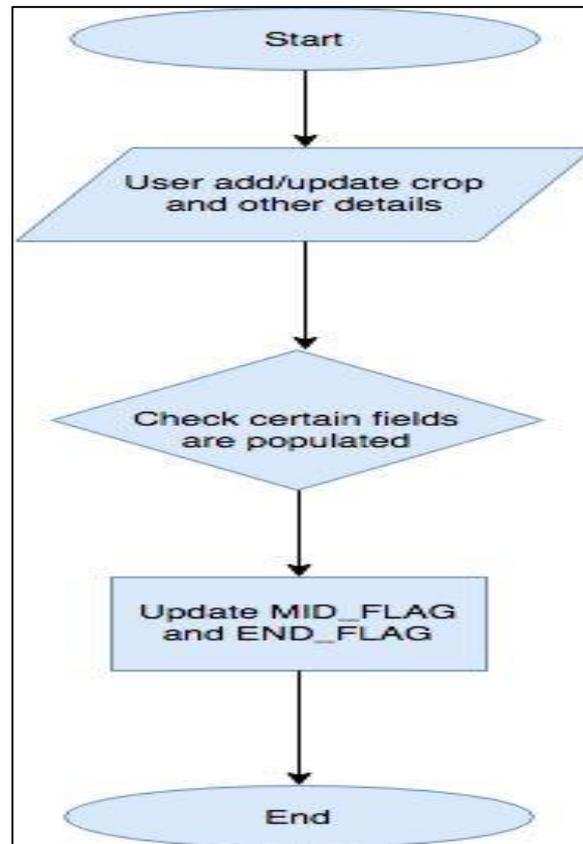
#### 4.4.3.1.11 *MASTER\_PAYMENTMODE*

Column Name	Values
ID	System generated value using the sequence for each member
Mode_Of_Payment	

#### 4.4.3.1.12 *MASTER\_INSURANCE\_AGENCIES*

Column Name	Values
ID	System generated value using the sequence for each member
Agency_Name	

#### 4.4.4 LOGICAL FLOW DIAGRAM



#### 4.4.5 TECHNICAL DESCRIPTION

##### 4.4.5.1 INPUT FIELDS ON WEB PAGE

Attribute Name	Mandatory	Input Type	Remark
Year		Label	Autopopulated
Season	Yes		Autopopulated
<b>Crop Details Section</b>			
Crop Sown	Yes	Drop Down	
Area Sown	Yes	Drop Down	
Variety Used	No	Drop Down	
Seeds Used	No	Drop Down	
Fertilizers Used	No	Drop Down	
Pest Occurrence	No	Drop Down	
Pesticides Used	No	Text Box	



Attribute Name	Mandatory	Input Type	Remark
Water Sources Used	No	Grid View	
Labour	No	Text Box	
Machinery Used	No	Grid View	
<b>Production and Income Details</b>			
Production	No	Text Box	
Income	No	Text Box	
Expenditure	Np	Text Box	
<b>Crop Insurance Details</b>			
Name of Agency	No	Drop Down	
Type of Insurance	No	Drop Down	
Insured On	No	Date Time	
Policy No	No	Text Box	
Date of Maturity	No	Date Time	
Premium	No	Text Box	
Mode of Payment	No	Drop Down	
<b>Market Details</b>			
Warehouse Facility Used	No	Text Box	
Processing Facility Used	No	Text Box	
Markets	No	Text Box	

#### 4.4.5.2 TABLE DEFINITION USED FOR THIS REQUIREMENT.

##### 4.4.5.2.1 *USER\_DYNAMIC\_INFORMATION*

Column Name	Data Type	Remark
Id	Integer	Primary Key /Unique Id With Sequence
Farmer_Id	Integer	
Year	Date	
Season	Date	
Crop_Sown	Varchar2	
Area_Sown	Varchar2	
Variety_Used	Varchar2	
Seeds_Used	Varchar2	
Fertilizers_Used	Integer	



Column Name	Data Type	Remark
Pest_Occurrence	Varchar2	
Pesticides_Used	Integer	
Labour	Varchar2	
Crop_Watersource_Used	Integer	
Crop_Machinery_Used	Integer	
Production	Varchar2	
Income	Varchar2	
Expenditure	Varchar2	
Insurance_Agency_Name	Varchar2	
Insurance_Type	Varchar2	
Insured_Date	Date	
Insurance_Policy_Number	Varchar2	
Policy_Maturity_Date	Date	
Policy_Premium	Varchar2	
Payment_Mode	Varchar2	
Warehouse_Used	Varchar2	
Processing_Facility	Varchar2	
Markets	Varchar2	
Mid_Flag	Char	
End_Flag	Char	
Insurance_Taken	Varchar2	
Crop	Integer	
CropWiseInsurance	Integer	
Sowing_Date	Date	

#### 4.4.5.2.2 **CROP\_WATERSOURCE\_USED**

Column name	Data type	Remark
Id	Integer	Primary Key /Unique Id With Sequence
Crop_Id	Integer	Reference Key From User_Dynamic_Infomation Table
Watersource_Name	Varchar2	

#### 4.4.5.2.3 **CROP\_MACHINARY\_USED**



Column Name	Data Type	Remark
Id	Integer	Primary Key /Unique Id With Sequence
Crop_Id	Integer	Reference Key From User_Dynamic_Infromation Table
Machinnary_Name	Varchar2	

#### 4.4.5.2.4 MASTER\_CROP\_SOWN

Column Name	Data Type	Remark
Id	Integer	
Crop_Name	Varchar2	

#### 4.4.5.2.5 MASTER\_AREA\_SOWN

Column Name	Data Type	Remark
Id	Integer	
Area	Varchar2	

#### 4.4.5.2.6 MASTER\_VARIETY\_USED

Column Name	Data Type	Remark
Id	Integer	
Crop_Variety	Varchar2	

#### 4.4.5.2.7 MASTER\_SEED\_USED

Column Name	Data Type	Remark
ID	INTEGER	
SEED	VARCHAR2	

#### 4.4.5.2.8 MASTER\_FERTILIZERS\_USED

Column Name	Data Type	Remark
ID	INTEGER	
FERTILIZERS_NAME	VARCHAR2	

#### 4.4.5.2.9 MASTER\_AGENCY\_NAME



Column Name	Data Type	Remark
ID	INTEGER	
AGENCY_NAME	VARCHAR2	

#### 4.4.5.2.10 MASTER\_INSURANCE\_TYPE

Column Name	Data Type	Remark
Id	Integer	
Insurance_Type	Varchar2	

## 4.5 REMAINDER MAIL/SMS TO FARMER

### 4.5.1 REQUIREMENT

FR\_LRIP\_005 – Reminder Mail/SMS sent to farmer to update season information (Dynamic Information)  
This services aims at sending sms/email to the farmers who has not updated season information.

### 4.5.2 REQUIREMENT UNDERSTANDING

A service is required, which will send the mail/sms to the farmers who has not updated the dynamic information, requesting them to update the season information. This service will be a system driven process, which will check if information is updated in the database or not for specified season duration. If not it will sent mail/sms on user's registered mail id and/or mobile number.

### 4.5.3 MODULES

- A database package procedure
- A database scheduler

#### 4.5.3.1 DATABASE PACKAGE PROCEDURE

A database package 'Sp\_Send\_Mail\_SMS' will be developed. This package will have following procedures

##### GetCropRecords –

- This procedure will fetch the records of farmer\_id, email\_id, mobile\_number from the USER\_PROFILE\_FARMER table.
- For each record of farmer\_id, it will get the records of crop based on the year = system date from USER\_DYNAMIC\_INFORMATION table.



- If crop records found for that farmer\_id, procedure will check the count of seasons.
- If no record found for that farmer\_id, then procedure will call the SP\_Send\_Mail\_SMS procedure to send the mail/sms.
- If count is less than 3 then for missing season record, it will call the SendMail and SendSMS procedures to send the mail/sms.
- For each record of crop, it will then check MID\_FLAG and END\_FLAG values. If values are null, then it will call the SendMail and SendSMS procedure to send the mail/sms.

#### **SendMail (EmailID, Year, Season) -**

- This procedure will call the pre-defined stored procedure 'SP\_SEND\_DBMAIL' with parameters like profilename, recipients, subject, body and importance.

profilename = Predefined profile created while creating the setup

recipients = EmailID

subject = 'Dynamic information not updated for year <Year> and season <Season>'

body = Pre-Defined text message.

Importance = 'HIGH'

#### **SendSMS (MobileNumber, Year, Season) –**

- This procedure will send the sms on the provided mobile number with predefined text message. Text message will include the year and season for which dynamic information is not updated.

#### **4.5.3.2 DATABASE SCHEDULAR**

A database scheduler will be created to schedule the Sp\_Send\_SMS\_Mail package procedure.

#### **4.5.3.3 CODE SNIPPET**

To Send the Email:

```
EXEC msdb.dbo.sp_send_dbmail
    @profile_name = 'SendEmailSql'
    , @recipients = 'xyx@gmail.com'
    , @subject = 'abc'
    , @body = 'test message'
    , @importance = 'HIGH'
GO
```

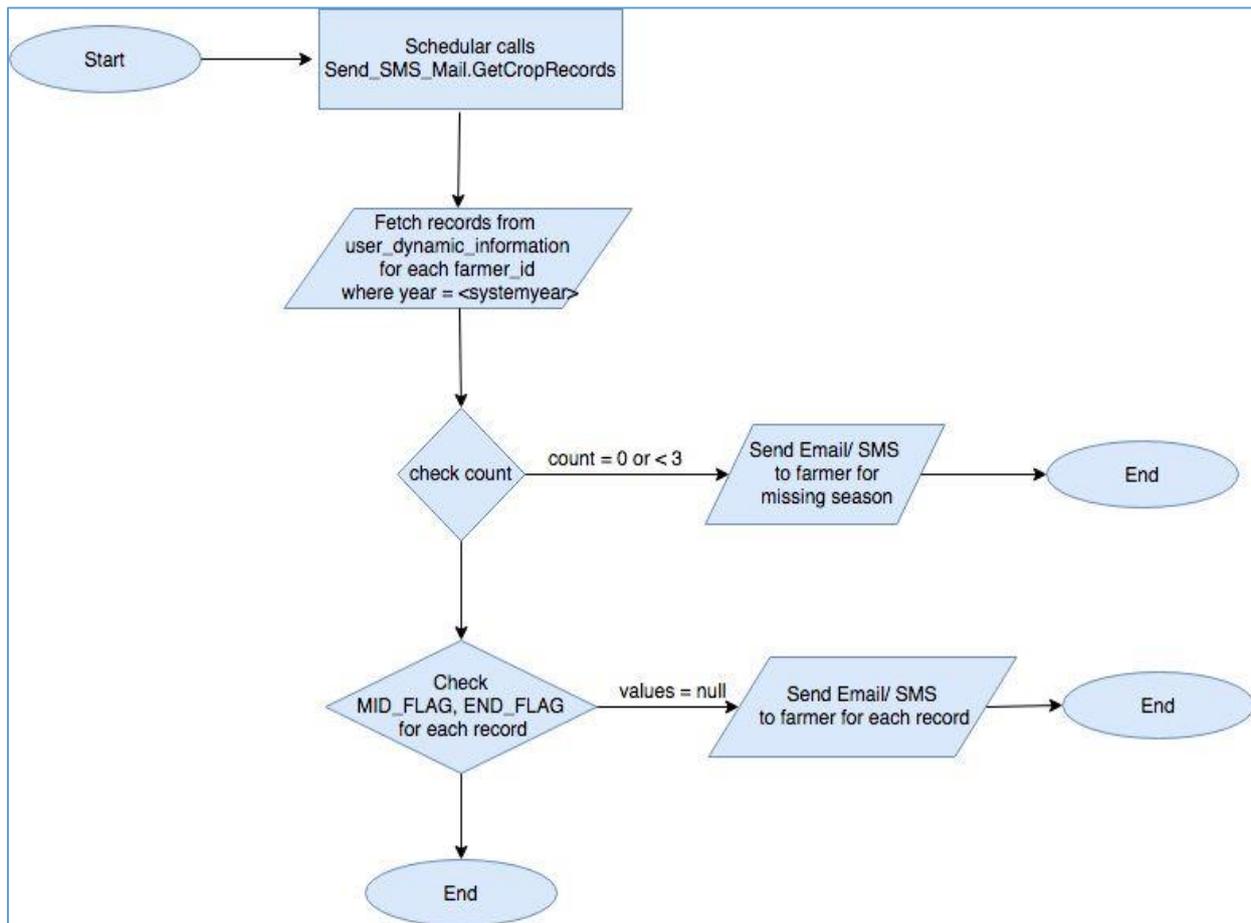
To Send the SMS: [Sp\\_SendSmsSQL](#)

```
<HTML>
create procedure [dbo].[pr_SendSmsSQL]
    @MobileNo nvarchar(12),
```



```
@smstext as nvarchar(300),
@sResponse nvarchar(1000)
OUT as BEGIN
Declare @iReq int,@hr int
Declare @sUrl as nvarchar(500)
DECLARE @errorSource NVARCHAR(8000)
DECLARE @errorDescription NVARCHAR(8000)
-- Create Object for XMLHTTP
EXEC @hr = sp_OACreate 'Microsoft.XMLHTTP', @iReq OUT    print @hr    if @hr <> 0
    Raiserror('sp_OACreate Microsoft.XMLHTTP FAILED!', 16, 1)
    set
@sUrl='http://api.clickatell.com/http/sendmsg?user=devendar&password=xxxxxxxx&api_id=xxxxxxxx&t
o=#MobNo#&text=#Msg#'
    set @sUrl=REPLACE(@sUrl,'#MobNo#',@MobileNo)
    set @sUrl=REPLACE(@sUrl,'#Msg#',@smstext)
    print @sUrl
    -- sms code start
EXEC @hr = sp_OAMethod @iReq, 'Open', NULL, 'GET', @sUrl, true    print @hr    if @hr <> 0
    Raiserror('sp_OAMethod Open FAILED!', 16, 1)
EXEC @hr = sp_OAMethod @iReq, 'send'
    select @iReq
    print @hr
    if @hr <> 0    Begin
        EXEC sp_OAGetErrorInfo @iReq, @errorSource OUTPUT, @errorDescription OUTPUT
        SELECT [Error Source] = @errorSource, [Description] = @errorDescription
        Raiserror('sp_OAMethod Send FAILED!', 16, 1)    end else Begin    EXEC @hr = sp_OAGetProperty
        @iReq,'responseText', @sResponse OUT
            print @hr
            insert into send_log (Id, mobile, sendtext, response, created, createddate)
        values(0, @MobileNo, @smstext, @sResponse, 'System', GETDATE())
        end
end
```

#### 4.5.4 LOGICAL FLOW DIAGRAM



#### 4.5.5 TECHNICAL DESCRIPTION

##### 4.5.5.1 TABLE DEFINITION USED FOR THIS REQUIREMENT.

###### 4.5.5.1.1 USER\_PROFILE\_FARMER

Column Name	Data type	Remark
ID	NUMBER	Primary Key /Unique Id with Sequence
User_ID	NUMBER	Reference Key from USER_LOGIN_DETAILS table
First_Name	VARCHAR(50)	
Middle_Name	VARCHAR(50)	
Last_Name	VARCHAR(50)	
Landline_Number	NUMBER	
Mobile_Number	NUMBER	
IMEI_Number	VARCHAR(100)	
Farmer_Type	Integer	
Address_1	VARCHAR(100)	



Column Name	Data type	Remark
Address_2	VARCHAR(100)	
State	Integer	
District	Integer	
Block	Integer	
Village	Integer	
Pin_Code	Integer	
Father_Name	VARCHAR2(50)	
Mother_Name	VARCHAR2(50)	
Gender	Integer	
DOB	DATE	
Marital_Status	Integer	
Voter_ID	VARCHAR2(50)	Integer
Ration_Card	VARCHAR2(50)	
Aadhar_Card	VARCHAR2(50)	
Driving_License	VARCHAR2(50)	
KCC_No	VARCHAR2(50)	
NPR	VARCHAR2(50)	
Fisherman_Biometric_Card	VARCHAR2(50)	
Personal_Identification_Mark	VARCHAR2(50)	
Education_Qualification	Integer	Values from table Education_Qualification_Picklist
Other Qualification	VARCHAR2(50)	
Cast	Integer	
Religion	Integer	
Minority	Bit	
Photo_ID	Integer	
Economical_Status	Integer	

#### 4.5.5.1.2 *USER\_DYNAMIC\_INFORMATION*

Column Name	Data Type	Remark
Id	Integer	Primary Key /Unique Id With Sequence
Farmer_Id	Integer	
Year	Date	
Season	Date	
Crop_Sown	Varchar2	
Area_Sown	Varchar2	
Variety_Used	Varchar2	
Seeds_Used	Varchar2	
Fertilizers_Used	Integer	
Pest_Occurrence	Varchar2	



Column Name	Data Type	Remark
Pesticides_Used	Integer	
Labour	Varchar2	
Crop_Watersource_Used	Integer	
Crop_Machinery_Used	Integer	
Production	Varchar2	
Income	Varchar2	
Expenditure	Varchar2	
Insurance_Agency_Name	Varchar2	
Insurance_Type	Varchar2	
Insured_Date	Date	
Insurance_Policy_Number	Varchar2	
Policy_Maturity_Date	Date	
Policy_Premium	Varchar2	
Payment_Mode	Varchar2	
Warehouse_Used	Varchar2	
Processing_Facility	Varchar2	
Markets	Varchar2	
Mid_Flag	Char	
End_Flag	Char	
Insurance_Taken	Varchar2	
Crop	Integer	
CropWiseInsurance	Integer	
Sowing_Date	Date	

#### 4.5.5.1.3 CROP\_SEASON

Column Name	Data Type	Remark
ID	int	
Season_Id	int	Linked to Master_Season
Crop_Id	int	Linked to Master_Crop
SownPeriod_From	int	Month number
SownPeriod_To	int	Month number



Column Name	Data Type	Remark
Harvesting_From	int	Month number
Harvesting_To	int	Month number
SeasonDuration	int	
Sowing_Duration	int	
Mid_duration	innt	
Harvesting_Duration	Int	

#### 4.5.5.1.4 **MASTER\_SEASON**

Column Name	Data Type	Remark
CLU_CODE	varchar	
Quality	nvarchar	

#### 4.5.5.1.5 **REMINDERLOG**

Column Name	Data Type	Remark
ID	int	
Flag	nvarchar(50)	
SeasonId	int	
ReminderDate	date	
ReminderCount	int	
ReminderPeriod	nvarchar(100)	

#### 4.5.5.1.6 **SEND\_LOG**

Column Name	Data Type	Remark
Id	int	
mobile	nvarchar(20)	
sendtext	nvarchar(2000)	



Column Name	Data Type	Remark
response	nvarchar(200)	
created	nvarchar(200)	
createddate	date	

## 4.6 REGISTERED FARMER'S LIST

### 4.6.1 REQUIREMENT

FR\_LRIP\_004– Registered Farmer List

This service aims at providing the user the list of farmers who have registered with the LRI Geo Portal

### 4.6.2 REQUIREMENT UNDERSTANDING

A service is required, which will provide departmental user (District Office Admin) facility to view the list of farmers who have registered with LRI Geo Portal. Using this list user can will view the static and dynamic information of registered farmer.

Service will be available under Farmer'Corner - > Registered Farmer List.

Link will be enable for users who have privilege to view the list.

### 4.6.3 MODULES

- Web form to view the list of farmers

#### 4.6.3.1 MODULE DESCRIPTION

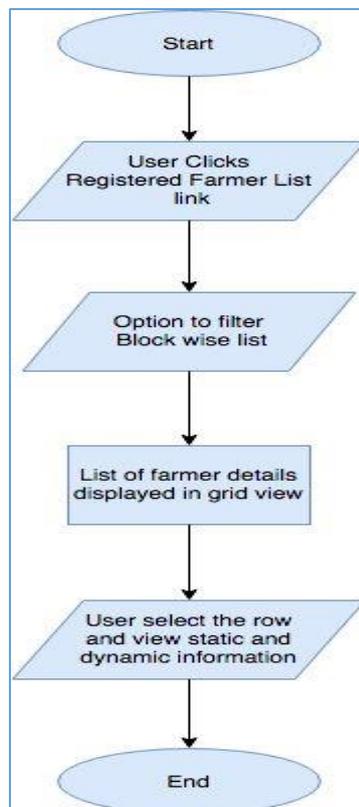
After successful login, departmental user will click on 'Registered Farmer List' link.

- A function will get the list of those farmers who belongs to same district as of logged in departmental user. This will be done by matching district in USER\_PROFILE\_FARMER table with location in USER\_PROFILE\_DEPARTMENT table.
- A drop down option will be provided on the page, using which user can filer the list based on block.
- Based on the filter condition, list of farmers will be displayed in grid view.
- Grid view will contain Farmer Name, Farmer Type, Mobile Number and Email ID columns.



- Buttons 'Static Information', 'Dynamic Information' will be displayed below the grid view. User will select the row from grid view and click any one of the above buttons to view the information.
- When user click on 'Static Information' button, a static information web page will be displayed to user. User will only able to view the information. User cannot modify the information.
- When user click on 'Dynamic Information' button, records of all years and all seasons from the USER\_DYNAMIC\_INFORMATION table will be fetched for that farmer. Function will also check if dynamic information is updated completely for each crop and each season using MID\_FLAG AND END\_FLAG
- These records will be displayed in separate grid view. Grid view will contain Year, Season and Crop Sown columns. If dynamic information is not updated completely, then that row will be highlighted using different colour in grid view. A 'View Information' button will be provided in each row of grid view, using which user can view the dynamic information for that selected row.
- When user click on 'View Information' button, dynamic information page will be displayed. User will only able to view the information. User cannot modify the information.

#### 4.6.4 LOGICAL FLOW DIAGRAM





## 4.7 CROP INFORMATION

### 4.7.1 REQUIREMENT

FR\_LRIP\_008 – Crop

This service aims at taking the user to the Crops section

FR\_LRIP\_009 – Agro Climatic Features

This service aims at taking the user to the Agro Climatic Features Application.

FR\_LRIP\_055 – Horticulture

This service aims at taking the user to the Horticulture section.

FR\_LRIP\_056 – Floriculture

This service aims at taking the user to the Flower section of LRI GEO PORTAL portal.

### 4.7.2 REQUIREMENT UNDERSTANDING

Services are required, using which farmer can view the information related to major cropping systems of Karnataka. User will be able to view the information related to agro climatic features, horticulture and floriculture.

Following services will be available under LRI GeoPortal

- LRI GeoPortal -> Crops
- Crops-> Grain Legumes
- Crops-> Tuber Crops
- Crops -> Agro Climatic Features
- Crops -> Kharif Crops
- Crops -> Ragbi Crops
- Crops -> Horticulture
- Crops -> Floriculture

### 4.7.3 MODULES

- Agro Climatic Features
- Grain Legumes
- Tuber Crops
- Kharif Crops
- Ragbi Crops
- Horticulture
- Floriculture.

### 4.7.4 MODULE DESCRIPTIONS



#### 4.7.4.1 AGRO CLIMATIC FEATURES

When user will click on Agro Climatic Feature link, user will be presented with following options.

- Climate
- Soil
- Land Use Pattern
- Water Resuorces
- Crop and Cropping System

User will be redirected to related information page as per the chosen option. The information which needs to be shown in the portal will be managed by Content Management System.

#### 4.7.4.2 GRAIN LUGEMS

When user will choose option 'Grain Lugems' under crops section, user will be redirected to related information page. The information which needs to be shown in the portal will be managed by Content Management System.

#### 4.7.4.3 TUBER CROPS

When user will choose option 'Tuber Crops' under crops section, user will be redirected to related information page. The information which needs to be shown in the portal will be managed by Content Management System.

#### 4.7.4.4 KHARIF CROPS

When user will click on Kharif Crops link, user will be presented with following options.

- Forage Crops
  - Cowpea & Rice bean
  - Maize Fodder
- Fiber Crops
  - Jute
  - Jute(seeds)
  - Mesta
  - Cotton
  - Ramie
- Pulse &Oilseed Crops
  - Black gram
  - Green gram
  - Cowpea(Grain)
  - Arhar
  - Soybean
  - Sasamum
  - Ground nut
  - Rice bean



- Cereals
  - Rice
  - Maize
  - Finger Millet
- Sugar Crops
  - Sugar Cane

User will be redirected to related information page as per the chosen option. The information which needs to be shown in the portal will be managed by Content Management System.

#### **4.7.4.5 RAGBI CROPS**

When user will click on Ragbi Crops link, user will be presented with following options.

- Forage Crops
- Tuber Crops
- Pulses
- Oilseeds
- Other Seeds
- Hybrid Rice
- Rabi Maize

User will be redirected to related information page as per the chosen option. The information which needs to be shown in the portal will be managed by Content Management System.

#### **4.7.4.6 HORTICULTURE**

When user will click on Horticulture link, user will be presented with following options.

- Fruit Crops
- Spices & Condiments
- Flowers
- Vegetable Crops
- Seasonal Flowers
- Plantation Crop
- Harvest and Value Addition
- Medicinal Plants

User will be redirected to related information page as per the chosen option. The information which needs to be shown in the portal will be managed by Content Management System.

#### **4.7.4.7 FLORICULTURE**

When user will click on Floriculture link, user will be presented with following options.

- Rose
- Gabaroes
- Tuberrose



- Chrysanthemum
- Mussaenda
- Bougainvillea

User will be redirected to related information page as per the chosen option. The information which needs to be shown in the portal will be managed by Content Management System.

## 4.8 SOIL HEALTH

### 4.8.1 REQUIREMENT

FR\_LRIP\_010 – Soil Health

This service aims at taking the user to the Soil Health application

FR\_LRIP\_011 – Soil Testing Procedure

This service enables the user to view information about the Soil Testing procedure

FR\_LRIP\_011 – Irrigation Advice

This service enables the user to view irrigation advice

FR\_LRIP\_012 – Soil Types

This service enables the user to view information on soil types

FR\_LRIP\_013 – Soil Testing Labs

This service enables the user to view information on soil types

### 4.8.2 REQUIREMENT UNDERSTANDING

Services are required using which farmer can view the information about the soil in Karnataka like soil quality, types of soil, methods used to test the soil, name and addresses of soil testing laboratories and irrigation advice for particular type of soil.

Following services will be available under LRI Geo Portal -> Department of Agriculture

- Soil Health Section
- Soil Health Section -> Soil Types
- Soil Health Section -> Soil Testing Procedure
- Soil Health Section -> Soil Testing Labs
- Soil Health Section -> Irrigation Advice

### 4.8.3 MODULES

- Soil Health
- Soil Types
- Soil Testing Procedures
- Soil Testing Labs
- Irrigation Advice



#### 4.8.3.1 SOIL HEALTH

User will be redirected to soil health information page. This page will display the information about the quality of soil in Karnataka. The information which needs to be shown in the portal will be managed by Content Management System.

#### 4.8.3.2 SOIL TYPES

User will be redirected to soil type's information page. This page will display the types of soil in Karnataka. Information will be displayed in the form of grid view which will contain the soil name and soil properties columns. The information which needs to be shown in the portal will be managed by Content Management System.

#### 4.8.3.3 SOIL TESTING PROCEDURES

User will be redirected to page, which will contain information about testing methods of soil. Information. The information which needs to be shown in the portal will be managed by Content Management System..

#### 4.8.3.4 SOIL TESTING LABS

User will be redirected to page, which will contain the information about soil testing laboratories. Information will include lab name, lab address, contact person and contact number. This information will be displayed in a grid view and will be fetched from 'SOIL\_TESTING\_LAB' table. Please refer section 4.8.4.2 for definition of table.

#### 4.8.3.5 IRRIGATION ADVICE

- Form will be displayed to the user for input required such as District, Taluka, village, survey number, crop grown, Date of sowing.
- Depending upon the location selected system will get soil type.
- System will provide Irrigation advice for the selected crop based on above parameters.

### 4.8.4 TECHNICAL DESCRIPTION

#### 4.8.4.1 INPUT FIELDS ON DEPARTMENT USER REGISTRATION WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
District	Yes	Textbox	



Attribute Name	Mandatory	Input Type	Remark
Taluka	Yes	Textbox	
Village	Yes	Dropdown	
Survey Number	Yes	Dropdown	
Crop Grown	Yes	Dropdown	
Date of Sowing	Yes	Textbox	

#### 4.8.4.2 TABLE DEFINITION USED FOR THIS REQUIREMENT.

##### 4.8.4.2.1 *SOIL\_TESTING\_LAB*

Column Name	Data Type	Remark
Id	Integer	Primary Key /Unique Id With Sequence
Lab_Name	Varchar2	
Lab_Address	Varchar2	
Contact_Person	Varchar2	
Contact_Number	Integer	

## 4.9 DISEASES AND REMEDIAL MEASURES

### 4.9.1 REQUIREMENT

FR\_LRIP\_014 – Diseases and Remedial measures.

This service aims at taking the user to the Diseases and Remedial Measures section.

### 4.9.2 REQUIREMENT UNDERSTANDING

This functionality will provide the user (Farmer) detail information about the common diseases found in the Karnataka state and it's Remedial Measures. Also there will be provision to upload the photograph along with the information related to crop diseases, once user submit the query related to crop diseases, user will receive system generated reference number against the submitted query on registered mobile number.

### 4.9.3 MODULES

- Web form for farmer to view common diseases & remedial measures and submit query related to farm diseases.



- Web form for departmental users response against submitted query.
- Validations
- Data storage.

#### 4.9.3.1 WEB FORM FOR FARMER TO VIEW COMMON DISEASES & REMEDIAL MEASURES

A web form will be developed, which will display common diseases found in the state and it's Remedial Measures and accept farmer query related to farm diseases in the form of textbox and picklist. For list of input fields, refer section 4.9.8.1. Mandatory fields will be marked as '\*' on web form. A 'Submit' button will be provided to submit the details in to database. When user will click on 'Submit' button, validations will be performed and after successful validations input data will be stored in respective tables. Please refer 'Validations' and 'Data Storage' modules.

#### 4.9.3.2 WEB FORM FOR DEPARTMENTAL USERS

A web form will be developed for departmental users, which will display farmers queries related to crop diseases and submit reply against farmer query. For list of input fields, refer section 4.9.3.2. Mandatory fields will be marked as '\*' on web form. A 'submit' button will be provided to submit the query response in to database, web form validations will be performed and after successful validations input data will be stored in respective tables. Please refer 'Validations' and 'Data Storage' modules.

#### 4.9.4 VALIDATIONS

Following validations will be performed

- Whether mandatory fields are populated or not.
- Format of email and mobile number.
- Email will be validated for 'username@domain' format.
- Mobile number will be validated for numeric 10 digits.
- Allow upload maximum 3 photos.

##### 4.9.4.1 CODE SNIPPET:

```
// public void SendUrn(string mobileNumber, string urn)
{
    var status = "";
    try
    {
        string receipt = mobileNumber.ToString();
        string Apikey = ConfigurationManager.AppSettings["APIKey"].ToString();
```



```

        string message = "Hi , Your Query has been Successfully Submitted.You can
Track your query by URN " + urn + "(sent By: TXTCL )";
        String encodedMessage = HttpUtility.UrlEncode(message);
        using (var webClient = new WebClient())
        {
            byte[] response =
webClient.UploadValues("https://api.textlocal.in/send/", new NameValueCollection(){
                { "Apikey", Apikey},
                { "numbers",receipt},
                {"message", encodedMessage},
                {"sender", "TXTLCL"} });
            string result = System.Text.Encoding.UTF8.GetString(response);
            var jsonObject1 = JObject.Parse(result);
            status = jsonObject1["status"].ToString();
        }
    }
    catch (Exception ex)
    {
        throw new Exception();
    }
}
//

```

#### 4.9.5 DATA STORAGE

After successful validations, data will be stored in following tables.

##### 4.9.5.1 MASTER\_DISEASE\_REMEDIES: FOR MASTER DISEASE AND REMEDIES.

Fields	Values
DRM ID	System generated unique ID
Disease Name	Disease name
Remedies	Remedies name
Photograph	Disease Photograph

##### 4.9.5.2 CROP\_DISEASE\_QUERY: FOR REGISTERING FARMERS CROP DISEASES

Fields	Values
ID	System generated unique ID
URN	System generated unique reference number
Farmer Name	Input from web form
Address	Input from web form
Village	Input from web form
Pin Code	Input from web form
Block	Input from web form
District	Input from web form



Fields	Values
State	Input from web form
Mobile Number	Input from web form
Email id	Input from web form
Crop Name	Input from web form
Disease Description	Input from web form
Farmer_ID	ID value from user_profile_farmer table. This will be same for each member of selected user
Status	ID related to 'Send to SME' from master_process_status table
Raised_Date	System date on which query is raised

#### 4.9.5.3 FILE\_ATTACHED: FOR DOCUMENT UPLOADING

ColumnName	Values
ID	System generated unique ID using sequence
URN	URN from crop_disease_query table
Transc_Type	ID related to 'Request' value from master_transc_type table
File_Attached	File attached by user

#### 4.9.5.4 TRANSACTION\_LOG: FOR MAINTAINING THE TRANSACTION STATUS

ColumnName	Values
ID	System generated unique ID using sequence
Process_Name	ID related to 'AddNewQuery' value from master_processname table
Process_ID	URN from user_queries table
Flag	ID related to 'Open' value from master_trans_flag table
From_User	SME_ID value to whom query is sent
To_User	Initially when query is raised, this will be '0'
Received_Date	Date on which query is received to SME
Response_Date	Date on which response for query is given
Remark	

#### 4.9.6 VALIDATION AND ERROR MESSAGES

Criteria	Message
Farmer Name not entered	Please enter Farmer name
Address not entered	Please enter Address
Village not selected	Please select Village
Block not selected	Please select Block
District not selected	Please select District
State not selected	Please select State

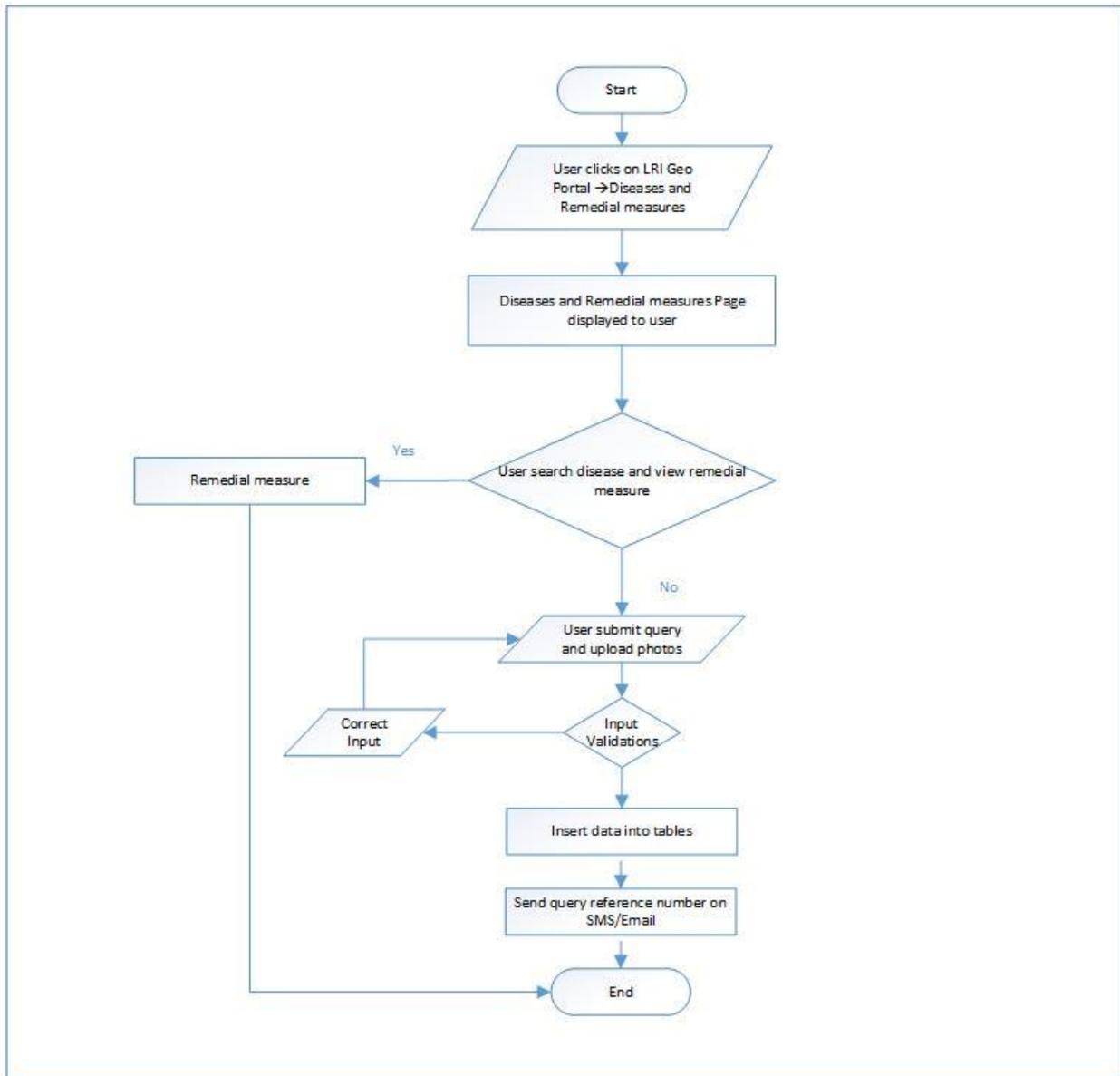


Criteria	Message
Mobile Number not entered	Please enter Mobile Number
Email Id not entered	Please enter Email ID
Crop name not entered	Please enter name of the crop
Disease description not entered	Please enter disease details
Upload Photo	Please upload crop disease photo
Invalid email format. @ missing	Email ID is not in proper format. Please include '@' in email id
Invalid email format. .com missing	Email ID is not in proper format. Please include domain such as '.com' in email i
Invalid mobile format. Contains character	Mobile number should not contain characters.
Invalid mobile format. Number greater than 10 digits	Mobile number should be 10 digit

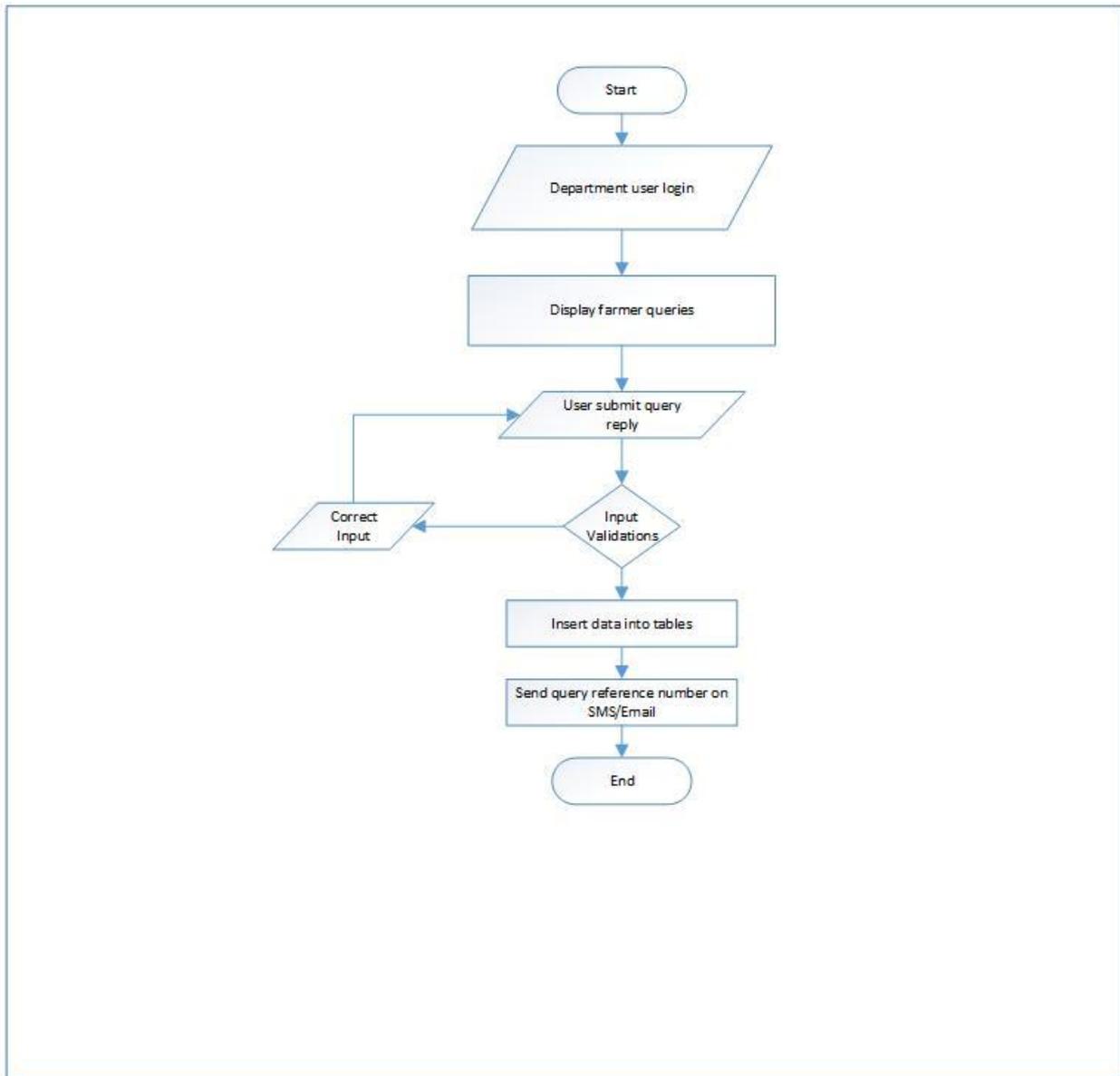
#### 4.9.7 LOGICAL FLOW DIAGRAM



### 4.9.7.1 SEARCH DISEASES AND REMEDIAL MEASURES & SUBMIT QUERY



#### 4.9.7.2 DEPARTMENTAL USER SUBMIT QUERY RESPONSE



#### 4.9.8 TECHNICAL DESCRIPTION

##### 4.9.8.1 INPUT FIELDS ON DISEASES AND REMEDIAL MEASURES WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
Farmer Name	Yes	Textbox	
Address	Yes	Textbox	
Village	Yes	Dropdown	
Pin Code	No	Textbox	
Block	Yes	Dropdown	



Attribute Name	Mandatory	Input Type	Remark
District	Yes	Dropdown	
State	Yes	Dropdown	
Mobile Number	Yes	Textbox	
Email ID	No	Textbox	
Crop Id	No	Dropdown	
Other Crop Name	Yes	Textbox	
Disease Description	Yes	Textbox	
Upload Photo 1	No	File Upload	
Upload Photo 2	No	File Upload	
Upload Photo 3	No	File Upload	

#### 4.9.8.2 INPUT FIELDS ON DEPARTMENTAL USER REPLY WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
Short Query	Yes	Listbox	Populate using Disease_Description field from Crop_disease_query table
Query Details		Read only Text box	
Reject	Yes	Radio Button	
Answer		Radio Button	
Remark	Yes	Multiline Text Box	

#### 4.9.8.3 INPUT FIELDS ON SEARCH DRM STATUS WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
DRM Reference number	Yes	Textbox	URN Number
Captcha Check	Yes	CAPTCHA	Mathematical Captcha

#### 4.9.8.4 TABLE DEFINITIONS USED FOR THIS REQUIREMENT.

##### 4.9.8.4.1 MASTER\_DISEASE\_REMDIES

Column Name	Data Type	Remark
DRM_Id	Integer	Primary Key /Unique Id With Sequence
Crop_Name	Nvarchar	Crop name



Column Name	Data Type	Remark
Disease_Name	Nvarchar	Disease description
Remedies	Nvarchar	Remedies description

#### 4.9.8.4.2 CROP\_DISEASE\_QUERY

ColumnName	Values	Remark
Q_Id	Integer	Primary Key /Unique Id With Sequence
URN	Integer	
Farmer_Name	Nvarchar	
Address_1	Nvarchar	
Village	Integer	Value from Master_Village
Block	Integer	Value from Master_Taluka
District	Integer	Value from Master_District
PIN_Code	Integer	
Mobile	Integer	
Email	Nvarchar	
Crop_ID	Integer	Value from Master_Crop
Crop_Name	Nvarchar	Other Crop Name
Disease_Description	Nvarchar	
Farmer_ID	Integer	Relationship with USER_PROFILE_FARMER table
Status	Integer	Relationship with Master_Process_Status
Raised_Date	Date	
Resolved_Date	Date	
Survey_Number	Nvarchar	

#### 4.9.8.4.3 FILE\_ATTACHED

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
URN	Integer	
Trans_type	Integer	Relation with Master_Trans_Type table
File_Attached	Varbinary(max)	

#### 4.9.8.4.4 TRANSACTION\_LOG

Column Name	Data Type	Remark
Id	Integer	Primary Key /Unique Id With Sequence
Process_Name	Varchar(100)	Relationship with Master_ProcessName table
Process_Id	Integer	
Flag	Integer	Relationship with Master_Trans_Flag table
From_User	Integer	Relationship with SME_Informarion table



Column Name	Data Type	Remark
To_User	Integer	Relationship with SME_Informarion table
Received_Date	Datetime	
Response_Date	Datetime	
URN_ID		
Service_ID		
Remark	nvarchar(max)	

#### 4.9.8.4.5 MASTER\_DISTRICT

Column_Name	Data_Type	Remarks
ID	Integer	
KGISDistrictName	nvarchar	
DistrictName_KN	nvarchar	
KGISDistrictID	Integer	
KGISStateID	Integer	
KGISDistrictCode	nvarchar	

#### 4.9.8.4.6 MASTER\_TALUKA

Column_Name	Data_Type	Remarks
ID	Integer	
KGISTalukName	nvarchar	
TalukName_KN	Integer	
KGISTalukID	Integer	
KGISTalukCode	nvarchar	
KGISDistrictID	Integer	

#### 4.9.8.4.7 MASTER\_VILLAGE

Column_Name	Data_Type	Remarks
ID	Integer	
KGISVillageName	Integer	
Villagename_KN	nvarchar	
KGISVillageCode	nvarchar	
KGISVillageID	nvarchar	
KGISDistrictName	nvarchar	
KGISHoblID	nvarchar	

**4.9.8.4.8 MASTER\_PROCESS**

Column_Name	Data_Type	Remarks
ID	Integer	
Process_ID	Integer	
Process_Name	nvarchar	Values : AddNewQuery

**4.9.8.4.9 MASTER\_TRANS\_TYPE**

Column_Name	Data_Type	Remarks
ID	Integer	
Trans_ID	Integer	
Trans_Type	Varchar2	Values : Request, Response

**4.9.8.4.10 MASTER\_PROCESS\_STATUS**

Column_Name	Data_Type	Remarks
ID	Integer	
Process_Status_ID	Integer	
Status	Varchar2	Values -: Send to SME, Forwarded to other relevant SME, Rejected, Accepted, Resolved

**4.9.8.4.11 MASTER\_TRANS\_FLAG**

Column_Name	Data_Type	Remarks
ID	Integer	
Flag_ID	Integer	
Flag	Varchar2	Values : Open, Forwarded, Resolved, Rejected

**4.10 SEED SECTION****4.10.1 REQUIREMENT**

FR\_LRIP\_016– Seeds Section

This service aims at taking the user to the Seed application

FR\_LRIP\_017– Dealers List

This service aims at providing the user with list of dealers for seeds

FR\_LRIP\_018– Seed Stock and Pricing Information

This service aims at providing the user with prices for seeds

FR\_LRIP\_019– Area wise recommendation

This service aims at providing the user with recommendations for the area

**FR\_LRIP\_020– Seed Testing Laboratories**

This service enables the user to view the list of Seed Testing Laboratories

**FR\_LRIP\_021-- Seed Certification Application**

This service aims at providing the user and application to apply for Seed Certification

**FR\_LRIP\_022-- Seed Village Program**

This service aims at providing the user to Seed Village Program

#### 4.10.2 REQUIREMENT UNDERSTANDING

Services are required using which farmer can view the information about the seeds in Karnataka like dealers list, seed stock & pricing information, area wise recommendation, name and addresses of seed testing laboratories and seed village program etc.

Following services will be available under LRI Geo Portal -> Department of Agriculture

- Seeds Section
- Seeds Section -> Dealers List
- Seeds Section -> Seed Stock and Pricing Information
- Seeds Section -> Information on Seeds/ Seed varieties
- Seeds Section -> Area wise recommendation
- Seeds Section -> Registration/Licensing of seed growers
- Seeds Section -> Seed Testing Laboratories
- Seeds Section -> Seed Certification Application
- Seeds Section -> Seed Village Program
- Seeds Section -> Production–wise achievement
- Seeds Section -> Sources of Foundation Seeds
- Seeds Section -> Sources of Breeder seeds
- Seeds Section -> Sources of Certified seeds
- Seeds Section -> Planting materials
- Seeds Section -> Seedlings
- Seeds Section -> Cuttings
- Seeds Section -> Budding
- Seeds Section -> Tissue culture

The information related to Seeds/Seed varieties, Related Website, Production–wise achievement, Sources of Foundation Seeds, Sources of Breeder seeds, Sources of Certified seeds, Planting materials, Seedlings, Cuttings, Budding, Tissue culture, Layering which needs to be shown in the portal will be managed by Content Management System.

For Registration/ Licensing of Seed Growers <http://kkisan.karnataka.gov.in/license/> link will be provided

#### 4.10.3 MODULES

- Dealers List



- Seed Stock and Pricing Information
- Area wise recommendation
- Seed Testing Laboratories
- Seed Certification Application
- Seed Village Program

#### 4.10.3.1 DEALERS LIST

- When user click on Dealer List, a page will be displayed to user, which will contain information about the seed dealers in Karnataka state.
- Information will include district, block, product category, brand names, dealer name, office address, phone number 1, phone number 2, license number and license validity of seeds dealers.
- This information will be displayed in grid view.
- Drop downs will be provided on web page above grid view, which will provide the user facility to filter the data using district, block, product category and brand name.
- User can select the values from drop downs and click on 'Search' button beside the drop downs. Using the user selected filter criteria, data will be displayed in grid view.
- Data will be fetched from User\_Profile\_Dealer table. This table will be populated by fetching the information from kKisan Application through Web service. Please refer section 4.10.3.6 for the table definition.

#### 4.10.3.2 SEED STOCK AND PRICING INFORMATION

- When user click on Pricing and Availability, a page will be displayed to user, which will contain information about the seed stock and its pricing detail information in Karnataka state.
- Information will include dealer district, Taluka, name, crop, product category, price per quantity, stock available.
- This information will be displayed in grid view.
- Drop downs will be provided on web page above grid view, which will provide the user facility to filter the data using district, taluka and product category. Drop downs will be populated using master tables. Please refer section 4.10.3.6 for master tables.
- User can select the values from drop downs and click on 'Search' button beside the drop downs. Using the user selected filter criteria, data will be displayed in grid view.



- Data will be fetched from User\_Profile\_Dealer table. This table will be populated by fetching the information from kKisan Application through Web service. Please refer section 4.10.3.6 for the table definition.

#### 4.10.3.3 AREA WISE RECOMMENDATION

- When user click on Area Wise Recommendation, a page will be displayed to user, which will display recommendations for area in Karnataka state.
- Information will include district, crop, seed, quantity per area and recommendations.
- This information will be displayed in grid view.
- Drop downs will be provided on web page above grid view, which will provide the user facility to filter the data using district and crop
- User can select the values from drop downs and click on 'Search' button beside the drop downs. Using the user selected filter criteria, data will be displayed in grid view.
- Data will be fetched from SEED\_USAGES\_GUIDLINES table. Please refer section 4.10.3.6 for the table definition.
- Seed Testing Laboratories
- When user click on Seed Testing Laboratories, a page will be displayed to user, which will contain information about the seed testing laboratories information in Karnataka state.
- Information will include lab name, lab address, contact person and contact number
- This information will be displayed in grid view.
- Data will be fetched from 'SEED\_TESTING\_LAB' table

#### 4.10.3.4 SEED CERTIFICATION APPLICATION

- When user click on Seed certification. This web page will be redirected to kKisan Application (<http://kkisan.karnataka.gov.in/>)

#### 4.10.3.5 SEED VILLAGE PROGRAM

- When user click on Seed village program, a page will be displayed to user, which will contain information about the Seed village program information in Karnataka state.
- The information about the Seed Village program will be managed using content management system.



#### 4.10.3.6 TABLE DEFINITION USED FOR THIS REQUIREMENT.

##### 4.10.3.6.1 *USER\_PROFILE\_DEALER*

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
UserID	Integer	
FirstName	nvarchar	
LastName	nvarchar	
Dealer_ID	Integer	
Dealer_Name	nvarchar	
Office_Address	nvarchar	
Phone_Number_1	Integer	
Phone_Number_2	Integer	
License_Number	Integer	
License_Validity	Date	
Taluk	nvarchar	
District	nvarchar	

##### 4.10.3.6.2 *DEALER\_PRODUCT\_INFO*

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Product_Category_ID	Integer	
Brand_Name_ID	nvarchar	
Dealer_id	Integer	
Available_Stock	Integer	
Cost_Per_Unit	float	

##### 4.10.3.6.3 *MASTER\_PRODUCT\_CATEGORY*

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Product_Category_ID	Integer	
Category_Name	nvarchar	
Category_Name_KN	nvarchar	

##### 4.10.3.6.4 *MASTER\_PRODUCT\_BRAND*

Column Name	Data Type	Remark
-------------	-----------	--------



ID	Integer	Primary Key /Unique Id With Sequence
Brand_Name_ID	Integer	
Brand_Name	nvarchar	
Brand_Name_KN	nvarchar	
Product_Category_Id	Integer	

#### 4.10.3.6.5 SEED\_TESTING\_LAB

Column Name	Data Type	Remark
ID	INTEGER	Primary Key /Unique Id With Sequence
LAB_NAME	VARCHAR2	
LAB_ADDRESS	VARCHAR2	
CONTACT_PERSON	VARCHAR2	
CONTACT_NUMBER	INTEGER	

#### 4.10.3.6.6 MASTER\_DISTRICT

Column_Name	Data_Type	Remarks
ID	Integer	
KGISDistrictName	nvarchar	
DistrictName_KN	nvarchar	
KGISDistrictID	Integer	
KGISStateID	Integer	
KGISDistrictCode	nvarchar	

#### 4.10.3.6.7 MASTER\_TALUKA

Column_Name	Data_Type	Remarks
ID	Integer	
KGISTalukName	nvarchar	
TalukName_KN	Integer	
KGISTalukID	Integer	
KGISTalukCode	nvarchar	
KGISDistrictID	Integer	

#### 4.10.3.6.8 MASTER\_SEED\_PRODUCT\_CATEGORY

Column Name	Data Type	Remark
ID	INTEGER	Primary Key /Unique Id With Sequence
PRODUCT_CATEGORY	VARCHAR2	

#### 4.10.3.6.9 SEED\_USAGES\_GUIDLINES



Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
District	Integer	Reference Key from master district table
Crop_ID	Integer	
Seed_ID	Integer	
Crop_Stage	nvarchar	
Seed_Dealer_ID	Integer	
Qty_Per_Area	nvarchar	KG/Hectare

## 4.11 PESTICIDES SECTION

### 4.11.1 REQUIREMENT

#### FR\_LRIP\_033– Pesticides

This service aims at taking the user to the Pesticides application

#### FR\_LRIP\_034– Dealer Network

This service aims at providing the user with list of dealers for pesticides

#### FR\_LRIP\_035– Pricing and Availability

This service aims at providing the user with prices of pesticides

#### FR\_LRIP\_036– Package of Practices

This service aims at providing the user with recommendations for the area

#### FR\_LRIP\_038– Pesticides Testing Laboratories

This service enables the user to view the pesticides testing laboratories information

#### FR\_LRIP\_089– Pesticides Testing Laboratories information

This service enables the user to view the pesticides testing laboratories information

### 4.11.2 REQUIREMENT UNDERSTANDING

Services are required using which farmer can view the information about the pesticides in Karnataka. Information will include types of pesticides, list of dealers who provides the pesticides, prices and stock of pesticides, recommendation of pesticides as per the area and information about pesticides testing laboratories. This information will be accessed using web service published by kkisan Application (<http://kkisan.karnataka.gov.in/>).

Following services will be available under LRI Geo Portal -> Department of Agriculture

- Pesticides Section
- Pesticides Section -> Dealer List
- Pesticides Section -> Pricing and Availability
- Pesticides Section -> Package of Practices
- Pesticides Section -> Pesticides Testing Laboratories



### 4.11.3 MODULES

- Pesticides
- Dealer List
- Pricing and Availability
- Package of Practices
- Pesticides Testing Laboratories

#### 4.11.3.1 PESTICIDES

On clicking the Pesticides Section link, user will be redirected to page, which will display the information about pesticides in use in Karnataka state. The information will be managed using content management system.

#### 4.11.3.2 DEALER LIST

- When user click on Dealer List, a page will be displayed to user, which will contain information about the pesticides dealers in Karnataka state.
- Information will include district, block, product category, brand names, dealer name, office address, phone number 1, phone number 2, license number and license validity of dealers.
- This information will be displayed in grid view.
- Drop downs will be provided on web page above grid view, which will provide the user facility to filter the data using district, block, product category and brand name. Drop downs will be populated using master tables.
- User can select the values from drop downs and click on 'Search' button beside the drop downs. Using the user selected filter criteria, data will be displayed in grid view.
- Data will be fetched from User\_Profile\_Dealer table. This table will be populated by fetching the information from kKisan Application through Web service. Please refer section 4.11.3.6 for the table definition.

#### 4.11.3.3 PRICING AND AVAILABILITY

- When user click on 'Pricing And Availability', a page will be displayed to user, which will contain information about pesticides availability and prices.
- Information will include district, block, dealer name, product category, brand names, price per quantity and available stock.
- This information will be displayed in grid view.



- Drop downs will be provided on web page above grid view, which will provide the user facility to filter the data using district, block, product category and brand name. Drop downs will be populated using master tables. Please refer section 4.11.3.6 for master tables.
- User can select the values from drop downs and click on 'Search' button beside the drop downs. Using the user selected filter criteria, data will be displayed in grid view.
- Data will be fetched from User\_Profile\_Dealer table. This table will be populated by fetching the information from kKisan Application through Web service. Please refer section 4.11.3.6 for the table definition.

#### 4.11.3.4 PACKAGES OF PRACTICES

- When user clicks on 'Package of Practices', a page will be displayed to user, which will contain the information about the package of practices for pesticides to be used.
- Information will include district, crop grown, pesticides recommended, stage of crop, quantity per area and supplier.
- This information will be displayed in grid view.
- Drop downs will be provided on web page above grid view, which will provide the user facility to filter the data using district, crops and stage of crop cycle. Drop downs will be populated using master tables.
- User can select the values from drop downs and click on 'Search' button beside the drop downs. Using the user selected filter criteria, data will be displayed in grid view.
- Data will be fetched from PESTICIDES\_USAGE\_GUIDELINES table. Please refer section 4.11.3.6 for the table definition.

#### 4.11.3.5 PESTICIDES TESTING LABORATORIES

User will be redirected to page, which will contain the information about pesticides testing laboratories. Information will include lab name, lab address, contact person and contact number. This information will be displayed in a grid view and will be fetched from 'PESTICIDES\_TESTING\_LAB' table.

#### 4.11.3.6 TABLE DEFINITION USED FOR THIS REQUIREMENT.

##### 4.11.3.6.1 USER\_PROFILE\_DEALER

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
UserID	Integer	



Column Name	Data Type	Remark
FirstName	nvarchar	
LastName	nvarchar	
Dealer_ID	Integer	
Dealer_Name	nvarchar	
Office_Address	nvarchar	
Phone_Number_1	Integer	
Phone_Number_2	Integer	
License_Number	Integer	
License_Validity	Date	
Taluk	nvarchar	
District	nvarchar	

#### 4.11.3.6.2 DEALER\_PRODUCT\_INFO

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Product_Category_ID	Integer	
Brand_Name_ID	nvarchar	
Dealer_id	Integer	
Available_Stock	Integer	
Cost_Per_Unit	float	

#### 4.11.3.6.3 MASTER\_PRODUCT\_CATEGORY

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Product_Category_ID	Integer	
Category_Name	nvarchar	
Category_Name_KN	nvarchar	

#### 4.11.3.6.4 MASTER\_PRODUCT\_BRAND

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Brand_Name_ID	Integer	
Brand_Name	nvarchar	
Brand_Name_KN	nvarchar	
Product_Category_Id	Integer	

#### 4.11.3.6.5 PESTICIDE\_USAGE\_GUIDELINES

Column Name	Data Type	Remark
ID	INTEGER	Primary Key /Unique Id With Sequence



Column Name	Data Type	Remark
DISTRICT	VARCHAR2	
CROPS_GROWN	VARCHAR2	
PESTICIDES_RECOMMENDED	VARCHAR2	
CROP_STAGE	VARCHAR2	Values Pre-Sowing, Sowing, Post Sowing
QUANTITY_PER_AREA	VARCHAR2	
SUPPLIER	VARCHAR2	

#### 4.11.3.6.6 PESTICIDES\_TESTING\_LAB

Column Name	Data Type	Remark
ID	INTEGER	Primary Key /Unique Id With Sequence
LAB_NAME	VARCHAR2	
LAB_ADDRESS	VARCHAR2	
CONTACT_PERSON	VARCHAR2	
CONTACT_NUMBER	INTEGER	

#### 4.11.3.6.7 MASTER\_DISTRICT

Column_Name	Data_Type	Remarks
ID	Integer	
KGISDistrictName	nvarchar	
DistrictName_KN	nvarchar	
KGISDistrictID	Integer	
KGISStateID	Integer	
KGISDistrictCode	nvarchar	

#### 4.11.3.6.8 MASTER\_TALUKA

Column_Name	Data_Type	Remarks
ID	Integer	
KGISTalukName	nvarchar	
TalukName_KN	Integer	
KGISTalukID	Integer	
KGISTalukCode	nvarchar	
KGISDistrictID	Integer	

#### 4.11.3.6.9 MASTER\_PESTICIDE\_BRAND\_NAME

Column Name	Data Type	Remark
ID	INTEGER	Primary Key /Unique Id With Sequence
BRAND_NAME	VARCHAR2	

#### 4.11.3.6.10 MASTER\_PESTICIDE\_PRODUCT\_CATEGORY



Column Name	Data Type	Remark
ID	INTEGER	Primary Key /Unique Id With Sequence
PRODUCT_CATEGORY	VARCHAR2	

## 4.12 FERTILIZER SECTION

### 4.12.1 REQUIREMENT

FR\_LRIP\_023– Fertilizer

This service aims at taking the user to the fertilizer application

FR\_LRIP\_024– Dealer Network

This service aims at providing the user with list of dealers for fertilizer

FR\_LRIP\_025– Pricing and Availability

This service aims at providing the user with prices for fertilizer

FR\_LRIP\_026– Usage Guidelines

This service aims at providing the user with recommendations for the area

FR\_LRIP\_015– Fertilizer Testing Laboratories

This service enables the user to view the Fertilizer testing laboratories information

FR\_LRIP\_029– Organic Fertilizer

This service aims at providing the user the access to Organic Fertilizer section

FR\_LRIP\_030– Fertilizer Testing Procedure

This service aims at providing the user the access to Fertilizer Testing Procedure page

FR\_LRIP\_031– Inorganic Fertilizer

This service aims at providing the user the access to Inorganic Fertilizer

FR\_LRIP\_032– Bio Fertilizer

This service aims at providing the user the access to Bio Fertilizer

### 4.12.2 REQUIREMENT UNDERSTANDING

Services are required using which farmer can view the information about the Fertilizer in Karnataka. Information will include types of Fertilizer, list of dealers who provides the Fertilizer, prices and availability of Fertilizer, recommendation of Fertilizer as per the area, information about Fertilizer testing laboratories, Organic Fertilizer, Inorganic Fertilizer and Bio Fertilizer. This information will be accessed using web service published by kisan Application (<http://kkisan.karnataka.gov.in/>). Agriculture department website will be accessed for registration / License certification by the dealers



Display the list of insecticide/Fertilizer/Seed Inspectors at Hobli, Taluka, Sub division District and State Level.

Following services will be available under LRI Geo Portal -> Department of Agriculture

- Fertilizer Section
- Fertilizer Section -> Dealer List
- Fertilizer Section -> Pricing and Availability
- Fertilizer Section -> Usage Guidelines
- Fertilizer Section -> Fertilizer Testing Laboratories
- Fertilizer Section -> Organic Fertilizer
- Fertilizer Section -> Fertilizer Testing Procedure
- Fertilizer Section -> Inorganic Fertilizer
- Fertilizer Section -> Bio Fertilizer

### 4.12.3 MODULES

- Fertilizer
- Dealer List
- Pricing and Availability
- Usage Guidelines
- Fertilizer Testing Laboratories
- Organic Fertilizer
- Fertilizer Testing Procedure
- Inorganic Fertilizer
- Bio Fertilizer

#### 4.12.3.1 FERTILIZER

On clicking the Fertilizer Section link, user will be redirected to page, which will display the information about Fertilizer in use in Karnataka state. The information will be managed using content management system.

#### 4.12.3.2 DEALER LIST

- When user click on Dealer List, a page will be displayed to user, which will contain information about the Fertilizer dealers in Karnataka state.
- Information will include district, block, product category, brand names, dealer name, office address, phone number 1, phone number 2, license number and license validity of dealers.
- This information will be displayed in grid view.
- Drop downs will be provided on web page above grid view, which will provide the user facility to filter the data using district, block, product category and brand name. Drop downs will be populated using master tables.



- User can select the values from drop downs and click on 'Search' button beside the drop downs. Using the user selected filter criteria, data will be displayed in grid view.
- Data will be fetched from Master\_DEALER table. This table will be populated by fetching the information from kKisan Application through Web service. Please refer section 4.12.4 for the table definition.

#### 4.12.3.3 PRICING AND AVAILABILITY

- When user click on 'Pricing Information', a page will be displayed to user, which will contain information about fertilizer availability and prices.
- Information will include district, block, dealer name, product category, brand names, price per quantity and available stock.
- This information will be displayed in grid view.
- Drop downs will be provided on web page above grid view, which will provide the user facility to filter the data using district, block, product category and brand name. Drop downs will be populated using master tables.
- User can select the values from drop downs and click on 'Search' button beside the drop downs. Using the user selected filter criteria, data will be displayed in grid view.
- Data will be fetched from User\_Profile\_Dealer table. This table will be populated by fetching the information from kKisan Application through Web service. Please refer section 4.12.4 for the table definition.

#### 4.12.3.4 USAGE GUIDELINES

- When user clicks on 'Usage Guidelines', a page will be displayed to user, which will contain the information about the package of practices for fertilizer to be used.
- Information will include district, crop grown, Fertilizers recommended, stage of crop, quantity per area and supplier.
- This information will be displayed in grid view.
- Drop downs will be provided on web page above grid view, which will provide the user facility to filter the data using district, crops grown and stage of crop cycle. Drop downs will be populated using master tables.



- User can select the values from drop downs and click on 'Search' button beside the drop downs. Using the user selected filter criteria, data will be displayed in grid view.
- Data will be fetched from FERTILIZER\_USAGE\_GUIDELINES table. Please refer section 4.12.4 for the table definition.

#### 4.12.3.5 FERTILIZER TESTING LABORATORIES

User will be redirected to page, which will contain the information about fertilizer testing laboratories. Information will include lab name, lab address, contact person and contact number. This information will be displayed in a grid view and will be fetched from 'FERTILIZER\_TESTING\_LAB' table. Please refer section 4.12.4 for definition of table.

#### 4.12.3.6 ORGANIC FERTILIZER

User will be redirected to page, which will contain the information about Organic fertilizer. This will be managed using Content Management System.

#### 4.12.3.7 FERTILIZER TESTING PROCEDURE

User will be redirected to page, which will contain the information about fertilizer testing laboratories. Content Management System

#### 4.12.3.8 INORGANIC FERTILIZER

User will be redirected to page, which will contain the information about InOrganic fertilizer. Content Management System

#### 4.12.3.9 BIOFERTILIZER

User will be redirected to page, which will contain the information about Biofertilizer. Content Management System

### 4.12.4 TECHNICAL DESCRIPTION

#### 4.12.4.1 TABLE DEFINITION USED FOR THIS REQUIREMENT.

##### 4.12.4.1.1 USER\_PROFILE\_DEALER

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence



Column Name	Data Type	Remark
UserID	Integer	
FirstName	nvarchar	
LastName	nvarchar	
Dealer_ID	Integer	
Dealer_Name	nvarchar	
Office_Address	nvarchar	
Phone_Number_1	Integer	
Phone_Number_2	Integer	
License_Number	Integer	
License_Validity	Date	
Taluk	nvarchar	
District	nvarchar	

#### 4.12.4.1.2 *DEALER\_PRODUCT\_INFO*

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Product_Category_ID	Integer	
Brand_Name_ID	nvarchar	
Dealer_id	Integer	
Available_Stock	Integer	
Cost_Per_Unit	float	

#### 4.12.4.1.3 *MASTER\_PRODUCT\_CATEGORY*

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Product_Category_ID	Integer	
Category_Name	nvarchar	
Category_Name_KN	nvarchar	

#### 4.12.4.1.4 *MASTER\_PRODUCT\_BRAND*

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Brand_Name_ID	Integer	
Brand_Name	nvarchar	
Brand_Name_KN	nvarchar	
Product_Category_Id	Integer	

#### 4.12.4.1.5 *FERTILIZER\_USAGE\_GUIDELINES*



Column Name	Data Type	Remark
ID	INTEGER	Primary Key /Unique Id With Sequence
DISTRICT	VARCHAR2	
CROPS_GROWN	VARCHAR2	
FERTILIZER_RECOMMENDED	VARCHAR2	
CROP_STAGE	VARCHAR2	Values Pre-Sowing, Sowing, Post Sowing
QUANTITY_PER_AREA	VARCHAR2	
SUPPLIER	VARCHAR2	

#### 4.12.4.1.6 *FERTILIZER\_TESTING\_LAB*

Column Name	Data Type	Remark
ID	INTEGER	Primary Key /Unique Id With Sequence
LAB_NAME	VARCHAR2	
LAB_ADDRESS	VARCHAR2	
CONTACT_PERSON	VARCHAR2	
CONTACT_NUMBER	INTEGER	

#### 4.12.4.1.7 *MASTER\_DISTRICT*

Column_Name	Data_Type	Remarks
ID	Integer	
KGISDistrictName	nvarchar	
DistrictName_KN	nvarchar	
KGISDistrictID	Integer	
KGISStateID	Integer	
KGISDistrictCode	nvarchar	

#### 4.12.4.1.8 *MASTER\_TALUKA*

Column_Name	Data_Type	Remarks
ID	Integer	
KGISTalukName	nvarchar	
TalukName_KN	Integer	
KGISTalukID	Integer	
KGISTalukCode	nvarchar	
KGISDistrictID	Integer	

#### 4.12.4.1.9 *MASTER\_FERTILIZER\_BRAND\_NAME*



Column Name	Data Type	Remark
ID	INTEGER	Primary Key /Unique Id With Sequence
BRAND_NAME	VARCHAR2	

## 4.13 VIEW FAQ

### 4.13.1 REQUIREMENT

FR\_LRIP\_040– View FAQ

The System provides a provision to the user to view FAQs.

### 4.13.2 REQUIREMENT UNDERSTANDING

A functionality is required using which user will be able to view the FAQ's and its response. User will be able to filter the FAQ depending on service/sub service name, FAQ category name.

Service will be available under

- Expert Advisory-> View FAQ

### 4.13.3 MODULES

- A web page for viewing FAQ

### 4.13.4 MODULE DESCRIPTION

- The information will be managed using content management system.

## 4.14 ADD NEW QUERY

### 4.14.1 REQUIREMENT

FR\_LRIP\_041– Add New Query

This Functional Requirement allows user to Add New query on specific service/sub service.

### 4.14.2 REQUIREMENT UNDERSTANDING

A functionality is required using which farmer/citizen can ask query to get advice on specific service/sub service. Once user submit the query, it will be sent to subject matter expert of selected FAQ category. A System generated reference number against the submitted query will be sent to the user's registered mobile number in local language. Using this reference number, the user can view the status of the submitted query on the portal/ service home page.

Service will be available under

- Expert Advisory -> Add New Query



### 4.14.3 MODULES

- A web page for providing inputs to add a new query
- Validations and messages.

#### 4.14.3.1 WEB PAGE FOR PROVIDING INPUTS

- When user clicks on 'Add New Query' link, a web page will be displayed to user.
- This web page will contains drop downs to select service/sub service, FAQ category and location area level and text boxes to enter mobile number, Query in short, Query Details, email id and captcha.
- A 'Query in short' text box will be limited characters text box.
- A 'Query Text' text box will be multiline text box and will allow user to enter the text in English and Kannada language.
- A 'Submit' button will be provided to submit the query.
- An option will be provided using which user can attached a file along with query.
- If user is registered user of LRI Geo Portal, then after the login, mobile number and email id will be populated using registered information of user.
- Values in drop downs will be populated from master tables for respective drop down. Location area selection will be depend on previous selection. For e.g. on selection of district, all these blocks of selected district will be shown in drop down for block.
- Mandatory fields will be marked as '\*'
- After entering/selecting all values, when user will click on 'Submit' button, validation will be done for mandatory values.
- After successful validation, function will generate a URN (unique reference number). Function will update the SME\_ID (ID of subject matter expert) to whom query will be forwarded. Generated URN number will be sent to user on his mobile number and/or email id.
- Function will then store the values in following tables.

#### 4.14.3.2 USER\_QUERIES:

In this table, data will be updated for following fields.

ColumnName	Values
ID	System generated unique ID using sequence



ColumnName	Values
SERVICE_NAME	Service Name drop down
FAQ_CATRLOGY	FAQ Category drop down
MOBILE_NUMBER	Mobile Number text box
EMAIL_ID	Email Id text box
DISTRICT	District drop down
BLOCK	Block drop down
PANCHAYAT	Panchayat drop down
VILLAGE	Village drop down
SERVEY_NO	Servey No text box
SHORT_QUERY	Query in short text box
QUERY_DETAILS	Query Text text box
FAMER_ID	ID value from user_profile_farmer table. This will be same for each member of selected user
URN	system generated unique id for 'AddNewQuery' process.
STATUS	ID related to 'Send to SME' from master_process_status table
RAISED_DATE	System date on which query is raised

#### 4.14.3.3 FILE\_ATTACHED:

In this table, data will be updated for following fields, if user attached any file along with query.

ColumnName	Values
ID	System generated unique ID using sequence
URN	URN from user_queries table
Transc_Type	ID related to 'Request' value from master_transc_type table
File_Attached	File attached by user

#### 4.14.3.4 TRANSACTION\_LOG:

In this table, data will be updated for following fields..

ColumnName	Values
ID	System generated unique ID using sequence
Process_Name	ID related to 'AddNewQuery' value from master_processname table
Process_ID	URN from user_queries table
Flag	ID related to 'Open' value from master_trans_flag table
From_User	SME_ID value to whom query is sent
To_User	Initially when query is raised, this will be '0'
Received_Date	Date on which query is received to SME
Response_Date	Date on which response for query is given



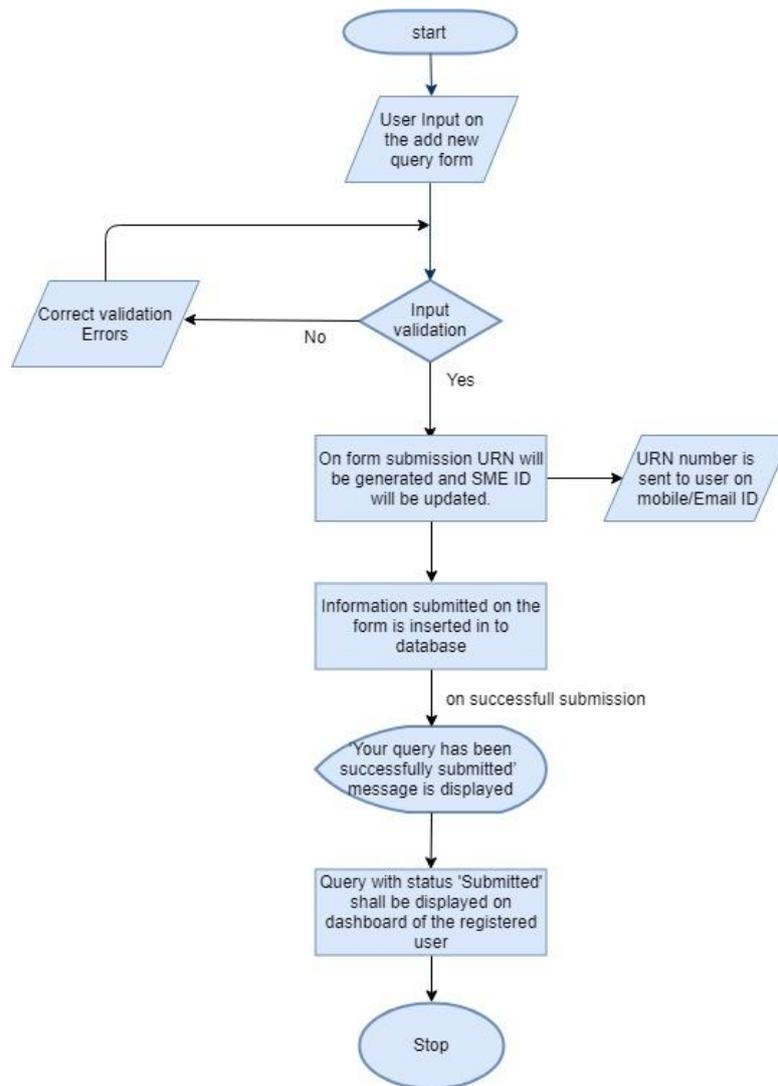
ColumnName	Values
Remark	
URN_ID	
Service Id	

- After successful submission of query a message 'Your query has been successfully submitted' will be displayed to user.
- Query with status 'Submitted' will be displayed on the dashboard of registered user. A registered user will view the status of query on his dashboard when he/she logged in.
- A non-registered user will view the status of query using link 'View Query Status' on LRI Geo Portal.

#### 4.14.3.5 VALIDATIONS AND MESSAGES

Criteria	Message
Service/Subservice not selected	Please select the service
FAQ category not selected	Please select the FAQ Category
Query text not entered	Please enter your Query
Mobile Number not entered	Please enter mobile number
Location area level not selected	Please select District/Block/Panchayat/Village
Servye number not selected	Please enter survey number

#### 4.14.4 LOGICAL FLOW DIAGRAM



#### 4.14.5 TECHNICAL DESCRIPTION

##### 4.14.5.1 INPUT FIELDS ON WEB PAGE

Attribute Name	Mandatory	Input Type	Remark
Service Name	Yes	Drop down	Populate values from table Master_Service table
FAQ Category Name	Yes	Drop down	Populate values from table Master_FAQ_Category table
Query Text	Yes	Text Box	
Mobile Number	Yes	Text Box	
Email ID	Yes	Text Box	
District	Yes	Drop down	Populate values from table Master_District table
Block	Yes	Drop down	Populate values from table Master_Taluka table
Panchayat	Yes	Drop down	Populate values from table Master_Panchayat table



Attribute Name	Mandatory	Input Type	Remark
Village	Yes	Drop down	Populate values from table Master_Village table
Surevy Number	Yes	Text Box	
Captcha		Image	
Captch Verification Text	Yes	Text Box	

#### 4.14.5.2 TABLE DEFINITION USED FOR THIS REQUIREMENT

##### 4.14.5.2.1 *USER\_QUERIES*

Column_Name	Data_Type	Remark
Id	Integer	Primary Key. Generate using Sequence
Service_Name	Integer	Relationship with Master_Service table
Faq_Catrgory	Integer	Relationship with Master_FAQ_Category table
Mobile_Number	Integer	
Email_ID	Varchar2	
District	Integer	Relationship with Master_District table
Block	Integer	Relationship with Master_Block table
Panchayat	Integer	Relationship with Master_Panchayat table
Village	Integer	Relationship with Master_Village table
Servey_No	Varchar2	
Query_Text	Nvarchar(max)	
Farmer_ID	Integer	Relationship with USER_PROFILE_FARMER table
URN	Integer	
Status	Integer	Relationship with Master_Process_Status
Raised_Date	Date	
Resolved_Date	Date	
Remark	Nvarchar(max)	

##### 4.14.5.2.2 *FILE\_ATTACHED*

Column_Name	Data_Type	Remark
ID	integer	Primary Key
URN	integer	
Transc_Type	integer	Relation with Master_Trans_Type table
File_Attached	binary	

##### 4.14.5.2.3 *TRANSACTION\_LOG*

Column_Name	Data_Type	Remarks
ID	Integer	Primary Key. Generate using Sequence
Process_Name	Nvarchar	Relationship with Master_ProcessName table
Process_ID	Integer	



Column_Name	Data_Type	Remarks
Flag	Integer	
From_User	Integer	
To_User	Integer	
Received_Date	DateTIme	
Response_Date	DateTIme	
Service_ID		
URN_ID		
Remark	Nvarchar	

#### 4.14.5.2.4 **MASTER\_SERVICE**

Column_Name	Data_Type	Remarks
ID	Integer	
Service_Name	Varchar2	

#### 4.14.5.2.5 **MASTER\_FAQ\_CATEGORY**

Column_Name	Data_Type	Remarks
ID	Integer	
Category_Name	Varchar2	

#### 4.14.5.2.6 **MASTER\_DISTRICT**

Column_Name	Data_Type	Remarks
ID	Integer	
KGISDistrictName	nvarchar	
DistrictName_KN	nvarchar	
KGISDistrictID	Integer	
KGISStateID	Integer	
KGISDistrictCode	nvarchar	

#### 4.14.5.2.7 **MASTER\_TALUKA**

Column_Name	Data_Type	Remarks
ID	Integer	
KGISTalukName	nvarchar	
TalukName_KN	Integer	
KGISTalukID	Integer	
KGISTalukCode	nvarchar	
KGISDistrictID	Integer	

**4.14.5.2.8 MASTER\_PANCHAYAT**

Column_Name	Data_Type	Remarks
ID	Integer	
Taluka_ID	Integer	
Panchayat_Name	Varchar2	

**4.14.5.2.9 MASTER\_VILLAGE**

Column_Name	Data_Type	Remarks
ID	Integer	
Panchayat_ID	Integer	
Village_Name	Varchar2	

**4.14.5.2.10 MASTER\_PROCESS**

Column_Name	Data_Type	Remarks
ID	Integer	
Process_Name	Integer	Values : AddNewQuery

**4.14.5.2.11 MASTER\_TRANS\_TYPE**

Column_Name	Data_Type	Remarks
ID	Integer	
Trans_Type	Varchar2	Values : Request, Response

**4.14.5.2.12 MASTER\_PROCESS\_STATUS**

Column_Name	Data_Type	Remarks
ID	Integer	
STATUS	Varchar2	Values -: Send to SME, Forwarded to other relevant SME, Rejected, Accepted, Resolved

**4.14.5.2.13 MASTER\_TRANS\_FLAG**

Column_Name	Data_Type	Remarks
ID	Integer	
Flag	Varchar2	Values : Open, Forwarded, Resolved, Rejected



## 4.15 QUERY ACCEPTANCE AND EXPERT ADVICE

### 4.15.1 REQUIREMENT

FR\_LRIP\_041– Add New Query

This Functional Requirement will provide a provision to the user to give advices against the received queries.

### 4.15.2 REQUIREMENT UNDERSTANDING

Functionality is required using which, subject matter expert (SME) will provide the advice or answer the queries of farmer/citizen. Published answers will be added in FAQ list and displayed on the home page of the LRI Geo Portal. SMS will be sent to stakeholder's mobile number.

Service will be available under

- LRI Geo Portal -> Expert Advisory -> Query Acceptance and Expert Advice

A user (SME) must logged in to LRI Geo Portal to view/answer the queries assigned to him.

### 4.15.3 MODULES

- A web page for providing inputs
- Database procedure to archive and delete the query records

#### 4.15.3.1 WEB PAGE FOR PROVIDING INPUTS

- After successful login, when user will click on 'Query Acceptance and Expert Advice', a list of queries will be displayed in a gridview. This list will be populated from 'short\_query' field of 'users\_query' table. Only those queries will be displayed which have 'Open' and 'Forwarded' flag in 'transation\_log' table for logged in user id. Match logged in user id with 'from\_user' field in 'transaction\_log' table.
- On click query in the list, details of query will be displayed along with the URN Number. This will be populated using 'query\_details' field of 'users\_query' table for that query in query list.
- Reject, Forward, Answer, Revert buttons will be provided on the page using which user will reject, forward and answer the queries.
- A multiline text box will be provided on web page in which user can provide the answer or write the remarks about rejected or forwarded queries.
- When user click on reject button, function will update the 'Flag' in 'Transaction\_Log' table with 'Rejected' value.
- When clicks forward button, drop downs for selecting the level and SME will be displayed to user.



When user will select center level in one of the drop down, function will display list of users who have been assigned the SME role for the particular FAQ/service category in another drop down.

When user will select state level, function will fetch the state of user who raised the query from user\_queries table. Function will then get list of users for the same state who have been assigned the SME role for the particular FAQ/service category.

When user will select district level, function will fetch the state and district of user who raised the query from user\_queries table. Function will then get list of users for the same state and district who have been assigned the SME role for the particular FAQ/service category.

- A 'View Forward Details' button and read only text box will be provided on web page to view the forward details. When user will click on 'View Forward Details' button, information about the forwarded query like forward remarks, role of SME's, district or state or district of SME's and details of SME's who forwarded the queries. There can be multiple forward details. All this information will be fetched from user\_queries, transaction\_log and sme\_information tables.
- When user will click on forward, function will update the 'Flag' with 'Forwarded' and 'Response\_Date' with system date time for the existing record of query having flag as 'Open' in 'Transaction\_Log' table.

A new record for the same query will be inserted in 'Transaction\_Log' table with 'Flag' as 'Open', 'To\_User' with id of SME to whom query will be forwarded and 'Receive\_Date' with system date time.

- When user click on Revert button , function will update the flag with 'Reverted' and 'Response Date' with system datetime and 'Remark' with remark Field for the existing record of query having flag as 'Forwarded' in 'Transaction\_Log' table.

A new record for the same query will be inserted in 'Transaction\_Log' table with 'Flag' as 'Open', 'To\_User' with id of SME to whom query will be Reverted and 'Receive\_Date' with system date time.

- When user will click on answer button, function will update the 'Flag' with 'Resolved' and 'Response\_Date' with system date time for the existing record of query having flag as 'Open' in 'Transaction\_Log' table.
- An remark in 'Remark' field, 'Resolved' in 'Status' field and system date in 'Resolved Date' field will be updated in 'User\_Queries' table for respective query/queries.

An SMS will be sent on farmer's/citizen's registered mobile number who raised the query.

- A button for attaching the file will be provided to user. Using this button user can attach any file along with the remark.



- A button 'FAQ Answer' will be provided on web page, using which user can add the query answer to FAQ List.

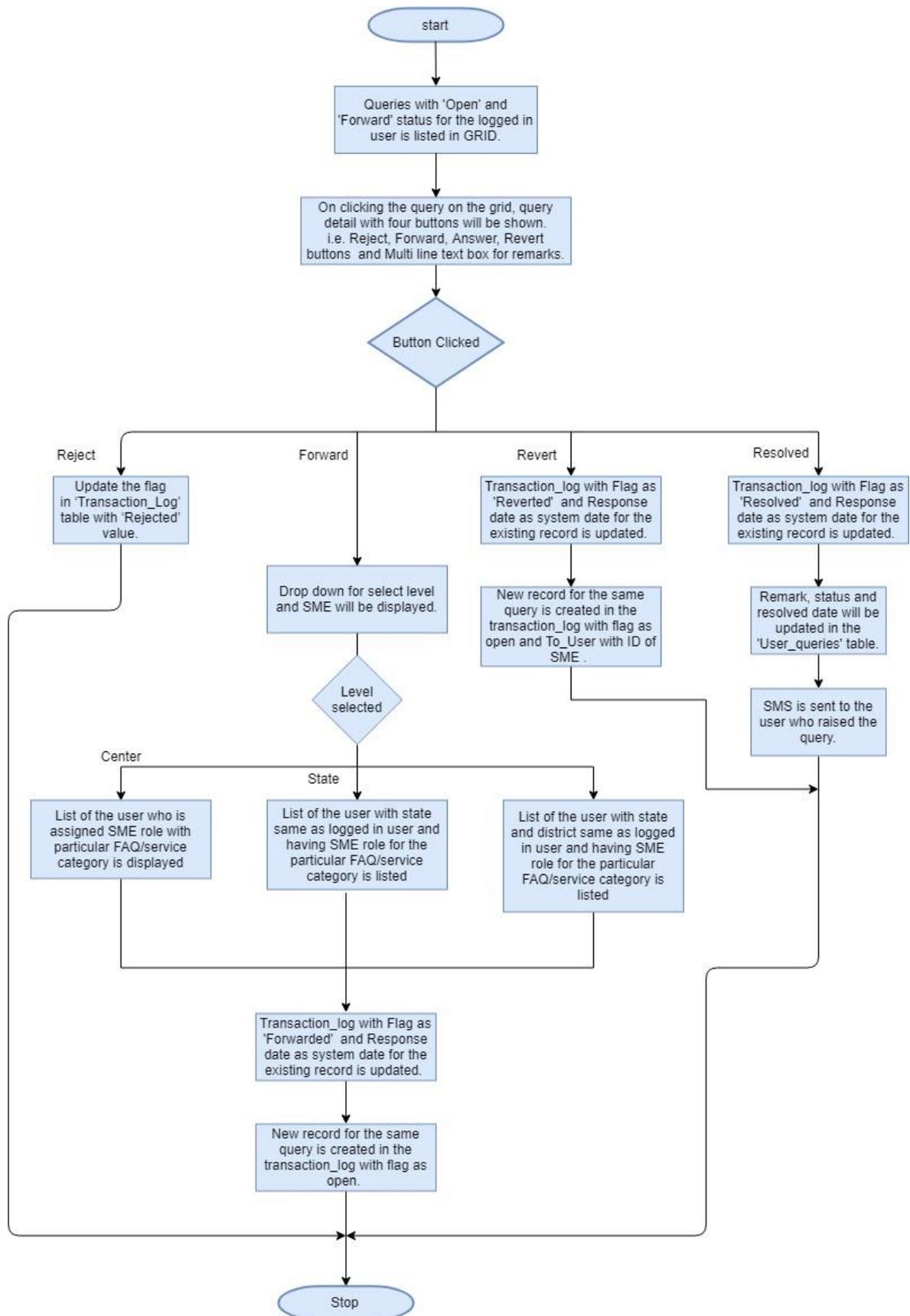
#### 4.15.3.2 VALIDATIONS AND MESSAGES

Criteria	Message
Query not selected	Please select at least one query
Remark not populated	Please enter answer/remark
User selected the level but not the SME while forwarding the query	No SME is selected to forward the query

#### 4.15.3.3 DATABASE PROCEDURES TO ARCHIVE AND DELETE THE QUERY RECORDS

- A database procedure will be developed which will fetch the records of queries from transaction\_log table, which have 'Open' flag and difference between received date and system date is equal to 30 days. Procedure will delete those records from transaction\_log table and put those records in archived table.
- Another database procedure will be developed which will fetched the records from archived table which are 60 days old and delete those records.
- These procedure will be scheduled daily using database scheduler.
- Number of days are configurable parameter in database.

#### 4.15.4 LOGICAL FLOW DIAGRAM



#### 4.15.5 TECHNICAL DESCRIPTION

**4.15.5.1 INPUT FIELDS ON WEB PAGE**

Attribute Name	Mandatory	Input Type	Remark
Short Query	Yes	Listbox	Populate using short_query field from users_query table
Query Details		Read only Text box	
Reject	Yes	Radio Button	
Answer		Radio Button	
Forward		Radio Button	
SME At Level	Conditional - If Forward option selected	Drop Down	Populate values from SME_Information table
SME	Conditional - If Forward option selected	Drop Down	Populate values from SME_Information table
View Forward Details		Button	
Forwarded Details		Read only Text box	
Remark	Yes	Multiline Text Box	
Submit		Button	

**4.15.5.2 TABLE DEFINITION USED FOR THIS REQUIREMENT****4.15.5.2.1 USER\_QUERIES**

Column_Name	Data_Type	Remark
ID	Integer	Primary Key. Generate using Sequence
SERVICE_NAME	Integer	Relationship with Master_Service table
FAQ_CATRGORY	Integer	Relationship with Master_FAQ_Category table
MOBILE_NUMBER	Integer	
EMAIL_ID	Varchar2	
DISTRICT	Integer	Relationship with Master_District table
BLOCK	Integer	Relationship with Master_Block table
PANCHAYAT	Integer	Relationship with Master_Panchayat table
VILLAGE	Integer	Relationship with Master_Village table
SERVEY_NO	Varchar2	
QUERY_TEXT	Nvarchar(max)	
FAMER_ID	Integer	Relationship with USER_PROFILE_FARMER table
URN	Integer	
Status	Integer	Relationship with Master_Process_Status
RAISED_DATE	Date	
Resolved_Date	Date	
Remark	Nvarchar(max)	



#### 4.15.5.2.2 FILE\_ATTACHED

Column_Name	Data_Type	Remark
ID	integer	Primary Key
URN	integer	
Transc_Type	integer	Relation with Master_Trans_Type table
File_Attached	binary	

#### 4.15.5.2.3 TRANSACTION\_LOG

Column_Name	Data_Type	Remarks
ID	Integer	Primary Key. Generate using Sequence
Process_Name	Nvarchar	Relationship with Master_ProcessName table
Process_ID	Integer	
Flag	Integer	Relationship with Master_Trans_Flag table
From_User	Integer	Relationship with SME_Informarion table
To_User	Integer	Relationship with SME_Informarion table
Received_Date	DateTIme	
Response_Date	DateTIme	
Remark	Nvarchar	

## 4.16 FARM MACHINERY

### 4.16.1 REQUIREMENT

FR\_LRIP\_043 Farm Machinery

This activity enables the user to access the application for Farm Machinery

### 4.16.2 REQUIREMENT UNDERSTANDING

Services are required using which farmer can view the information about the Farm Machinery. Information will include list of dealers who provides the farm Machinery, pricing information, Usage of Machinery, testing and training center, types of farm machinery, farm machinery scheme . This information will be accessed using web service published by kkisan Application (<http://kkisan.karnataka.gov.in/>)

### 4.16.3 MODULES

- Dealer List
- Pricing Information
- Usage of Machinery
- Testing and training center
- Type of farm machinery
- Farm machinery scheme.



#### 4.16.3.1 DEALER LIST

- When user click on Dealer List, a page will be displayed to user, which will contain information about the Farm machinery dealers in Karnataka state.
- Information will include district, Taluka, product category, brand names, dealer name, office address, phone number 1, phone number 2.
- This information will be displayed in grid view.
- Drop downs will be provided on web page above grid view, which will provide the user facility to filter the data using district, Taluka, product category and brand name.
- User can select the values from drop downs and click on 'Search' button beside the drop downs. Using the user selected filter criteria, data will be displayed in grid view.
- Data will be fetched from Master\_DEALER table. This table will be populated by fetching the information from kKisan Application through Web service.

#### 4.16.3.2 PRICING INFORMATION

- When user click on 'Pricing And Availability', a page will be displayed to user, which will contain information about pesticides availability and prices.
- Information will include district, taluka, dealer name, product category, brand names, price per quantity and available stock.
- This information will be displayed in grid view.
- Drop downs will be provided on web page above grid view, which will provide the user facility to filter the data using district, taluka, product category and brand name. Drop downs will be populated using master tables.
- User can select the values from drop downs and click on 'Search' button beside the drop downs. Using the user selected filter criteria, data will be displayed in grid view.
- Data will be fetched from Master\_DEALER table. This table will be populated by fetching the information from kKisan Application through Web service.

#### 4.16.3.3 USAGE OF MACHINERY

- When user clicks on 'Usage of Machinery', a page will be displayed to user, which will contain the information about the usage of machinery.



- The information related to Usage of Machinery which needs to be shown in the portal will be managed by Content Management System.

#### 4.16.3.4 TESTING AND TRAINING CENTER

User will be redirected to page, which will contain the information about Machinery testing and training center. Information will include Center name, Center address, district, Taluka, contact person and contact number. This information will be displayed in a grid view and will be fetched from 'Machinery\_Testing\_Center' table. Please refer section for definition of table.

#### 4.16.3.5 TABLE DEFINITION USED FOR THIS REQUIREMENT.

##### 4.16.3.5.1 MASTER\_DEALER

Column Name	Data Type	Remark
Id	Integer	Primary Key /Unique Id With Sequence
District	Varchar2	
Taluka	Varchar2	
Product_Category	Varchar2	
Brand_Names	Varchar2	
Dealer_Name	Varchar2	
Office_Address	Varchar2	
Phone_Number1	Varchar2	
Phone_Number2	Varchar2	
License_Number	Varchar2	
Lecense_Validity	Date	
Price_Per_Quantity	Varchar2	
Available_Stock	Varchar2	

##### 4.16.3.1 MACHINERY\_TESTING\_CENTER

Column Name	Data Type	Remark
Id	Integer	Primary Key /Unique Id With Sequence
Center_Name	Varchar2	
Center_Address,	Varchar2	
District	Varchar2	
Taluka	Varchar2	
Contact_Person	Varchar2	
Contact_Number	Varchar2	

## 4.17 WEATHER AND AGROMET ADVISORY

### 4.17.1 REQUIREMENT



FR\_LRIP\_044 Weather and Acgromet Advisory  
FR\_LRIP\_045 Weather Forecast

#### 4.17.2 REQUIREMENT UNDERSTANDING

- User will able to view the information related to Agro-met Advisory, Weather Forecast, District Rain fall Maps, Temperature, Weather Parameter, Week Rainfall Probability, Weekly Rainfall Data.
- User will be able to view the above information for his location by selecting District, Taluka, Village
- The Information will be fetched from Webservice provided by the KSNDMC. Infomration about the Webservices from KSNDMC is not yet received.

### 4.18 FLASH SEASON SPECIFIC INFORMATION

#### 4.18.1 REQUIREMENT

FR\_LRIP\_046 Flash Season Specific Information

#### 4.18.2 REQUIREMENT UNDERSTANDING

System displays information relevant to Crop for the season in this section. The information will be managed using content management system.

### 4.19 HARVESTING

#### 4.19.1 REQUIREMENT

FR\_LRIP\_047 Harvesting

This activity enables the user to access the application for harvesting

#### 4.19.2 REQUIREMENT UNDERSTANDING

System will display the information related to the Harvesting based on these inputs provided by the user.

#### 4.19.3 MODULES

- Input form for Input and view Harvesting information

#### 4.19.4 MODULE DESCRIPTION



- User will select the District, Taluk, Village, Crop, Date of Sowing.
- Execute a Query on “Crop\_Season” Table depending upon the Crop selected and Date of sowing to find Harvesting period.
- The result will be displayed to the user screen

#### 4.19.5 TECHNICAL DESCRIPTION

##### 4.19.5.1 INPUT FIELDS ON SOIL AND HARVESTING FORM

Attribute Name	Mandatory	Input Type	Remark
District	Yes	Drop Down	List of district in Karnataka
Taluk	Yes	Drop Down	Populated depending on the District Selected
Village	No	Drop Down	Populated depending on the Taluk Selected
Crop	Yes	Drop Down	
Date of Sowing	yes	Textbox	
Submit	-	Button	
Cancel	-	Button	

##### 4.19.5.2 TABLE DEFINITION USED FOR THIS REQUIREMENT.

###### 4.19.5.2.1 CROP\_SEASON

Column Name	Data Type	Remark
ID	Integer	
Season_Id	Integer	Linked to Master_Season
Crop_Id	Integer	Linked to Master_Crop
SownPeriod_From	Integer	Month number
SownPeriod_To	Integer	Month number
Harvesting_From	Integer	Month number
Harvesting_To	Integer	Month number
SeasonDuration	Integer	



Column Name	Data Type	Remark
Sowing_Duration	Integer	
Mid_duration	Integer	
Harvesting_Duration	Integer	

## 4.20 ORGANIC FARMING

### 4.20.1 REQUIREMENT

FR\_LRIP\_048 Organic Farming

This activity enables the user to access application for Organic Farming.

### 4.20.2 REQUIREMENT UNDERSTANDING

System will display the information relevant to Organic Farming. The information will be managed using content management system.

## 4.21 IRRIGATION

### 4.21.1 REQUIREMENT

FR\_LRIP\_049 Irrigation

This activity enables the user to access application for Irrigation.

### 4.21.2 REQUIREMENT UNDERSTANDING

This functionality enables user to view information related to Irrigation schedule, Area wise information. Micro Irrigation information.

### 4.21.3 MODULES

- Web form for information view/input related to Irrigation

### 4.21.4 MODULE DESCRIPTION

- When user click on Irrigation, a page will be displayed to user, which will contain information about the Irrigation schedule, area wise information, Micro Irrigation information.

**4.21.4.1 IRRIGATION SCHEDULE**

- Drop down will be provide to select Reservoir, Command Area. Drop downs will be populated using “Reservoir”, “Command\_Area”. Please refer section 4.21.5.2 for master tables.
- Execute the query on ‘Irrigation\_Schedule” on the basis of Reservoir and Command Area selected
- This information will be displayed in grid view.

**4.21.4.2 AREA WISE INFORMATION**

- Drop down will be provide to select Reservoir, Command Area. Drop downs will be populated using “Reservoir”, “Command\_Area”. Please refer section 4.21.5.2 for master tables.
- Depending upon the selection, Irrigation information will be displayed

**4.21.4.3 MICRO IRRIGATION INFORMATION**

- The information will be managed using content management system.

**4.21.5 TECHNICAL DESCRIPTION****4.21.5.1 INPUT FIELDS ON IRRIGATION SCHEDULE AND AREA WISE INFORMATION WEB FORM.**

Attribute Name	Mandatory	Input Type	Remark
Reservoir	Yes	Textbox	
Command_area	Yes	Textbox	

**4.21.5.2 TABLE DEFINITION USED FOR THIS REQUIREMENT.****4.21.5.2.1 RESERVOIR**

Column Name	Data Type	Remark
ID	Integer	
FID	Integer	
KGISReservoirID	nvarchar	
ReservoirCode	nvarchar	
ReservoirName	nvarchar	



#### 4.21.5.2.2 *COMMAND\_AREA*

Column Name	Data Type	Remark
ID	Integer	
ReservoirCode	Integer	
Command_Area_Name	nvarchar	

#### 4.21.5.2.1 *IRRIGATION\_SCHEDULE*

Column Name	Data Type	Remark
ID	Integer	
ReservoirCode	Integer	
Command_Area_Code	Integer	
Irrigation_Schedule	nvarchar	

#### 4.21.5.2.1 *IRRIGATION\_INFORMATION*

Column Name	Data Type	Remark
ID	Integer	
ReservoirCode	Integer	
Command_Area_Code	Integer	
Irrigation_Information	nvarchar	

## 4.22 DROUGHT RELIEF LAND MANAGEMENT

### 4.22.1 REQUIREMENT

FR\_LRIP\_049 Irrigation

This activity enables the user to access application for Drought Relief Land Management.

### 4.22.2 REQUIREMENT UNDERSTANDING

System will display the information relevant to Drought Relief Land Management. The information will be managed using content management system.

## 4.23 FODDER

### 4.23.1 REQUIREMENT



FR\_LRIP\_051 Fodder

This activity enables the user to access application for Fodder.

#### 4.23.2 REQUIREMENT UNDERSTANDING

System will display the information relevant to Fodder. The information will be managed using content management system.

### 4.24 GOOD AGRICULTURAL PRACTICES (GAPs)

#### 4.24.1 REQUIREMENT

FR\_LRIP\_052 Good Agricultural Practices (GAPs)

This activity enables the user to access application for Good Agricultural Practices (GAPs).

#### 4.24.2 REQUIREMENT UNDERSTANDING

System will display the information relevant to Good Agricultural Practices (GAPs). The information will be managed using content management system.

### 4.25 FISHERIES

#### 4.25.1 REQUIREMENT

FR\_LRIP\_053 Fisheries

This activity enables the user to access application for Fisheries.

#### 4.25.2 REQUIREMENT UNDERSTANDING

System will display the information relevant to Fisheries. The information will be managed using content management system.

### 4.26 LIVESTOCK

#### 4.26.1 REQUIREMENT

FR\_LRIP\_054 Livestock

This activity enables the user to access application for Livestock.

#### 4.26.2 REQUIREMENT UNDERSTANDING

System will display the information relevant to Livestock. The information will be managed using content management system.



## 4.27 GOVERNMENT POLICIES AND INITIATIVES

### 4.27.1 REQUIREMENT

FR\_LRIP\_057 Livestock

This activity enables the user to access application for Government Policies and Initiatives.

### 4.27.2 REQUIREMENT UNDERSTANDING

System will display the information relevant to Government Policies and Initiatives. The information will be managed using content management system.

## 4.28 SCHEMES AND PROGRAMS

### 4.28.1 REQUIREMENT

FR\_LRIP\_058 Schemes and Programs

This activity enables the user to access application for Schemes and Programs.

### 4.28.2 REQUIREMENT UNDERSTANDING

This functionality enables user to view information pertaining to various Agriculture, Horticulture and Sericulture related Schemes and Programs through linkages to respective departments portals. The information will be managed using content management system.

## 4.29 STATISTICS

### 4.29.1 REQUIREMENT

FR\_LRIP\_059 Statistics

This activity enables the user to access application for Statistics.

### 4.29.2 REQUIREMENT UNDERSTANDING

- On click of Statistics, System will direct the user <http://raitamitra.kar.nic.in/ENG/statistics.asp>. The information will be managed using content management system. The administrator will be able to change the link using CMS.

## 4.30 TENDERS

### 4.30.1 REQUIREMENT

FR\_LRIP\_060 Tenders

This activity enables the user to access application for Tenders.



## 4.30.2 REQUIREMENT UNDERSTANDING

- System will display the List of Tenders published by the WDD as well as link will be provided to access the tenders. The information will be managed using content management system. The administrator will be able to change the link using CMS.

## 4.31 PUBLICATIONS

### 4.31.1 REQUIREMENT

FR\_LRIP\_061 Publications

This activity enables the user to access application for Publications.

### 4.31.2 REQUIREMENT UNDERSTANDING

- System will display the List of publication published by the respective departments. User will be able to click on the particular publication in the list and will able to view it. The information will be managed using content management system. The administrator will be able to change the link using CMS.

## 4.32 MARKETING INFRASTRUCTURE

### 4.32.1 REQUIREMENT

FR\_LRIP\_062 Marketing Infrastructure

This activity enables the user to access application for Marketing Infrastructure.

### 4.32.2 REQUIREMENT UNDERSTANDING

- System will display the information relevant to marketing Infrastructure. The information will be managed using content management system.

## 4.33 STORAGE FACILITY

### 4.33.1 REQUIREMENT

FR\_LRIP\_063 Storage Facility

This activity enables the user to access application for Storage Facility.

### 4.33.2 REQUIREMENT UNDERSTANDING

- System will display the List of Storage Facilities available in the Karnataka State.



- User will be able to click on the particular Storage Facilities in the list and will be able to view the detail information such as Name, Address, Contact Person Name, Phone number. The information will be managed using content management system.

## 4.34 TECHNOLOGIES

### 4.34.1 REQUIREMENT

FR\_LRIP\_064 Technologies

This activity enables the user to access application for Technologies.

### 4.34.2 REQUIREMENT UNDERSTANDING

- System will display the information relevant to Technologies. The information will be managed using content management system.

## 4.35 NEWS/EVENTS

### 4.35.1 REQUIREMENT

FR\_LRIP\_065 News/Events

This activity enables the user to access application for News/Events.

### 4.35.2 REQUIREMENT UNDERSTANDING

- System will display News/Events related to WDD Department. The information will be managed using content management system.

## 4.36 DIRECTORIES

### 4.36.1 REQUIREMENT

FR\_LRIP\_066 Directories

This activity enables the user to access application for Directories.

### 4.36.2 REQUIREMENT UNDERSTANDING

- The information will be managed using content management system.

## 4.37 SUCCESS STORIES

### 4.37.1 REQUIREMENT

FR\_LRIP\_067 Success Stories

This activity enables the user to access application for Success Stories.



### 4.37.2 REQUIREMENT UNDERSTANDING

This will be managed using content management system.

## 4.38 DISTRICT MAP

### 4.38.1 REQUIREMENT

FR\_LRIP\_068 District Map

This activity enables the user to access application for District Map.

### 4.38.2 REQUIREMENT UNDERSTANDING

A functionality is required on Geospatial portal, using which user will be able to search the required district on map.

### 4.38.3 PRECONDITIONS:

- User should have access to LRI GEO PORTAL

### 4.38.4 BASIC FLOW:

- User shall click on District Search.
- User shall select District name of his interest.
- Selected District will be searched and will be zoomed at center of the map.

### 4.38.5 MODULES

Java script function

- Using portal SDK APIs, a drop down box will be added in the toolbar of portal to allow user to select the district name.
- When user selects the district from the drop down box, using the function in java script, respective district will be searched and will be zoomed at center of the map.

## 4.39 IMPORTANT LINKS

### 4.39.1 REQUIREMENT

FR\_LRIP\_069 Important Links

This activity enables the user to access application for Important Links.

### 4.39.2 REQUIREMENT UNDERSTANDING



The information will be managed using content management system

## 4.40 DOWNLOAD FORMS

### 4.40.1 REQUIREMENT

FR\_LRIP\_070 Download Forms

This activity enables the user to access application for Download Forms.

### 4.40.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system

## 4.41 HELP

### 4.41.1 REQUIREMENT

FR\_LRIP\_073 Download Forms

This activity enables the user to access application for Help.

### 4.41.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system

## 4.42 FEEDBACK

### 4.42.1 REQUIREMENT

FR\_LRIP\_074 Feedback

This activity enables the user to access application for Feedback.

### 4.42.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system

### 4.42.3 MODULES

- Web form for Feedback

### 4.42.4 MODULES DESCRIPTION

A web form will be developed, which will accept input from user in the form of textbox and picklist. For list of input fields, refer section 4.42.8.1 Mandatory fields will be marked as '\*' on web form. A 'Submit' button will be provided to submit the details in to database. When user will click on 'Submit' button, validations will be performed and after successful validations input data will be stored in Feedback



table. Please refer 'Validations' and 'Data Storage'. After successful feedback submission SMS/email to the user about the successful submission of the feedback.

#### 4.42.5 VALIDATIONS

Following validations will be performed

- Whether mandatory fields are populated or not.
- Format of email and mobile number.
- Email will be validated for 'username@domain' format.
- Mobile number will be validated for numeric 10 digits.

#### 4.42.6 DATA STORAGE

##### 4.42.6.1 FEEDBACK:

Column Name	Values
ID	System generated ID
Name	Input from web form
Address	Input from web form
MobileNumber	Input from web form
EmailID	Input from web form
Feedback	Input from web form

#### 4.42.7 VALIDATIONS AND ERROR MESSAGES

Criteria	Message
Name not entered	Please enter First name
Address not entered	Please enter Address1
Mobile Number not entered	Please enter Mobile Number
Email Id not entered	Please enter Email ID
Invalid email format. @ missing	Email ID is not in proper format. Please include '@' in email id
Invalid email format. .com missing	Email ID is not in proper format. Please include '.com' in email id



Criteria	Message
Invalid mobile format. Contains character	Mobile number should not contains characters.
Invalid mobile format. Number greater than 10 digits	Mobile number should be 10 digit
Feedback	Feedback is not entered.

#### 4.42.8 TECHNICAL DESCRIPTION

##### 4.42.8.1 INPUT FIELDS ON FEED SUBMISSION WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
Name	Yes	Textbox	
Address	Yes	Textbox	
Mobile Number	No	Textbox	
email ID	No	Textbox	
Feedback	Yes	Multiline Textbox	

##### 4.42.8.2 TABLE DEFINITIONS USED FOR THIS REQUIREMENT.

###### 4.42.8.2.1 FEEDBACK

Column Name	Data Type	Remark
ID	INTEGER	Primary Key /Unique Id With Sequence
Name	nVarchar	
Address	nVarchar	
Mobile_Number	nVarchar	
Email_ID	nVarchar	
Feedback	nvarchar	

### 4.43 GENERAL INFORMATION SECTION

#### 4.43.1 REQUIREMENT

FR\_LRIP\_076 General Information Section

This activity enables the user to access application for General Information Section.

#### 4.43.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system



## 4.44 SEARCH

### 4.44.1 REQUIREMENT

FR\_LRIP\_077 Search

This activity enables the user to access application for Search.

### 4.44.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system. CMS provides the ability to index and search content items in the application. The indexing functionality is provided by enabling the Indexing feature. In addition to the Indexing, the Search feature provides the ability to query the index (by keyword) to return a list of content items matching the query.

## 4.45 SITEMAP

### 4.45.1 REQUIREMENT

FR\_LRIP\_078 Sitemap

This activity enables the user to access application for Sitemap.

### 4.45.2 REQUIREMENT UNDERSTANDING

On click of SiteMap, system will display the siteme.

### 4.45.3 MODULE DESCRIPTION

- Execute A query on “Master\_Module” and “Master\_SubModule” to get the list of modules and submodules available for the site.
- Display the Result on the web page as tree structure. Each submodule will be displayed under it’s parent module

### 4.45.4 TECHNICAL DESCRIPTION

#### 4.45.4.1 TABLE DEFINITIONS USED FOR THIS REQUIREMENT.

##### 4.45.4.1.1 MASTER\_MODULE

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Module_Name	nvarchar	



#### 4.45.4.1.2 MASTER\_SUBMODULE

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
SubModule_Name	nvarchar	
Module_ID	Integer	

## 4.46 CONTACT US

### 4.46.1 REQUIREMENT

FR\_LRIP\_078 Contact Us

This activity enables the user to access application for Contact Us.

### 4.46.2 REQUIREMENT UNDERSTANDING

System will display the contact details of the WDD department such as Contact Person Name, Designation, Address, Telephone No, E-mail Address, Comments

### 4.46.3 MODULES

- Web form for information view/input related to Contact Us

### 4.46.4 MODULE DESCRIPTION

- A web form will be developed, which will display the information accept input from user in the form of textbox.
- Execute Query on “Master\_ContactUs” to get the Contact person name, Designation, Address, Telephone Number, Email Address.
- For list of input fields, refer section 4.42.8.1 Mandatory fields will be marked as ‘\*’ on web form. A ‘Submit’ button will be provided to submit the details in to database. When user will click on ‘Submit’ button, validations will be performed and after successful validations input data will be stored in Feedback table. Please refer ‘Validations’ and ‘Data Storage’. An email will be sent to the contact person email id.

### 4.46.5 VALIDATIONS

Following validations will be performed



- Whether mandatory fields are populated or not.
- Format of email and mobile number.
- Email will be validated for 'username@domain' format.
- Mobile number will be validated for numeric 10 digits.

#### 4.46.6 DATA STORAGE

##### 4.46.6.1 CONTACT\_US:

Column Name	Values
ID	System generated ID
Name	Input from web form
Address	Input from web form
MobileNumber	Input from web form
EmailID	Input from web form
Comments	Input from web form

#### 4.46.7 VALIDATIONS AND ERROR MESSAGES

Criteria	Message
Name not entered	Please enter First name
Address not entered	Please enter Address1
Mobile Number not entered	Please enter Mobile Number
Email Id not entered	Please enter Email ID
Invalid email format. @ missing	Email ID is not in proper format. Please include '@' in email id
Invalid email format. .com missing	Email ID is not in proper format. Please include '.com' in email id
Invalid mobile format. Contains character	Mobile number should not contains characters.
Invalid mobile format. Number greater than 10 digits	Mobile number should be 10 digit
Comments	Comments is not entered.

#### 4.46.8 TECHNICAL DESCRIPTION

**4.46.8.1 INPUT FIELDS ON FEED SUBMISSION WEB FORM.**

Attribute Name	Mandatory	Input Type	Remark
Name	Yes	Textbox	
Address	Yes	Textbox	
Mobile Number	No	Textbox	
email ID	No	Textbox	
Comments	Yes	Multiline Textbox	

**4.46.8.2 TABLE DEFINITIONS USED FOR THIS REQUIREMENT.****4.46.8.2.1 CONTACT\_US**

Column Name	Data Type	Remark
ID	integer	Primary Key /Unique Id With Sequence
Name	nVarchar	
Address	nVarchar	
Mobile_Number	interger	
Email_ID	nVarchar	
Feedback	nvarchar	

**4.46.8.2.1 MASTER\_CONTACT\_US**

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Contact_Name	nVarchar	
Contact_Address	nVarchar	
Phone_Number	integer	
Email_ID	nVarchar	

**4.47 ANNOUNCEMENTS****4.47.1 REQUIREMENT**

FR\_LRIP\_081 Announcements

This activity enables the user to access application for Announcements.

**4.47.2 REQUIREMENT UNDERSTANDING**

System will display the Announcement made by the WDD department. The information will be managed using content management system.



## 4.48 ABOUT THIS PORTAL

### 4.48.1 REQUIREMENT

FR\_LRIP\_082 About This Portal

This activity enables the user to access application for About This Portal.

### 4.48.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system.

## 4.49 TERMS OF USE

### 4.49.1 REQUIREMENT

FR\_LRIP\_083 Terms of Use

This activity enables the user to access application for Terms of Use.

### 4.49.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system.

## 4.50 VISITOR'S SUMMARY

### 4.50.1 REQUIREMENT

FR\_LRIP\_084 Visitor's Summary

This activity enables the user to access application for Visitor's Summary.

### 4.50.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system.

## 4.51 COMPREHENSIVE DISTRICT AGRICULTURE PLAN (CDAP)

### 4.51.1 REQUIREMENT

FR\_LRIP\_085 Comprehensive District Agriculture Plan

This activity enables the user to access application for Comprehensive District Agriculture Plan.

### 4.51.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system.

## 4.52 FARM LEVEL PLANNING

### 4.52.1 REQUIREMENT



FR\_LRIP\_086 Farm Level Planning

This activity enables the user to access application for Farm Level Planning.

#### 4.52.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system.

### 4.53 AGRICULTURAL COURSES

#### 4.53.1 REQUIREMENT

FR\_LRIP\_087 Agricultural Courses

This activity enables the user to access application for Agriculture Courses.

#### 4.53.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system.

### 4.54 TRAINING AND EXTENSION

#### 4.54.1 REQUIREMENT

FR\_LRIP\_090 Training and Extension

This activity enables the user to access application for Training and Extension.

#### 4.54.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system.

### 4.55 PROCUREMENT POINTS

#### 4.55.1 REQUIREMENT

FR\_LRIP\_091 Procurement Points

This activity enables the user to access application for Procurement Points.

#### 4.55.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system.

### 4.56 MONITORING IMPLEMENTATION

#### 4.56.1 REQUIREMENT

FR\_LRIP\_094 Procurement Points

This activity enables the user to access application for Procurement Points.



#### 4.56.2 REQUIREMENT UNDERSTANDING

System will display map showing the areas covered under Sujala III and LRI activities Progress of LRI activities.

#### 4.56.3 MODULE DESCRIPTION

- **Project Details:** Department user can create, update and delete project information, information should contain name, Implementation date, end date, Implemented by and authority and other details. Department user will select the watershed name from the dropdown and then insert the project details
- **WBS of Project:** In this part user could create Task, add Sub task under particular project with expected start date, expected end date, actual start date and actual end date.
- **Reports:** User can check the report of the project as per actual Versus targeted dates, it should be in form of pie chart and other charts.
- **Display on Map:**
  - Fetch the Geometry from the Watershed table against the Watershed code.
  - Read the Coordinates of the geometry and create GeoJson polygon. Send GeoJson to Leaflet to display the polygon with Cyan color and overlay it on the map.

#### 4.56.4 VALIDATIONS

Following validations will be performed

- Whether mandatory fields are populated or not.
- Date format is in correct.

#### 4.56.5 DATA STORAGE

##### 4.56.5.1 MASTER\_PROJECT

Column Name	Values
Watershed Name	Dropdown
Project_Name	Input from web form
Implementation_Date	Input from web form



Column Name	Values
End_Date	Input from web form
Implemeted_By	Input from web form
Brief_Information	Input from web form
Active_Status	Input from web form

#### 4.56.5.1 PROJECT\_WBS

Column Name	Values
ID	Dropdown
Project_ID	Input from web form
Task_ID	Input from web form
SubTask_Name	Input from web form
Expected_Start_Date	Input from web form
Expected_End_Date	Input from web form
Actual_Start_Date	Input from web form
Actual_Start_Date	Input from web form
Actual_End_Date	Input from web form
Remark	Input from web form

#### 4.56.6 VALIDATIONS AND ERROR MESSAGES

Criteria	Message
Project Name	Please enter First name
Implementation_Date	Please enter Date
End_Date	Please enter End adate



Criteria	Message
Implemeted_By	Please enter Implementedby
Brief_Information	please ender Brief Descripio
Project_ID	Please select project
Task_ID	Please select Task
SubTask_Name	Please selected sub task
Expected_Start_Date	Please enter expected date of start
Expected_End_Date	Please enter expected date of end
Actual_Start_Date	Please enter actual date of start
Actual_End_Date	Please enter actual date of end
Remark	Please enter remark

#### 4.56.7 TECHNICAL DESCRIPTION

##### 4.56.7.1 INPUT FIELDS ON PROJECT CREATION WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
Project_Name	Yes	Textbox	
Implementation_Date	Yes	Textbox	
End_Date	No	Textbox	
Implemeted_By	No	Textbox	
Brief_Information	Yes	Multiline Textbox	
Active_Status	No	Drop down	

##### 4.56.7.2 INPUT FIELDS ON PROJECT WDB WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
Project	Yes	Dropdown	
Task	Yes	Dropdown	
SubTask_Name	Yes	Dropdown	



Attribute Name	Mandatory	Input Type	Remark
Expected_Start_Date	Yes	Textbox	
Expected_End_Date	Yes	Textbox	
Actual_Start_Date	No	Textbox	
Actual_Start_Date	No	Textbox	
Actual_End_Date	No	Textbox	
Remark	No	Textbox	

#### 4.56.8 TECHNICAL DESCRIPTION

##### 4.56.8.1 TABLE DEFINITIONS USED FOR THIS REQUIREMENT.

##### 4.56.8.2 MASTER\_PROJECT:

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Project_Name	nvarchar(300)	
Implementation_Date	Date	
End_Date	Date	Null
Implemeted_By	Nvarchar(300)	
Brief_Information	NVarchar(4000)	
Active_Status	Bit	



#### 4.56.8.3 MASTER\_PROJECT\_TASK:

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
TASK_Name	nvarchar(300)	task name

#### 4.56.8.4 PROJECT\_WBS: FOR WORK BREAKDOWN STRUCTURE

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Project_ID	Integer	Project name
Task_ID	Integer	
SubTask_Name	Nvarchar(1000)	
Expected_Start_Date	Date	
Expected_End_Date	Date	
Actual_Start_Date	Date	
Actual_End_Date	Date	
Remark	Nvarchar(1000)	

### 4.57 NATURAL DISASTER

#### 4.57.1 REQUIREMENT

FR\_LRIP\_098 Natural Disaster

This activity enables the user to access application for Natural Disaster.

#### 4.57.2 REQUIREMENT UNDERSTANDING



System will display the information related to the Natural disaster. The information will be displayed related to Drought, Flood, Earthquake, Tsunami. The information will be managed using content management system.

## 4.58 PROTECTED CULTIVATION

### 4.58.1 REQUIREMENT

FR\_LRIP\_099 Protected Cultivation

This activity enables the user to access application for Protected Cultivation.

### 4.58.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system.

## 4.59 FARM STRUCTURE

### 4.59.1 REQUIREMENT

FR\_LRIP\_100 Farm Structure

This activity enables the user to access application for Farm Structure.

### 4.59.2 REQUIREMENT UNDERSTANDING

The LRI GEO PORTAL display information related to Godowns, Green storage structure, Thrashing floor, Implement storage. The information will be managed using content management system.

## 4.60 MAP

### 4.60.1 REQUIREMENT

FR\_LRIP\_101 Map

This activity enables the user to access application for Map.

### 4.60.2 REQUIREMENT UNDERSTANDING

- User shall be able to click on “Maps”.
- System shall display the option of selecting two types of maps
  - Ground Water maps and soil maps made by the Central Ground Water Board.
  - National Bureau of Soil Survey & Land Use Planning.
- User shall be able to select one of the option, depending on the selected option system shall show the map



### 4.60.3 BASIC WORKFLOW

1. User shall click on LRI Geo Portal menu
2. System shall display the Map and Layer management tool on map along with navigation tools.
3. User shall click on layer management tool.
4. System shall display different layers which will includes layers for Ground Water Map and soil maps and layers for National Bureau of Soil Survey and land use
5. User shall optionally on off the desired layer to see on the map.

### 4.60.4 MODULES

- Administrator shall assign the WMS service and layers published by Central Ground Water Board to the role of citizen/farmer.
- Administrator shall also assign the WMS service for NBSS soil survey and land use planning to the role of citizen/farmer
- According to the role layers will be displayed to user on map.

## 4.61 CREDIT LINKAGES

### 4.61.1 REQUIREMENT

FR\_LRIP\_102 Credit Linkages

This activity enables the user to access application for Credit Linkages.

### 4.61.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system.

## 4.62 AGRICULTURAL INSURANCE

### 4.62.1 REQUIREMENT

FR\_LRIP\_103 Agricultural Insurance

This activity enables the user to access application for Agricultural Insurance.

### 4.62.2 REQUIREMENT UNDERSTANDING

The information will be managed using content management system.



## 4.63 RTI

### 4.63.1 REQUIREMENT

FR\_LRIP\_104 – RTI.

This service aims at taking the user to the pages related to *RTI*.

### 4.63.2 REQUIREMENT UNDERSTANDING

A service is required for user (Farmer/Citizen) to submit the RTI application with necessary information to state ministries department.

### 4.63.3 MODULES

- Web form for user (farmer/citizen) to submit RTI.
- Web form for user (farmer/citizen) to search RTI status.
- Web form for departmental user to response on RTI application.
- Validations
- Data storage.

#### 4.63.3.1 WEB FORM FOR USER (FARMER/CITIZEN) TO SUBMIT RTI

A web form will be developed, which will accept input from user in the form of textbox and picklist. Mandatory fields will be marked as '\*' on web form. A 'Submit' button will be provided to submit the details in to database. When user will click on 'Submit' button, validations will be performed and after successful validations input data will be stored in respective tables. Please refer 'Validations' and 'Data Storage' modules.

#### 4.63.3.2 WEB FORM FOR USER (FARMER/CITIZEN) TO SEARCH RTI STATUS

A web form will be developed, which will provide the status of submitted RTI application and response in text and scanned document given by departmental user. Mandatory fields will be marked as '\*' on web form. A 'Search' button will be provided to display the application status. Please refer 'Validations' and 'Data Storage' modules.

#### 4.63.3.3 WEB FORM FOR DEPARTMENTAL USER TO RESPONSE ON RTI APPLICATION

A web form will be developed for departmental users, which will display RTI application and provide option to departmental users to submit reply on registered RTI application. Mandatory fields will be



marked as '\*' on web form. A 'submit' button will be provided to submit the RTI application response and upload scanned reply in .jpg or .pdf format. Web form validations will be performed and after successful validations input data will be stored in respective tables. Please refer 'Validations' and 'Data Storage' modules.

#### 4.63.4 VALIDATIONS

- Following validations will be performed
  - 1) Whether mandatory fields are populated or not.
  - 2) Format of email and mobile number.
    - a) Email will be validated for 'username@domain' format.
    - b) Mobile number will be validated for numeric 10 digits.
  - 3) Upload document format.

##### 4.63.4.1 CODE SNIPPET:

```
// public ActionResult RTIList()
{
    try
    {
        KWDDEntities db = new Models.KWDDEntities();
        VM_RTI model = new VM_RTI();
        List<SelectListItem> liDesign = new List<SelectListItem>();
        var varRt = (from sd in db.RTIs
                    where sd.Reply_Date == null
                    select sd).ToList();
        //db.RTIs.ToList().Where(m => m.Reply_Remark == "");
        foreach (var design in varRt)
        {
            SelectListItem selctList = new SelectListItem
            {
                Text = design.Complaint_Description.Substring(0, 50),
                Value = design.Id.ToString(),
            };
            liDesign.Add(selctList);
        }
        ViewBag.Complaint = liDesign;

        //model.RTIList = db.RTIs.ToList();
        model.RTIList = (from sd in db.RTIs
                        join a in db.Master_Department on sd.DeptId equals a.ID
                        join b in db.Master_Authority_Org on sd.AuthorityId
equals b.AuthorityId
                        join t in db.View_District on sd.District_Id equals
t.DISTRICT_CODE
                        join d in db.View_Taluk on sd.Taluka_Id equals
d.TALUK_CODE
                        join v in db.View_Village on sd.Village_Id equals
v.VILLAGE_CODE
                        // orderby sd.Complaint_Date
```



```
// select new VM_RTI
select new VM_RTI
{
    Id = sd.Id,
    Title = sd.Title,
    First_Name = sd.First_Name,
    Middle_Name = sd.Middle_Name,
    Last_Name = sd.Last_Name,
    Citizen_Status = sd.Citizen_Status,
    Below_BPL = sd.Below_BPL,
    Address1 = sd.Address1,
    Address2 = sd.Address2,
    District = t.DISTRICTNAME,
    Taluka = d.TALUKNAME,
    Village = v.VILLAGE_NAME,
    PIN_Zip = sd.PIN_Zip,
    Landline = sd.Landline,
    Alternate_Landline = sd.Alternate_Landline,
    Mobile = sd.Mobile,
    Fax = sd.Fax,
    emailID = sd.Email,
    Life_Liberty = sd.Life_Liberty,
    Senior_Citizen = sd.Senior_Citizen,
    Physically_Handicapped = sd.Physically_Handicapped,
    Complaint_Description = sd.Complaint_Description,
    Department = a.Department,
    Authority_Orgnisation = b.Authority_Orgnisation,
    Doc_Name = sd.Doc_Name,
    Doc_Description = sd.Doc_Description,
    URN = sd.URN,
    Complaint_Date = sd.Complaint_Date,
    Status = sd.Status
}).ToList();
//model.RTIList = varrti.ToList();

return View(model);
}
catch (Exception ex)
{
    ex.Message.ToString();
    throw;
}
}
```

#### 4.63.5 DATA STORAGE

After successful validations, data will be stored in following tables.

##### 4.63.5.1 MASTER\_DEPARTMENT: FOR MINISTERIAL DEPARTMENT.

Fields	Values
Id	System generated unique ID
Department Name	Ministerial department name

**4.63.5.2 MASTER\_AUTHORITY\_ORG: FOR DEPARTMENT WISE AUTHORITY**

ColumnName	Values
Authority Id	System generated unique ID
Authority Organization Name	Authority/ Organization Name
Department Id	Reference value from Master_Department table.

**4.63.5.3 RTI: FOR RTI APPLICATION DETAILS**

ColumnName	Values
ID	System generated unique ID
Ministry Name	Input from web form
Authority/ Organization Name	Input from web form
First Name	Input from web form
Middle Name	Input from web form
Last Name	Input from web form
Citizenship Status	Input from web form
BPL Category	Input from web form
Address 1	Input from web form
Address 2	Input from web form
Village	Input from web form
Pin Code	Input from web form
Block	Input from web form
District	Input from web form
State	Input from web form
Landline Number	Input from web form
Alternate Landline Number	Input from web form
Mobile Number	Input from web form
Fax Number	Input from web form
Email id	Input from web form
Life or Liberty of Citizen	Input from web form
Senior Citizen	Input from web form
Physical Handicapped details	Input from web form
Complaint Description	Input from web form
Uploaded Document Details	Input from web form
Complaint Date	System Date on which RTI is submitted
FAMER_ID	ID value from user_profile_farmer table. This will be same for each member of selected user



ColumnName	Values
RTI Status	ID related to 'Send to SME' from master_process_status table

#### 4.63.5.4 FILE\_ATTACHED: FOR DOCUMENT UPLOADING

ColumnName	Values
ID	System generated unique ID using sequence
URN	URN from RTI table
Transc_Type	ID related to 'Request' value from master_transc_type table
File_Attached	File attached by user

#### 4.63.5.5 TRANSACTION\_LOG: FOR MAINTAINING THE TRANSACTION STATUS

ColumnName	Values
ID	System generated unique ID using sequence
Process_Name	ID related to 'AddNewQuery' value from master_processname table
Process_ID	URN from user_queries table
Flag	ID related to 'Open' value from master_trans_flag table
From_User	SME_ID value to whom query is sent
To_User	Initially when query is raised, this will be '0'
Received_Date	Date on which query is received to SME
Response_Date	Date on which response for query is given
Remark	

#### 4.63.6 VALIDATION AND ERROR MESSAGES

Criteria	Message
Department not selected	Please select Department Name
Authority not selected	Please select Authority Name
First Name not entered	Please enter First name
Last Name not entered	Please enter Last name
Citizenship not selected	Please select citizenship
BPL Category not selected	Please select BPL category
Address not entered	Please enter Address
Village not selected	Please select Village
Block not selected	Please select Block
District not selected	Please select District
State not selected	Please select State
Mobile Number not entered	Please enter Mobile Number
Email Id not entered	Please enter Email ID
Life or Liberty not entered	Please enter Life or Liberty
Senior citizen Details not entered	Please enter Senior citizen Details
Physical handicapped not entered	Please enter Physical handicapped details
Complaint Description not entered	Please enter complaint description

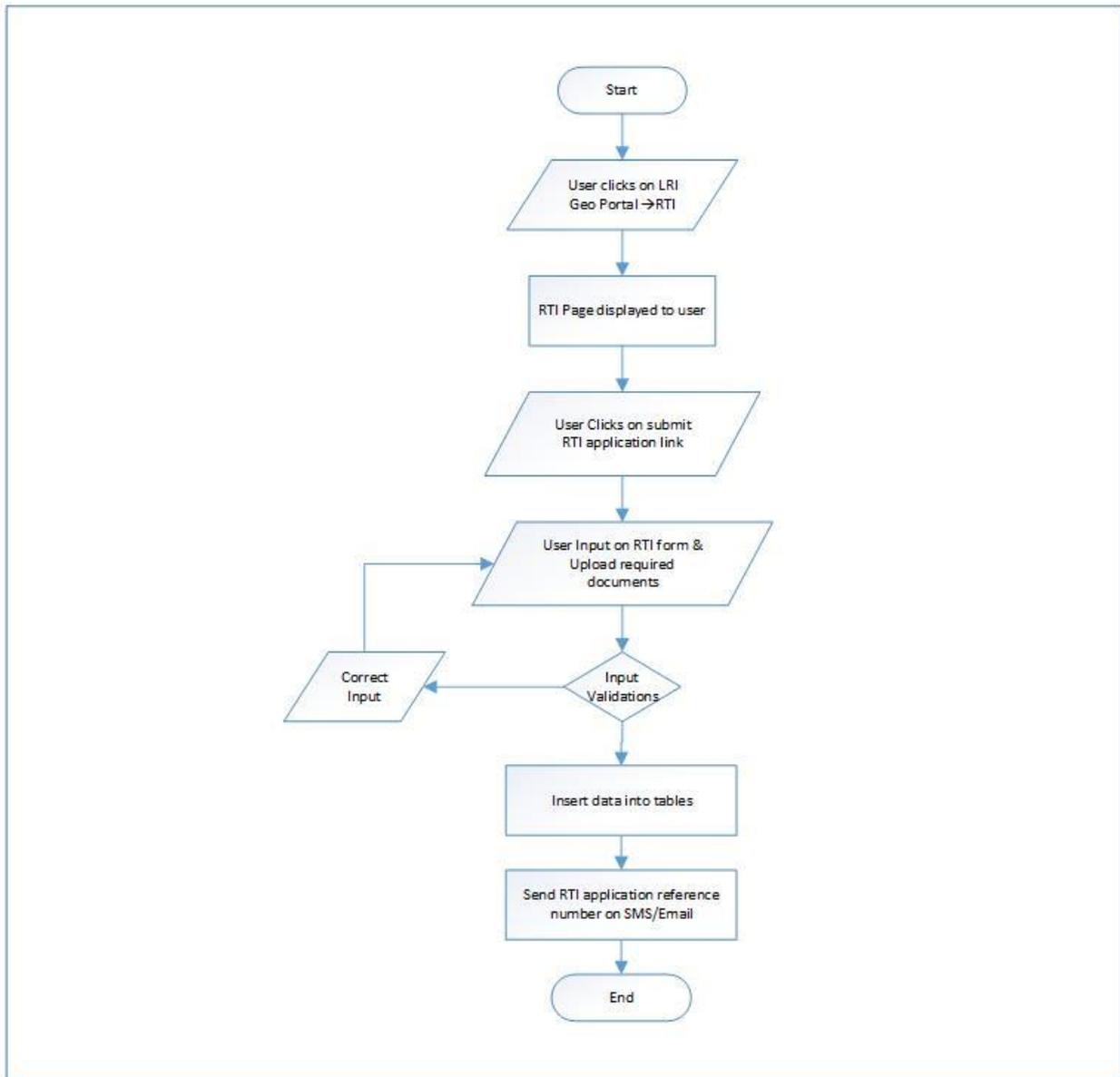


Criteria	Message
Invalid email format. @ missing	Email ID is not in proper format. Please include '@' in email id
Invalid email format. .com missing	Email ID is not in proper format. Please include domain such as '.com' in email i
Invalid mobile format. Contains character	Mobile number should not contain characters.
Invalid mobile format. Number greater than 10 digits	Mobile number should be 10 digit

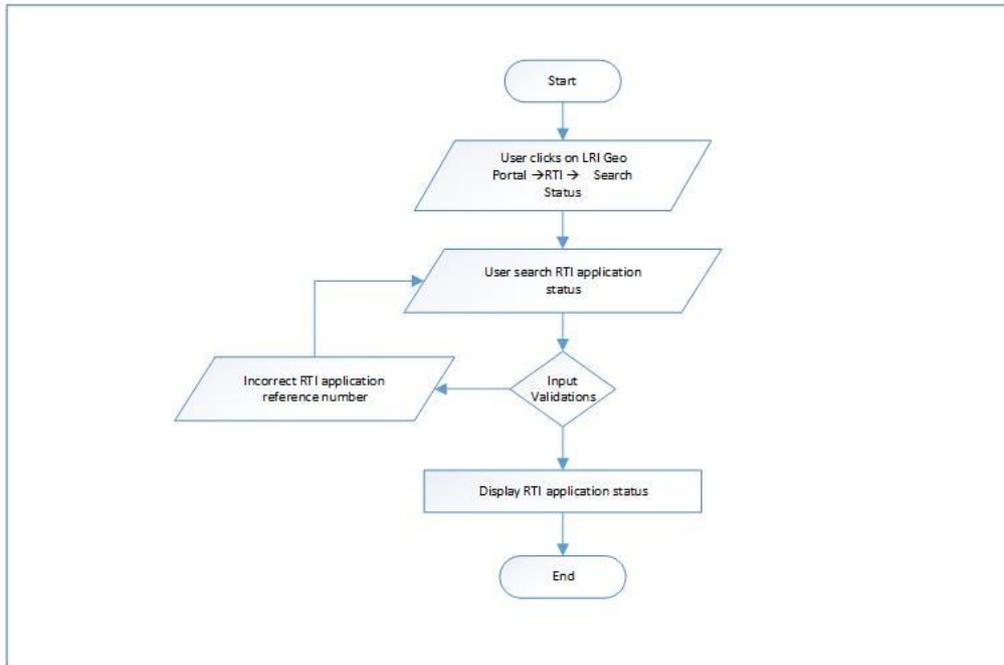
#### 4.63.7 LOGICAL FLOW DIAGRAM



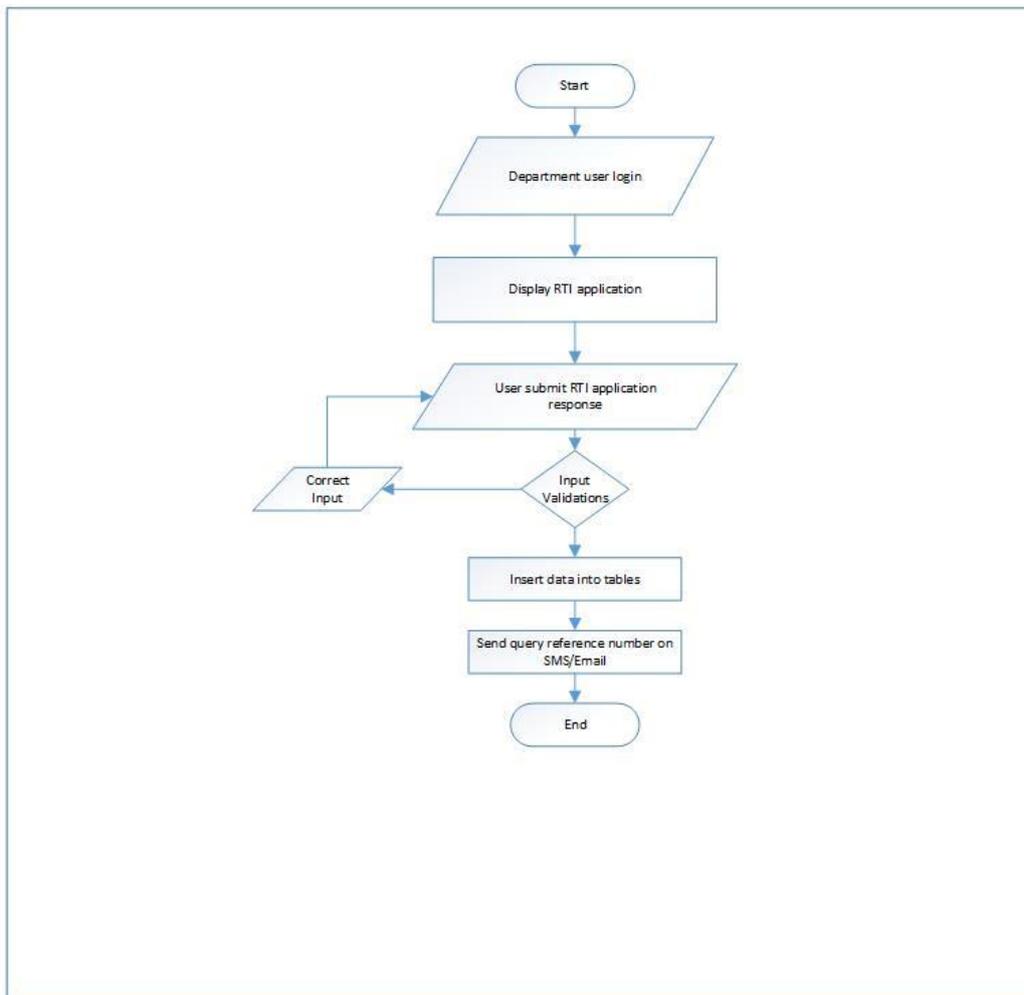
### 4.63.7.1 SUBMIT RTI APPLICATION



### 4.63.7.2 SEARCH RTI APPLICATION STATUS



#### 4.63.7.3 DEPARTMENTAL USER SUBMIT RTI APPLICATION REPLY





#### 4.63.8 TECHNICAL DESCRIPTION

##### 4.63.8.1 INPUT FIELDS ON RTI SUBMISSION WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
Department Name	Yes	Dropdown	
Authority/ Organization Name	Yes	Dropdown	
First Name	Yes	Textbox	
Middle Name	No	Textbox	
Last Name	Yes	Textbox	
Citizenship	Yes	Dropdown	
BPL Category	Yes	Dropdown	
Address 1	Yes	Textbox	
Address 2	Yes	Textbox	
Village	Yes	Dropdown	
Pin Code	No	Dropdown	
Block	Yes	Dropdown	
District	Yes	Dropdown	
State	Yes	Dropdown	
Landline Number	No	Textbox	
Alternate Landline Number	No	Textbox	
Mobile Number	Yes	Textbox	
Fax Number	No	Textbox	
Email ID	Yes	Textbox	
Life or Liberty of Citizen	Yes	Dropdown	
Senior Citizen	Yes	Dropdown	
Physical Handicapped	Yes	Dropdown	
Complaint Description	Yes	Textbox	
Uploaded Document Details	No	File Upload	

##### 4.63.8.2 INPUT FIELDS ON SEARCH RTI STATUS WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
RTI Reference number	Yes	Textbox	URN Number



Attribute Name	Mandatory	Input Type	Remark
Captcha Check	Yes	CAPTCHA	Mathematical Captcha

#### 4.63.8.3 INPUT FIELDS ON RTI RESPONSE WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
RTI Details	Yes	Listbox	Populate using Complaint_Description field from RTI table
Query Details		Read only Text box	
Reject	Yes	Radio Button	
Answer		Radio Button	
Forward		Radio Button	
Remark	Yes	Multiline Text Box	
Uploaded Document Details	No	File Upload	

#### 4.63.8.4 TABLE DEFINITIONS USED FOR THIS REQUIREMENT.

##### 4.63.8.4.1 MASTER\_DEPARTMENT

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Department	nvarchar	Ministerial department name

##### 4.63.8.4.2 MASTER\_AUTHORITY\_ORG

Column Name	Data Type	Remark
AuthorityId	Integer	Primary Key /Unique Id With Sequence
Authority_Organisation	Nvarchar	Authority/ Organization Name
Ministry_DeptId	Integer	Reference Key From Master_Department Table

##### 4.63.8.4.3 RTI

ColumnName	Values	Remark
ID	Integer	Primary Key /Unique Id With Sequence
DeptId	Integer	Value from Master_Dept
AuthorityId	Integer	Value from Master_Authority_Org



ColumnName	Values	Remark
Title	nvarchar	
First_Name	nvarchar	
Middle_Name	nvarchar	
Last_Name	nvarchar	
Citizen_Status	nvarchar	
Below_BPL	nvarchar	
Address_1	nvarchar	
Address_2	nvarchar	
Pin_Code	nvarchar	
State	Integer	
District	Integer	Value from Master_District
Taluk	Integer	Value from Master_Taluka
Village	Integer	Value from Master_Village
Landline	nvarchar	
Alternate_Landline	nvarchar	
Mobile	nvarchar	
Fax	nvarchar	
Email	nvarchar	
Life_Liberty	nvarchar	
Senior_Citizen	nvarchar	
Physically_Handicapped	nvarchar	
Complaint_Description	nvarchar	
Doc_Name	nvarchar	
Doc_Description	nvarchar	
Complaint_Date	date	
URN	Integer	
Status	nvarchar	Relationship with Master_Process_Status
Doc_Reply	nvarchar	Scan Response received from department
Reply_Remark	nvarchar	



ColumnName	Values	Remark
Reply_Date	date	
Farmer_ID	Integer	Relationship with USER_PROFILE_FARMER table

#### 4.63.8.4.4 FILE\_ATTACHED

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
URN	Integer	
Transc_type	Integer	
File_Attached	Varbinary(max)	

#### 4.63.8.4.5 TRANSACTION\_LOG

Column Name	Data Type	Remark
Id	Integer	Primary Key /Unique Id With Sequence
Process_Name	Varchar(100)	Relationship with Master_ProcessName table
Process_Id	Integer	
Flag	Integer	Relationship with Master_Trans_Flag table
From_User	Integer	Relationship with SME_Informarion table
To_User	Integer	Relationship with SME_Informarion table
Received_Date	Datetime	
Response_Date	Datetime	
URN_ID		
Service_ID		
Remark	nvarchar(max)	

#### 4.63.8.4.6 MASTER\_DISTRICT

Column_Name	Data_Type	Remarks
ID	Integer	
District_Name	Nvarchar(25)	
State_ID	Integer	

#### 4.63.8.4.7 MASTER\_TALUKA

Column_Name	Data_Type	Remarks
ID	Integer	
Taluka_Name	Nvarchar(25)	



Column_Name	Data_Type	Remarks
District_ID	Integer	

#### 4.63.8.4.8 MASTER\_VILLAGE

Column_Name	Data_Type	Remarks
ID	Integer	
Taluka_ID	Integer	
Village_Name	Nvarchar(25)	

#### 4.63.8.4.9 MASTER\_PROCESS

Column_Name	Data_Type	Remarks
ID	Integer	
Process_Name	Nvarchar	Values : RTI Application

#### 4.63.8.4.10 MASTER\_TRANS\_TYPE

Column_Name	Data_Type	Remarks
ID	Integer	
Trans_Type	Nvarchar	Values : Request, Response

#### 4.63.8.4.11 MASTER\_PROCESS\_STATUS

Column_Name	Data_Type	Remarks
ID	Number	
STATUS	Nvarchar	Values -: Send to SME, Forwarded to other relevant SME, Rejected, Accepted, Resolved

#### 4.63.8.4.12 MASTER\_TRANS\_FLAG

Column_Name	Data_Type	Remarks
ID	Integer	
Flag	Nvarchar	Values : Open, Forwarded, Resolved, Rejected



## 4.64 ADMIN MODULE

### 4.64.1 REQUIREMENT

This service aims at carrying out administrative task such as user Management, Role Management, Updating Master Tables, DSS criteria tables, Content Management System Administration

### 4.64.2 REQUIREMENT UNDERSTANDING

A service is required for Add User, Create Role and Assign Role to user (department and Farmer/Citizen). After successfully done admin actions into Geoportal using the necessary information, database will be updated with user information.

### 4.64.3 MODULES

- Add New User.
- Registered User List (department, Farmer/Citizen and Dealer).
- Create New Role
- Assign Role
- Validations
- Data storage

#### 4.64.3.1 ADD NEW USER

- On click on Add User then will open Create new user Form.
- Administrator will input the data for Name, username, Password, MobileNo, EmailID, Department, Designation, Location, Role.
- After click on Register button, information will be saved in the database.

#### 4.64.3.6 REGISTERED USER LIST

- In Registered User List three tabs will be displayed.
- First tab for Department User: - Display the all Department User List with Name, email id, Mobile number and Role.



- Second tab for Farmer User: - Display the all Farmer User List with Name, email id, Mobile number and Role.
- Third Tab for Dealer User: - Here Display the all Dealer User List with Name, email id, Mobile number.
- On click of Edit, Delete buttons administrator will be able to edit or delete the User. Also by clicking on edit administrator will be able to assign the role to user.

#### 4.64.3.7 CREATE NEW ROLE

- A form will have text box for entering Role name. A form will be displayed which will have two Tabs. In First tab for MIS and second Tab GIS Role.
- MIS Tab:
  - Execute the query on Master\_Module and Master\_SubModule to get the list of Module names, sub module names.
  - Check boxes for Modules and Sub modules will be will be displayed.
  - Administrator will check the modules, sub modules for giving access permission the desired role
  - On submit button click, data will be saved in Master\_Role and MIS\_Role Table
- GIS Tab:
  - Administrator will select the type of Service (e.g. WMS, WFS), and then enter the Service URL address to get the group names and Layer Names.
  - The check boxes for selecting the groups, layers which needs to be displayed the desired role will be displayed.
  - Administrator will checked the appropriate check boxes.
  - On submit button click data will be saved in GIS\_Role

#### 4.64.4 VALIDATIONS

- Following validations will be performed in Add User
  - 4) Whether mandatory fields are populated or not.
  - 5) Format of email and mobile number.
    - a) Email will be validated for 'username@domain' format.



- b) Mobile number will be validated for numeric 10 digits.
  - 6) Validation for password and confirm password.
  - 7) Length of Password.
  - 8) User already exists based on username, mobile number and email id. If any one of the three parameters already exists, then error message will be displayed to user.
- Following validations will be performed in Create Role
    - 1. Role already exists based on role name then error message will be displayed to user.

#### 4.64.5 DATA STORAGE

After successful validations, data will be stored in following tables.

##### 4.64.5.1 USER\_LOGIN\_TABLE:

For both departmental and non-departmental users.

Column Name	Values
User_ID	System generated unique ID
UserName	Input from web form
Password	Input from web form
UserType_ID	Departement or Non-Department depend on option selected by user
MobileNumber	Input from web form
EmailID	Input from web form
IsMobileVerified	Populated this field with 'Y'
IsEmailVerified	This is null until user verify the email verification link.
	Once user activates the link, populated this field with 'Y'
EmailActivationCode	Populate this field with Query String generated for email verification
IsLoggedin	Populated this field with 'Y' if user is Active

**4.64.5.2 USER\_PROFILE\_DEPARTMENT:**

For departmental users

Column Name	Values
ID	System generated unique ID
User_ID	Reference value from User_Login_Details table
Landline_Number	Input from web form
Department	Input from web form
Designation	Input from web form
Role	Input from web form
Location	Input from web form
First_Name	Input from web form
Middle_Name	Input from web form
Last_Name	Input from web form

**4.64.5.3 MASTER\_ROLE:**

ColumnName	Values
ID	System generated unique ID
Role_Name	Input from Webform

**4.64.5.4 MIS\_ROLE:**

ColumnName	Values
ID	System generated unique ID
Sub_Module_ID	Input from Web form. Reference value from Master_SubModule
Module_ID	Input from Web form .Reference value from Master_Module
Role_ID	Reference value from Master_Role

**4.64.5.5 GIS\_ROLE**

ColumnName	Values
ID	System generated unique ID
Role_ID	Reference value from TBL_SubMenu
ServiceType	Input from web form
ServiceURL	Input from web form



ColumnName	Values
Service_Layers	Input from web form

#### 4.64.6 VALIDATION AND ERROR MESSAGES

Criteria	Message
First Name not entered	Please enter First name
Last Name not entered	Please enter Last name
UserName not entered	Please enter UserName
Password not entered	Please enter Password
Confirm Password not entered	Please enter Confirm Password
Address not entered	Please enter Address

#### 4.64.7 TECHNICAL DESCRIPTION

##### 4.64.7.1 INPUT FIELDS ON DEPARTMENT USER REGISTRATION WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
First Name	Yes	Textbox	
Middle Name	No	Textbox	
Last Name	Yes	Textbox	
User Name	Yes	Textbox	
Password	Yes	Textbox	
Confirm Password	Yes	Text box	
Mobile Number	Yes	Textbox	
Landline Number	No	Textbox	
Email ID	Yes	Textbox	
Department	Yes	Dropdown	
Designation	Yes	Dropdown	
Location	Yes	Dropdown	
Role	Yes	Dropdown	

##### 4.64.7.2 INPUT FIELDS ON DEPARTMENT CREATE ROLE WEB FORM.

Attribute Name	Mandatory	Input Type	Remark
Role Name	Yes	Textbox	
<b>MIS TAB</b>			



Attribute Name	Mandatory	Input Type	Remark
Module Name	No	Checkbox	
Sub module Name	No	Check boc	
<b>GSi TAB</b>			
Service Type	Yes	Dropdown	
Service URL	Yes	Text Box	
Layer Names	Npo	Check box	

#### 4.64.7.3 TABLE DEFINATIONS USED FOR THIS REQUIREMENT

##### 4.64.7.3.1 *MASTER\_MODULE*

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
Module_Name	nvarchar	

##### 4.64.7.3.2 *MASTER\_SUBMODULE*

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
SubModule_Name	nvarchar	
Module_ID	Integer	

##### 4.64.7.3.3 *USER\_LOGIN\_TABLE:*

For both departmental and non-departmental users.

Column Name	Data Type	Remark
UserID	Integer	Primary Key /Unique Id With Sequence
Username	nvarchar	
Password	nvarchar	
UserTypeID	Integer	



Column Name	Data Type	Remark
MobileNumber	nvarchar(12)	
EmailID	nvarchar	
IsEmailVerified	bit	
IsMobileVerified	bit	
EmailActivationCode	uniqueidentifier	
IsLoggedIn	bit	

#### 4.64.7.3.4 **USER\_PROFILE\_DEPARTMENT:**

For departmental users

Column Name	Data Type	Remark
ID	Integer	Primary Key /Unique Id With Sequence
User_ID	Integer	
FirstName	nvarchar	
MiddleName	nvarchar	
LastName	nvarchar	
Lanline_Number	Integer	
Department_ID	Integer	
Designation_ID	Integer	
Role_ID	Integer	
Location_ID	Integer	

#### 4.64.7.3.5 **MASTER\_ROLE:**

ColumnName	Values
ID	System generated unique ID
Role_Name	Input from Webform



#### 4.64.7.3.6 MIS\_ROLE:

ColumnName	Values
ID	System generated unique ID
Sub_Module_ID	Input from Web form. Reference value from Master_SubModule
Module_ID	Input from Web form .Reference value from Master_Module
Role_ID	Reference value from Master_Role

#### 4.64.7.3.7 GIS\_ROLE

ColumnName	Values
ID	System generated unique ID
Role_ID	Reference value from TBL_SubMenu
ServiceType	Input from web form
ServiceURL	Input from web form
Service_Layers	Input from web form

## 4.65 GET FEATURE INFORMATION

### 4.65.1 REQUIREMENT

By default, feature information in Geospatial Portal displays coded values for attributes which have predefined values. With this requirement user will be able to view the actual predefined value of attribute in feature information dialog.

### 4.65.2 REQUIREMENT UNDERSTANDING

Default feature information functionality of Geospatial portal will be modified to get the actual predefined value of attribute from database views and display it in feature information dialog box. View names for each layer of portal will be configured in configuration file of Geospatial Portal.

### 4.65.3 PRECONDITIONS:

Configuration file should contain the setting for all layers applicable for that particular User Role

### 4.65.4 BASIC FLOW:

- User will click on the “Get Feature Info” customized tool on the Geo-Portal.
- User will be able to access WMS/WFS services and view the attribute information for the selected feature on the map. This customized tool will display the descriptions of the code listed values e.g. District Name for District code which common user may not be able to understand.



#### 4.65.5 MODULES

- Database Views
- WCF Service Method
- Java Script Functions

Database Views: Database views will be created between main tables and masters table. Data from views will be fetched and displayed for required feature record.

WCF Service Method: 'GetLayerData' method will be created in WCF service. Input for this method will be json string which will contain key pair values of the layer names and record FIDs. Method will get the view name for respective layer from configuration file. Data will be fetched from respective view against the input FIDs. Method will then format the data in json string and return it back to calling function.

Java Script Function: A java script function will be developed which will add the customized 'Get Feature Information' button on the portal. When user click on the map to get the feature information, a function will get the layernames and fids of visible layers near the user provided point on map. This information will be passed to WCF service method. Method will get the required data on from the view and return it back to calling function. Function will format the information in html format and will display it in feature info dialog box.

#### 4.65.6 TECHNICAL DESCRIPTION

View name from which data will be fetched will be configured for each layer in configuration file of Geospatial Portal under app settings.

### 4.66 EDIT FEATURE ATTRIBUTE INFORMATION

#### 4.66.1 REQUIREMENT

By default, feature information in Geospatial Portal displays coded values for attributes which have predefined values. With this requirement user will able to view the list of all predefined values of attribute in feature information dialog, while editing the record.

#### 4.66.2 REQUIREMENT UNDERSTANDING

Default feature information functionality of Geospatial portal will be modified to display list of all predefined values of attribute from master table for respective layer and display it in feature



information dialog box, while editing the feature. Name of master tables, column names of predefined values will be configured in configuration file of portal.

#### 4.66.3 PRECONDITIONS:

- User should have a valid username and password.
- User must have authorized role assigned to edit map vector data
- Configuration file should contain the setting for editable layers

#### 4.66.4 BASIC FLOW:

- User will click on the “Edit Attribute” customized tool on the Geo-Portal.
- System will re-verify the user role.
- User will be able to access WMS/WFS services and edit attribute information of selected feature on the map. This customized tool will display the descriptions of the code listed values e.g. District Name for District code which common user may not be able to understand.
- For Geometry edits User will select default “Edit” option available on Geo-Portal.

#### 4.66.5 MODULES

- Database Views
- WCF Service Method ‘GetFeatureDataForEdit’
- Java Script Function
- WCF Service Method ‘UpdateFeatureData’

Database Views: Database views will be created between main tables and masters table. Data from views will be fetched and displayed for required feature record.

WCF Service Method ‘GetFeatureDataForEdit’:

- ‘GetFeatureDataForEdit’ method will be created in WCF service. Input for this method will be json string which will contain key pair values of the layer names and record FIDs.
- Using the configuration parameter from configuration file, method will first check if respective layer is allowed to edit. If not, then such message will be passed to calling javascript function and will be to displayed to user. If yes , then method will get name of attributes which have pick



list, name of picklist table and name of column containing predefined values using the configuration parameters from configuration file.

- Using this information, method will generate selection list in html format and pass the html string to calling function.

Java Script Function:

- A java script function will be developed which will add the customized 'Edit Feature Information' button on the portal.
- When user click on the map to edit the feature information, a function will get the layernames and fids of topmost visible layer from the legend near the user provided point on map. This information will be passed to WCF service method.
- Method will get the required data on from the view and return it back to calling function.
- Function will check for any information message or error message. Such messages will be displayed to user
- If no such messages are available, then html data along with pick lists will be displayed in feature info dialog box.
- User will edit any attribute value or change the pick list value and click on 'Update' button.
- Function will invoke the 'UpdateFeatureData' method of WCF service.
- A comma separated string of attribute name and attribute value will be passed to method.

WCF Service Method 'UpdateFeatureData':

- 'UpdateFeatureData' method will be created in WCF service. This method will generate the update query using the input string from the calling javascript function.
- Method will then execute the update statement against the table configured in configuration file for respective layer.

#### 4.66.6 TECHNICAL DESCRIPTION

Following configuration will be done in configuration file of Geospatial Portal under app settings.

- View name and Table name will be configured for each layer
- Name of layers which are not allowed to edit.
- Name of attributes which have pick lists for each layer.



## 4.67 FIND LOCATION

### 4.67.1 REQUIREMENT

This requirement will provide a provision to user to find the location on map against the provided latitude, longitude values or X, Y coordinates.

### 4.67.2 REQUIREMENT UNDERSTANDING

Functionality is required on Geospatial portal to find the location on map using the coordinates provided by user.

### 4.67.3 PRECONDITIONS:

- User should have access to LRI GEO PORTAL

### 4.67.4 BASIC FLOW:

- User will click on the Find Location Tool.
- User will enter coordinates either in Geographic coordinate system format or projected coordinate system format.
- When user click on the zoom button on dialog box, validation will performed to check the proper coordinates. These coordinates will be transformed using required coordinate system and marker will be placed on the map on transformed coordinates. Location of marker will be zoomed at the center of map.

### 4.67.5 MODULES

Java Script Function

- Using portal SDK APIs, a button will be added in the toolbar of portal to allow user to find the location on map.
- A java script function will be developed which will display a dialog box to user, when user clicks on the button.
- A drop down will be provided on dialog box to select the type of coordinate system in which user wants to enter the coordinates. Following are the values in dropdown.
- Lat,Lon (degree: minutes: seconds)
- Lat,Lon (dere. decimals)
- Projected +east + north(m)



- Depending on the type selection, text boxes will be displayed to user to enter latitude, longitude or in X Y coordinate values.
- When user click on the zoom button on dialog box, validation will performed to check the proper coordinates. These coordinates will be transformed using required coordinate system and marker will be placed on the map on transformed coordinates. Location of marker will be zoomed at the center of map.

## 4.68 DATA MIGRATION

### 4.68.1 REQUIREMENT

Upload the spatial as well as attribute data available in ESRI file geodatabase (gdb) format into sql server 2016 spatial database storage.

### 4.68.2 REQUIREMENT UNDERSTANDING

Functionality is required using which user can upload the data available in ESRI file geodatabase format into sql server spatial database storage. Features available in geodatabase will be first uploaded in sql server intermediate tables, using Geomedia export commands. Using the mapping tool, user will create the mapping between the attributes of features exported in sql server and attributes of destination tables. Once the mapping is done, data from intermediate tables will be migrated into destination tables.

### 4.68.3 PRECONDITIONS

- Spatial data must be topologically correct.
- Data must be available in proper coordinate system.

### 4.68.4 BASIC FLOW

- LRI Partners will validate the data available in ESRI file geodatabase format.
- After successful validation, this data will be send to PMU location.
- Users at PMU location will validate the data.
- After successful validation, user will open Geomedia workspace and connect to file geodatabase.
- Using the command 'Export to Sql Server', user will load the data into sql server. This will create import files at the path mentioned by user while exporting the data.



- User will import the data in sql server using Import command at command prompt.
- During import intermediate tables will be created using the same schema as available in file gdb and data will be loaded into intermediate tables.
- User will then create the mapping between attributes of intermediate tables and attributes of final tables using the mapping tool. Mapping will get stored in mapping tables in sql server database.
- After completion of mapping, user will load the data from intermediate tables into final tables using the migration tool.

#### 4.68.5 MODULES

##### Data export and import using Geomedia commands

- Using Geomedia 'Export to Sql Server' command, file gdb attached in Geomedia workspace will be exported. System will create import files at the path mentioned while exporting the data. This data will be imported into sql server database using the import command at command prompt.

**IMPORT <server> <database> <username> <password> N**

**Where N – not to create metadata tables while importing the data.**

- During the import, system will create tables and fields with the same name as of layers available in file geodatabase. These tables are the source tables for final migration.

##### Feature and Attribute Mapping

- A mapping tool will be developed, using which user will create a mapping between source table and final table.
- Drop down list of source tables and target tables will be displayed on Mapping dialog box.
- User will select required source table and required destination table from the drop down lists.
- System will display list of matching attributes according to attribute name, data type and data length. User can select/change the destination attribute. If no matching attribute found, then user can select 'NA' as destination attribute.
- After mapping of source and destination attributes, user will click on 'Apply' button to store the mapping in database.
- This mapping will be stored in 'Feature\_Mapping' table and 'Attribute\_Mapping' table.

##### Migration

- Using the migration tab on the mapping tool, data from source tables will be migrated into final tables.
- Drop down list of source tables for which attribute mapping is completed and migration is not done, will be displayed to user.
- User will select the source table from the list. Target table will get displayed automatically in read only text box from the Feature\_Mapping table.



- User will then click the 'Migration' button, which will invoke the 'MIG\_Data' database stored procedure. This procedure will read the Attribute\_Mapping table for the source and final table and migrate the data in respective attributes into final table from source table.
- After successful migration, system will update the IsMigration\_Completed attribute to 'Y' in Feature\_Mapping table.
- Log files for the migration will be created at path mentioned in configuration file of the mapping tool.

#### 4.68.6 TECHNICAL DESCRIPTION

Following tables will be created for migration of data.

##### 4.68.6.1 FEATURE\_MAPPING

Column_Name	Data_Type	Remark
ID	Integer	Primary Key.
SOURCE_TABLE_NAME	Nvarchar	
TARGET_TABLE_NAME	Nvarchar	
IS_ATTRIBUTEMAPPING_COMPLETED	Nvarchar	
IS_MIGRATION_COMPLETED	Nvarchar	

##### 4.68.6.1.1 ATTRIBUTE\_MAPPING

Column_Name	Data_Type	Remark
ID	Integer	Primary Key.
SOURCE_TABLE_NAME	Nvarchar	
SOURCE_ATTRIBUTE_NAME	Nvarchar	
TARGET_TABLE_NAME	Nvarchar	
TARGET_ATTRIBUTE_NAME	Nvarchar	

##### 4.68.6.2 MIG\_LOG

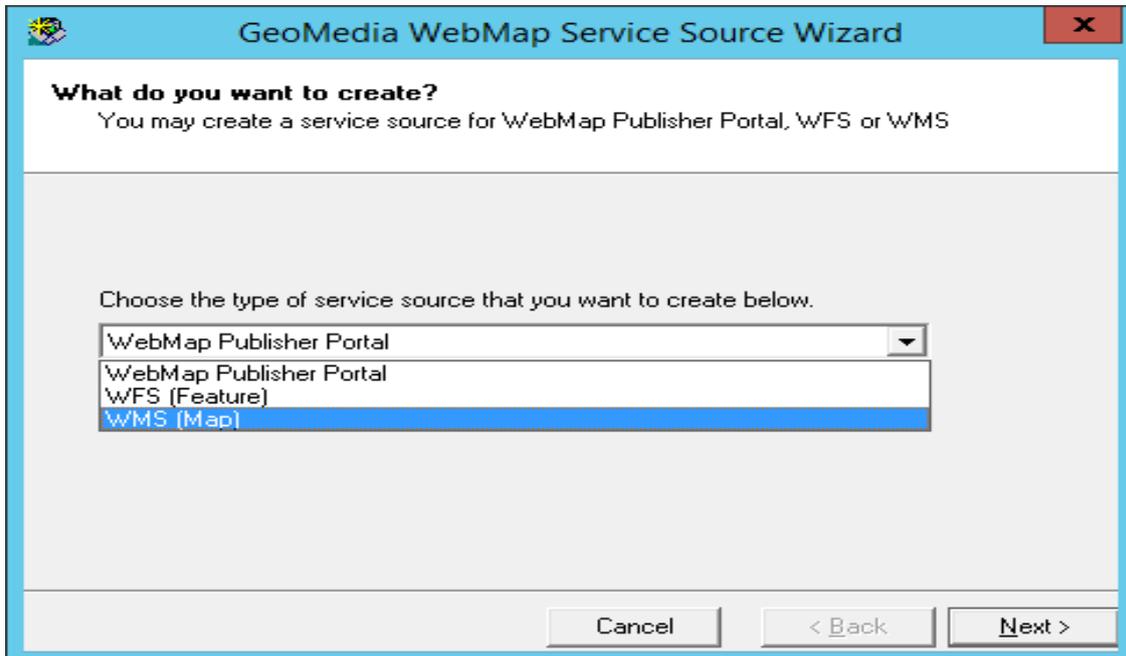
Column_Name	Data_Type	Remark
ID	Integer	Primary Key.
SOURCE_TABLE_NAME	Nvarchar	
ERR_ID	Integer	
ERRMSG	Nvarchar	
STATUS	Nvarchar	
DATE_IMPORT	Datetime	

Following configuration should be done configuration file of application

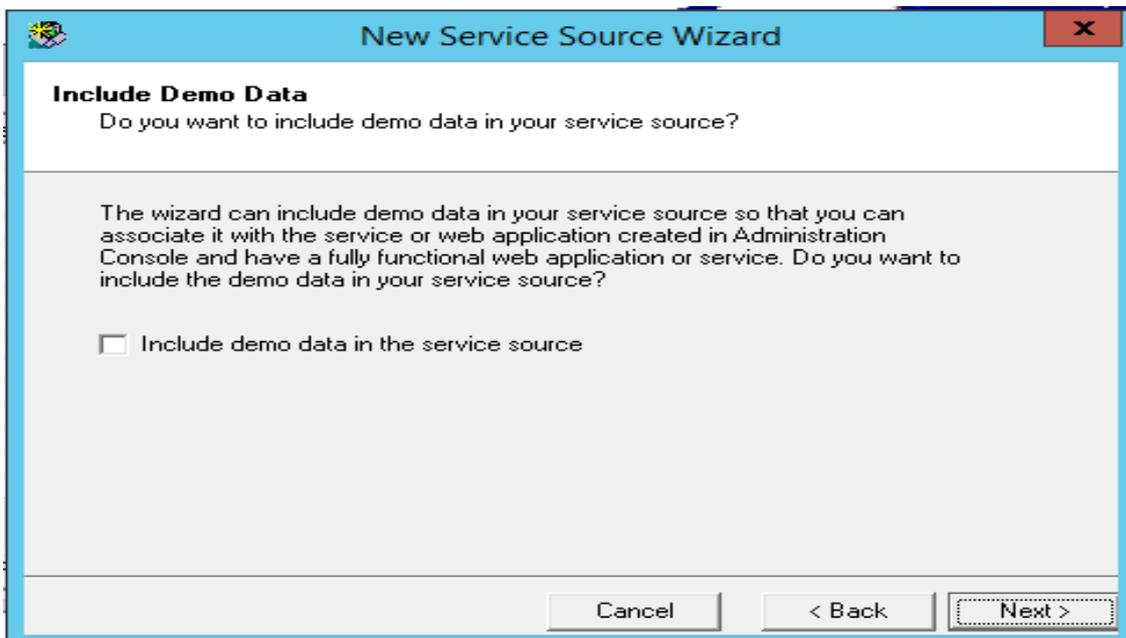
- Connection string for database using the name WDDConnectionString
- Targetshema parameter – For Target schema
- LogFilePath parameter – For log file of mapping and migration tool



- Select the type as WMS to create the WMS Service Source Or WFS to create the WFS service source and select the Next button



- Leave the 'Include demo data in the service source' check box uncheck and click Next.



- Key-in a name for the WMS Service source that is being created and select the Next button.

**New Service Source Wizard**

**Service Source Name**  
What do you want to name your service source?

You must give your new service source a unique name. This name will be used as the default folder, though you may change it later on in the wizard if you wish.

Name:

Cancel < Back Next >

- Choose a folder for the Service Source and click Next. The folder shown is the default location.

**New Service Source Wizard**

**Choose Location**  
Select or create a location for the new service source

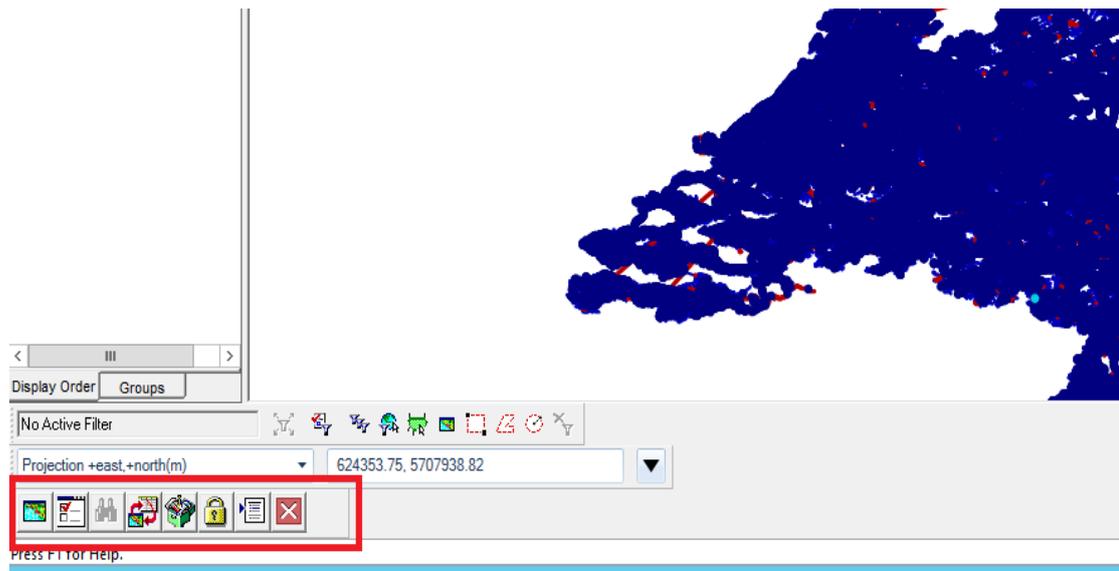
Choose a folder where the new files will be copied. This folder must be located on the web server. You may type a folder name that does not exist, but the parent path must already exist.

Warning: You may select an existing folder, but any data in this folder will be deleted when the new service source is created.

Folder:  Browse...

Cancel < Back Next >

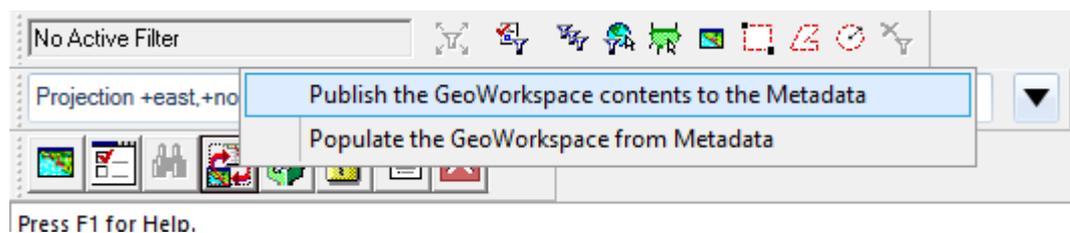
- Provide path for metadata access mdb. It will show default location. Change path if required. And click Next.
- Check the summary and click Next.
- Click Finish. This will create service source for WMS or WFS.
- On the Service Sources dialog, select the newly created, empty Service Source by clicking on the row with the WMS Service Source name or WFS Service Source name and then select the Open button.
- It will show WebMap Dockable control at the bottom of the GM Desktop window



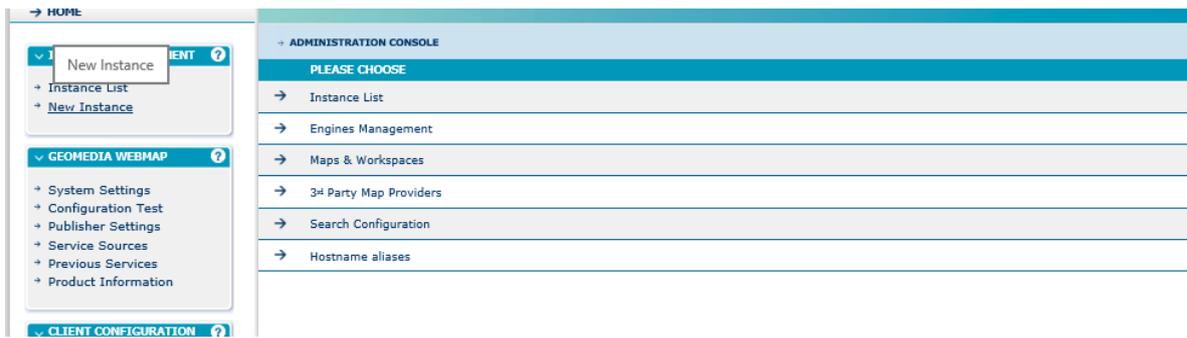
- Select the Publish and Populate Geoworkspace command.



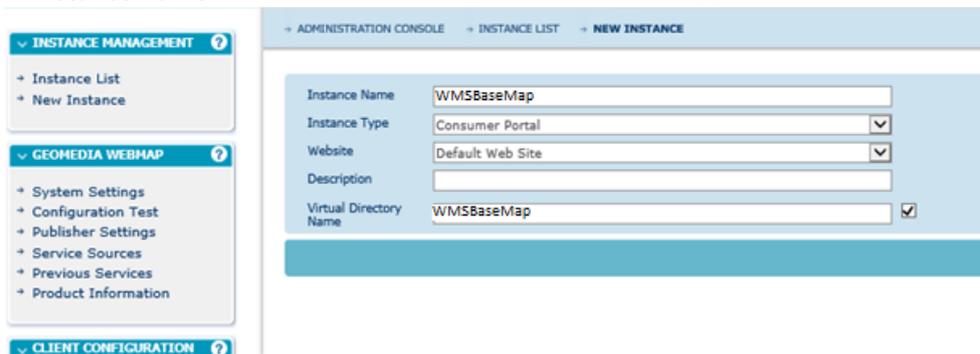
- This command has two sub commands – one that allows you to publish the contents of the geoworkspace to the Metadata database and one that allows you to populate a geoworkspace with the contents of a Metadata database. Since we are in the creation/publishing step of creating the WMS Service Source, select the “Publish the Geoworkspace Contents to the Metadata” sub command. Once you select the sub-command, the publishing processing begins.



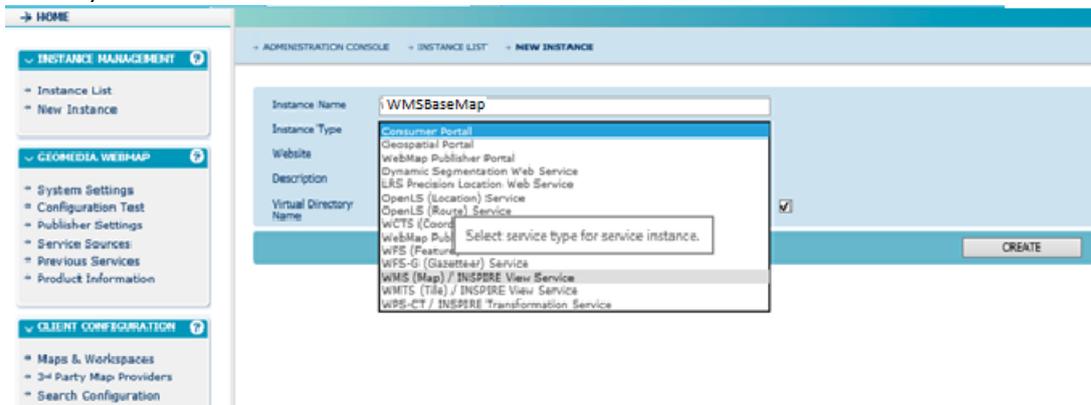
- After completion of publishing process, it will display error or warning messages if any. Select the WebMap Dockable Control Close command
- Open AdminConsole in IE using the URL : <http://localhost/adminconsole>
- In AdminConsole select a New Instance in the left panel under Instance Mangement



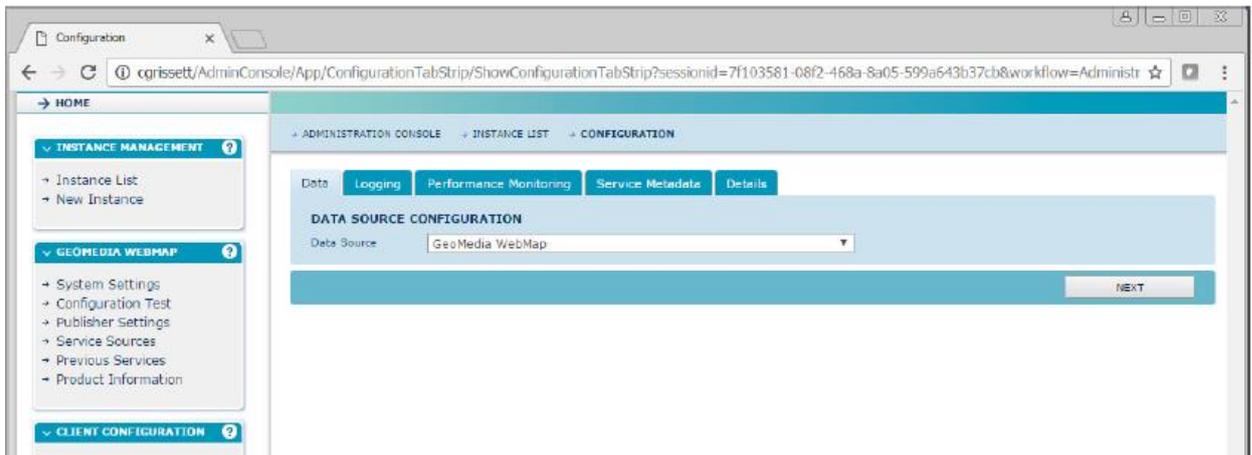
- Key In the instance name in 'Instance Name' text box. Provide the same or almost the same name as the Service Source to avoid the confusion which service source is associated with which service instance. Text in 'Virtual Directory Name' text box will get populated automatically same as instance name.



Select the instance type as WMS (Map) /INSPIRE View Service for WMS service Or WFS (Feature service) for WFS.



- Then select the CREATE button. The Service Instance will be created. Once created, the new Service Instance need to be configured.
- Configure the Service Instance by selecting the Configure button on the dialog that displays after the Instance is created.
- Select the Data Source of the Data published to the Service Source as 'GeoMedia WebMap' and select Next.



- The next dialog, GeoMedia WebMap Data Source Configuration dialog. Here associate the WMS Service Source with WMS Instance you just created and click on Apply
- This will create instance of service which can be consumed in GeoSpatial Portal.

Steps to create WMS or WFS using Erdas Apollo.

1. Go to Catalog tab in Data manager,
2. Right click on root and select Crawl database.
3. Select database and click next
4. Provide database connection parameters click next
5. Schedule crawling as per your convenience click next
6. Provide web options which you want to enable/disable click next
7. Provide security if any, click next
8. Select Metadata parser if any, click next
9. Review the options which is being process and click finish
10. A WMS link will be generated which is visible in data manager as well as Portal
11. Use this link in any software to review the service

## 4.70 METADATA SEARCH

### 4.70.1 REQUIREMENT



Provide various stake holders with facility to publish and access the metadata. This will also allow user to search the metadata of a layer and view the metadata going through a filter process to find the layers, which makes the search for metadata easy.

#### 4.70.2 REQUIREMENT UNDERSTANDING

.A facility will be provided to user using which user can add and update the metadata of individual layer or dataset. User will able to search the metadata about the individual layer and dataset or multiple layers and datasets using the keywords as filter criteria.

#### 4.70.3 MODULES

##### Metadata Extract

- Create Metadata: This module will allow user to create the metadata. User will input the following information while creating the metadata.
  - Name of layer
  - General Information
    - Language
    - Character Encoding
    - Metadata Standard
  - Data Information and Status
    - Theme Keyword
    - Date of Generation
    - Generated By
    - Completion Status
    - Source Agency
    - Contact Person
    - KeyWords
    - Access (Public / Restricted)
  - Data Publisher Information
    - Publisher
    - Publication Date
    - Contact Person
    - Contact Telephone
    - Contact Fax Number
    - Contact Email Address
    - Contact Address
  - Data Quality Information
    - Positional Accuracy Report
    - Attribute Validation
    - Completeness Report
- Update Metadata: This sub module will allow user to edit the existing metadata details of the layer.

##### Metadata Search and view



- This module will allow the user to search the metadata of a layer and view the metadata going through a filter process to find the layers, which makes the search for metadata easy.
- User can select the individual layer from the available list of layers. Metadata information from the selected layer will be fetched from the database and will be displayed to user
- User can provide the key words in search text box and search the metadata related to specific keywords.
- System will fetched all layers having the keywords given as search input and displayed to user. User can select individual layer and view the metadata information.

## 4.71 DATA DOWNLOAD

### 4.71.1 REQUIREMENT

Allow users to download the data in ESRI Shape format, KML and GML format.

### 4.71.2 REQUIREMENT UNDERSTANDING

Functionality will be developed, which will allow authorized users to download the layer data in ESRI shape format, KML or GML format. User will allow to input the attribute filter criteria or spatial filter criteria and resulted data will be downloaded in specified format.

### 4.71.3 PRECONDITIONS

- User should have valid username and password
- User must be authorized to perform the download operation of map data.

### 4.71.4 BASIC WORKFLOW

1. User selects the layer and attributes search criteria and perform query operations.
2. User uses the download options to download data into local system
3. Options to download in any of the available formats – Shape, GML and KML format
4. Save dialog to save the gml, kml and shape in zip into local machine.

### 4.71.5 MODULES

Query and Download

- A list of available layers will be displayed to user in drop down list.
- Depending on the selection of layer, attributes of the respective layers will be displayed to user.
- User can optionally select the attribute from attribute list for attribute based query. User will select the condition operator and provides the value.
- User can also optionally select the spatial criteria like data within the Area of Interest(AOI), data within polygon drawn on map.
- User will select one of the format option in which data will be downloaded.
- When user click on the download button, system will execute the attribute query or spatial query and fetched the data from database and put it into selected format.



- System will create the zip file of downloaded data and ask user to save the data on local system.

## 4.72 DSS FOR SOIL AND WATER CONSERVATION PLAN

### 4.72.1 REQUIREMENT

FRS Reference: Annexure-5 DSS Functions, Sl. No. 1

DSS for Soil & Water conservation plan to identify the type of structures, their design and estimate, for both arable and non-arable lands/areas.

### 4.72.2 REQUIREMENT UNDERSTANDING

The Soil and Water Conservation Decision support system will provide the detail information including type of treatment/structure required for the selected area along with estimated cost. The conservation plan will be decided based on the land slope, depth, texture, gravel, and rainfall.

### 4.72.3 MODULES

- Web form for Soil and Water Conservation plan DSS.

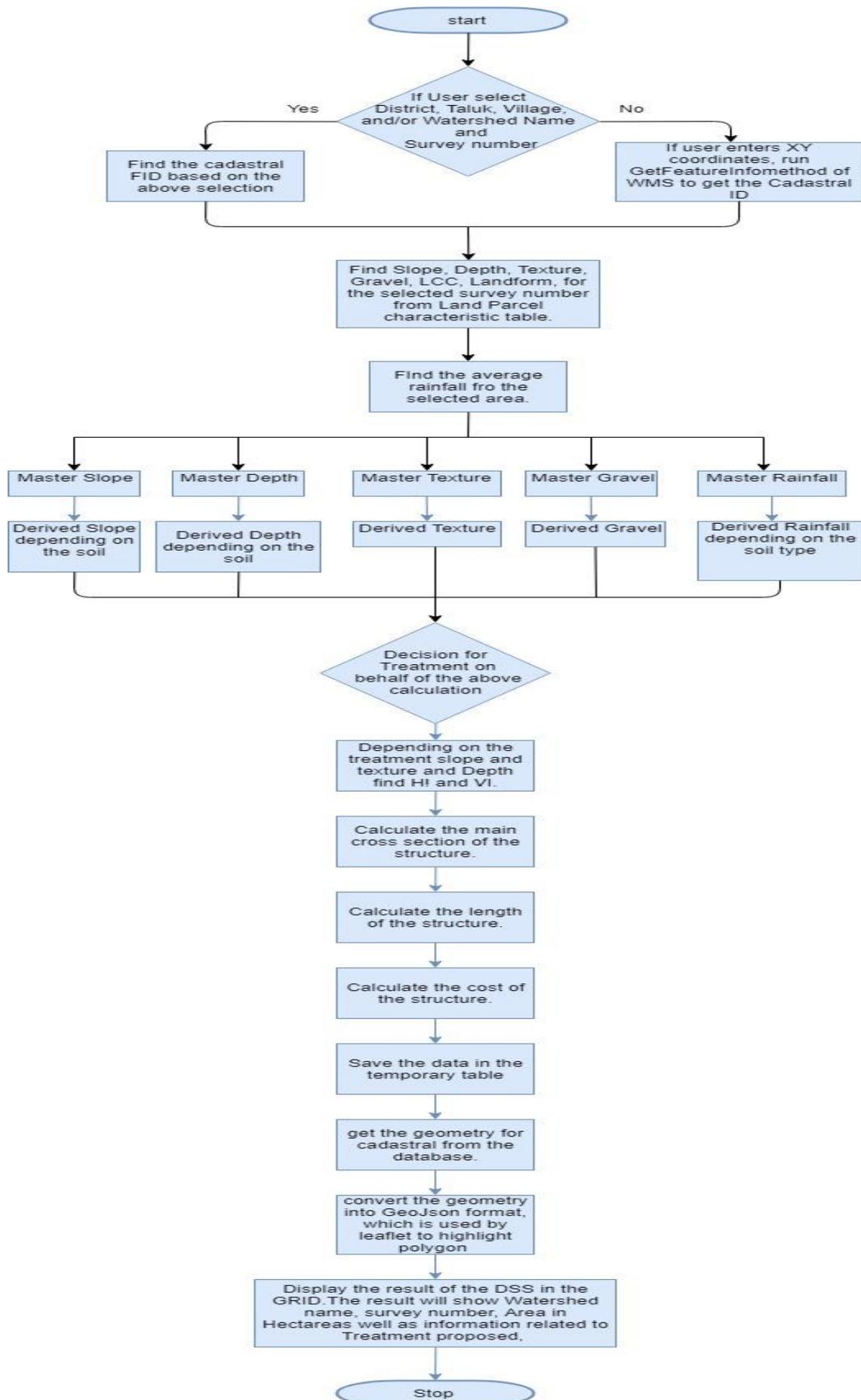
#### 4.72.3.1 MODULE DESCRIPTION

- User will select the District, Taluk, Village, and/or Watershed Name and Survey number. User will also be able to enter the XY coordinates as Lat-Long .
- A query will be executed to find the Cadastral ID on basis of Selected Village, Taluk, District, Survey Number from CADASTRAL table.
- If user enters XY coordinates, run GetFeatureInfo method of WMS to get the Cadastral ID
- Finding Slope, Depth, Texture, Gravel, LCC, Land form, for the selected survey number from Land Parcel characteristic table.
- Fetching average Rainfall for the year from Rainfall Table for the selected area.
- On the basis of LCC and Landform columns. getting soil type which is “Arable soil Red/Lateritic” or “Arable soil black” or “Non arable soil”
- Search for derived slope against actual slope on the basis of soil type from Master\_Land\_Slope\_Class.
- Search for derive soil depth against actual soil depth on the basis of soil type from Master\_Soil\_Depth\_Class.



- Search for Derived Texture from Master\_Soil\_Texture\_Class.
- Search for derived Gravel from Master\_Gravel\_Class.
- Search for derived Rainfall from Master\_Rainfall\_class on the basis of Soil type.
- Find Treatment from Treatment\_Ara\_Red\_Lat\_Soil, Treatment\_Ara\_Black\_Soil, Treatment\_Non\_Ara\_Area depending on the soiltype and slope, depth, texture, Gravel, and rainfall.
- Finding Treatment from Treatment\_Ara\_Red\_Lat\_Soil, Treatment\_Ara\_Black\_Soil, Treatment\_Non\_Ara\_Area depending on the soiltype and slop and depth and texture and Gravel and rainfall.
- Finding horizontal and vertical interval from Cri\_Horizontal\_Vertical\_Bunding on the basic of treatment and slope and texture and Depth.
- Finding value of main cross section on the basis of texture, gravel, slope, depth, VI and HI. Side cross section =  $2/3 \times$  Main cross section.
- Find the length of the structure
  - Length per hectare (m) =  $10000 \times S / (VI * 100)$
- Find the Cost for the Construction of structure from Master\_Cost\_Rate\_Construction\_Structure using Treatment, soil, gravel, cross section.
- Save data (ParcelCharacterID, SurveyNo, Cadastral\_Fid, MicroWatershed, AreaInHectare, Treatment, Length, MainBundCost, SideBundCost, TotalCost, CostOfWasteWeir) into DSS1\_Result table.
- Fetch the Geometry from the Cadastral table against the Cadastral\_ID.
- Read the Coordinates of the geometry and create GeoJson polygon. Send GeoJson to Leaflet to display the polygon with Cyan color and overlay it on the map.
- Display the result in a table showing the information such as Watershed name, survey number, Area in Hectare as well as information related to Treatment proposed, its length, cost for the main bund, cost for side bund, Total cost and also cost of Waste Weir.
- Report Button will be provided along with the result row in table. On click of report Button, Report of the result along with the map will be generated in pdf format.

#### 4.72.4 LOGICAL FLOW DIAGRAM





#### 4.72.5 TECHNICAL DESCRIPTION

##### 4.72.5.1 INPUT FIELDS ON SOIL AND WATER CONSERVATION PLAN DSS FORM

Attribute Name	Mandatory	Input Type	Remark
District	Yes	Drop Down	List of district in Karnataka
Taluk	Yes	Drop Down	Populated depending on the District Selected
Village	No	Drop Down	Populated depending on the Taluk Selected
Watershed Code	No	Drop Down	populated depending on the Taluk selected
Survey Number	No	Drop Down	Populated depending on the Village selected
Submit	-	Button	
Cancel	-	Button	

##### 4.72.5.2 RESULT VIEW OF SOIL AND WATER CONSERVATION DSS

Micro Watershed	Survey Number	Area in Hectare	Treatment	Length (Meters)	Main Bund Cost (Rs )	Side Bund Cost (in RS)	Total Cost	Cost of Waste weir(COF)
Dadamatti	389	1.75	TCB	20	23000	2300	25300	

##### 4.72.5.3 TABLE DEFINITION USED FOR THIS REQUIREMENT.

###### 4.72.5.3.1 CADASTRAL

Column Name	Data Type	Remark
FID	Integer	
DXF_TEXT	nvarchar	
VILLAGE	nvarchar	
TALUK	nvarchar	
DISTRICT	nvarchar	
WS_CODE	nvarchar	

###### 4.72.5.3.2 PARCEL\_CHARACTERISTIC



Column Name	Data Type	Remark
Cadastral_FID	Integer	
DEPTH	nvarchar	
SLOPE	nvarchar	
TEXTURE	nvarchar	
GRAVEL	nvarchar	
LCC	nvarchar	
LANDFARM	nvarchar	
AVARAGE_RAINFALL	nvarchar	
AREA_SOIL_CAPTURED	float	

#### 4.72.5.3.3 **MASTER\_LAND\_SLOPE\_CLASS**

Column Name	Data Type	Remark
ID	Integer	
Arable_Black_Soil	nvarchar	
Arable_Red_Lat_Soil	nvarchar	
Non_Arable_Soil	nvarchar	
Slope_Class	nvarchar	

#### 4.72.5.3.4 **MASTER\_SOIL\_DEPTH**

Column Name	Data Type	Remark
ID	Integer	
Arable_Black_Soil	nvarchar	
Arable_Red_Lat_Soil	nvarchar	
Non_Arable_Soil	nvarchar	
Depth_Class	nvarchar	

**4.72.5.3.5 MASTER\_TEXTURE**

Column Name	Data Type	Remark
ID	Integer	
Texture_Code	nvarchar	
Texture_Description	nvarchar	

**4.72.5.3.6 MASTER\_SOIL\_TEXTURE**

Column Name	Data Type	Remark
ID	Integer	
M_Texture_Class	nvarchar	
D_Texture_Class	nvarchar	

**4.72.5.3.7 MASTER\_GRAVEL**

Column Name	Data Type	Remark
ID	Integer	
GRAVEL_CODE	nvarchar	
GRAVEL_DESCRIPTION	nvarchar	

**4.72.5.3.8 MASTER\_SOIL\_GRAVEL**

Column Name	Data Type	Remark
ID	Integer	
M_Gravel_Class	nvarchar	
D_Gravel_Class	nvarchar	

**4.72.5.3.9 MASTER\_RAINFALL\_CLASS**



Column Name	Data Type	Remark
ID	Integer	
Arable_Black_Soil	nvarchar	
Arable_Red_Lat_Soil	nvarchar	
Non_Arable_Soil	nvarchar	
Rainfall_Class	nvarchar	

#### 4.72.5.3.10 *TREATMENT\_ARA\_RED\_LAT\_SOIL*

Column Name	Data Type	Remark
ID	Integer	
Slope	nvarchar	
Depth	nvarchar	
Text_Surface	nvarchar	
Gravel	nvarchar	
Treatment	nvarchar	
Rainfall	nvarchar	

#### 4.72.5.3.11 *TREATMENT\_ARA\_BLACK\_SOIL*

Column Name	Data Type	Remark
ID	Integer	
Slope	nvarchar	
Depth	nvarchar	
Text_Surface	nvarchar	
Gravel	nvarchar	



Column Name	Data Type	Remark
Treatment	nvarchar	
Rainfall	nvarchar	

**4.72.5.3.12 TREATMENT\_NON\_ARA\_AREA**

Column Name	Data Type	Remark
ID	Integer	
Slope	nvarchar	
Depth	nvarchar	
Text_Surface	nvarchar	
Gravel	nvarchar	
Treatment	nvarchar	
Rainfall	nvarchar	

**4.72.5.3.13 CRI\_HORIZONTAL\_VERTICAL\_BUNDING**

Column Name	Data Type	Remark
ID	Integer	
Treatment	nvarchar	
Slope	nvarchar	
Loamy_VI	nvarchar	
Loamy_HI	nvarchar	
Clayey_VI	nvarchar	
Clayey_HI	nvarchar	

**4.72.5.3.14 CRI\_CROSS\_SECTION\_STRUCTURE**



Column Name	Data Type	Remark
ID	Integer	
Crop	nvarchar	
Texture	nvarchar	
Gravel	nvarchar	
Depth	nvarchar	
Top_Width	nvarchar	
Base_Width	nvarchar	
Height	nvarchar	
Side_Slope	nvarchar	
Cross_Section	nvarchar	

#### 4.72.5.3.15 *CRI\_COST\_RATE\_CONSTRUCTION*

Column Name	Data Type	Remark
ID	Integer	
Treatment	nvarchar	
Soil	nvarchar	
Gravel	nvarchar	
Execution_Mode	nvarchar	
Main_Bund_Section	nvarchar	
Main_Bund_Cost	nvarchar	
Side_Bund_Section	nvarchar	
Side_Bund_Cost	nvarchar	

4.72.5.3.16 **DSS1\_RESULT**

Column Name	Data Type	Remark
ID	Integer	
ParcelCharacterID	Integer	
SurveyNo	nvarchar	
CADASTRAL_FID	Integer	
MicroWatershed	nvarchar	
AreaInHectare	nvarchar	
Treatment	nvarchar	
Length	nvarchar	
MainBundCost	nvarchar	
SideBundCost	Nvarchar	
TotalCost	nvarchar	
CostOfWasteWeir	nvarchar	
LMD	datetime	
Flag	nvarchar	



## 4.73 DSS FOR CROP SELECTION (BASED ON PHYSICAL SUITABILITY AND B:C RATIO)

### 4.73.1 REQUIREMENT

FRS Reference: Annexure-5 DSS Functions, Sl. No 2

Find out Crop suitability for the given selected area.

### 4.73.2 REQUIREMENT UNDERSTANDING

The Crop selection Decision support system will provides the crop suitability for the selected land depending upon the land resources occurring in an area. This DSS will compare requirement of crops with the land characteristics. Depending upon the suitability land will be classified into four categories order, classes, subclasses and units. The decision matrix for deciding the class and subclasses is for the crop is given in table No .....

Following are the description of order S (Suitable)

Class S1: Highly Suitable

Class S2: Moderately Suitable

Class S3: Marginally Suitable

Class N1: Currently not Suitable

Class N2: Permanently not Suitable

The classes S2 and S3 will be divided into subclasses based on the specific limitations. These limitations are indicated in lower case letters after suitability class symbol e.g. S2c (class is S2 with low rainfall or short growing period as a limitation). Following are the symbols used for the specific limitations that are likely to affect crop selection.

Erratic rainfall and its distribution and short growing period	c
Slope and erosion	e
Soil depth	d
Soil texture	t
Coarse fragments	g
Soil fertility constraints, calcareousness, sodicity hazard, salinity problem etc.	s
Drainage problem	w

The following Criteria / Logic need to be considered while deciding crop suitability:



- 1) Law of Minimum / Limitation approach.
- 2) Internal prioritization among crops with same rank.
- 3) Displaying the suitable crops (on prioritization basis), with all limiting factors as sub-script.

The System will calculate crop suitability for all the land parcels (Survey Numbers) and will be stored in static database tables. Provision will be available to update the database tables as and when any parameter is changed.

### 4.73.3 MODULES

- Web form for information view/input related to crop

#### 4.73.3.1 MODULE DESCRIPTION

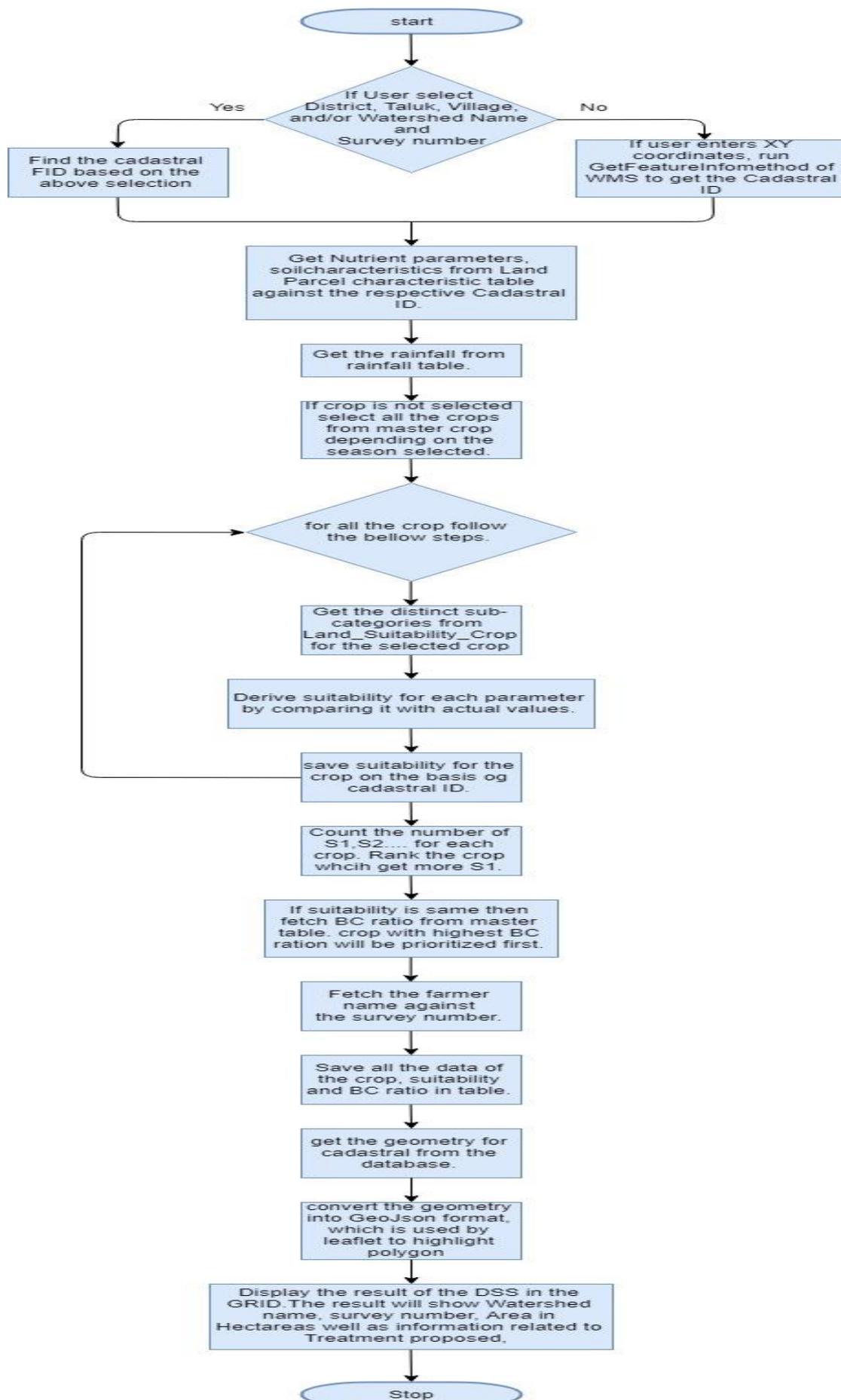
After successful login, user will click on 'Crop Selection' under Decision Support System. A web page for Crops selection DSS will be displayed to user.

- The web page will have the drop down for selecting District, Taluk, Village, Watershed name, Survey Number, Season as well as will have the drop down for selecting Crop. The details of input fields in Web page is as mentioned in section 4.73.5.1
- User will be able to select the District, Taluk, Village, Survey Number, Watershed and Season.
- A query will be executed to find the Cadastral ID on basis of Selected Village, Taluk, District, Survey Number from CADASTRAL table.
- Select Values such as Nutrient parameters, soil characteristics from Land Parcel characteristic table against the respective Cadastral ID.
- Get the Rainfall data from the Rainfall table.
- If user has not selected the crop, get the Crop list from the Master\_Crop depending upon the season selected.
- Follow below steps for each crop from the Crop list or crop which user has selected.
  - Get the distinct sub-categories ( Parameters) from Land\_Suitability\_Crop for the selected crop
  - Derive the suitability (i.e. S1/S2/S3/N) for each parameter by comparing it with the actual values for the respective cadastral ID.
  - Save the information crop, with suitability (S1, S2, S3, N) on the basis of CADASTRAL\_ID on DSS2\_Parameter\_sutability database.



- Count the number of S1, S2, S3 against each crop and rank the crop which get more S1. If the number of S1, S2, S3 acquire are the same then fetch the B:C ratio from Master\_BC\_Ratio against respective crop. Whichever crop is having highest BC ration will be prioritized.
- Fetch the Farmer Name BHOOMI Using web service.
- Saving BC ratio and Suitability and count of suitability of particular crop against respective cadastral ID in DSS2\_Crop\_Suitability Table In database.
- Fetch the Geometry from the Cadastral table against the Cadastral\_ID.
- Read the Coordinates of the geometry and create GeoJson polygon. Send GeoJson to Leaflet to display the polygon with Cyan color and overlay it on the map.
- Result displays the type of Crop for the particular Survey Number, with Season, Suitability Class, Benefit Ratio and the Rank. System will also highlight the Land parcel related to the selected survey number in GIS map.
- System will provide the result displaying suitability of the selected crop as well as system will display the message “ For More information please contact << Number >> << Name of the Person>>” . Fetch the number and name from Master\_Experts table. Also Link will be provided to open the Package of Practices. On click of link PDF of Package of Practices will be displayed
- Report Button will be provided along with the result row in table. On click of report Button, Report of the result along with the map will be generated in pdf format.

#### 4.73.4 LOGICAL FLOW DIAGRAM





#### 4.73.5 TECHNICAL DESCRIPTION

##### 4.73.5.1 INPUT FIELDS ON CROP SELECTION DSS FORM

Attribute Name	Mandatory	Input Type	Remark
District	Yes	Drop Down	List of district in Karnataka
Taluk	Yes	Drop Down	Populated depending on the District Selected
Village	No	Drop Down	Populated depending on the Taluk Selected
Watershed Code	No	Drop Down	populated depending on the Taluk selected
Survey Number	No	Drop Down	Populated depending on the Village selected
Season	Yes	Drop Down	Kharif, Rabbi, Summer
Crop Name	No	Drop Down	List of Crops
Submit	-	Button	
Cancel	-	Button	

##### 4.73.5.2 RESULT VIEW OF CROP SELECTION DSS

Survey Number	Farmer Name	Area in Hectare	Crop	Season	Suitability Class	Benefit Ratio	Rank
389	XYZ	1.2	Bajra	Kharif	S1- Highly suitable	230000	1
			Jowar	Kharif	S2	150000	2

##### 4.73.5.3 TABLE DEFINITION USED FOR THIS REQUIREMENT

###### 4.73.5.3.1 LAND\_SUITABILITY\_CROP

Column Name	Data Type	Remark
ID	Integer	
Crop_Name	nvarchar	
Category	nvarchar	
Subcategory	nvarchar	
Unit	nvarchar	



Column Name	Data Type	Remark
Suitability	nvarchar	
Cal_Condition	nvarchar(10)	
Min_Value	float	
Max_Value	float	
Value	nvarchar	

#### 4.73.5.3.2 *DSS2\_PARAMETER\_SUITABILITY*

Column Name	Data Type	Remark
ID	Integer	
CROP_ID	Integer	
Suitability	nvarchar	
CADASTRAL_ID	Integer	
Condition	nvarchar	

#### 4.73.5.3.3 *DSS2\_CROP\_SUITABILITY*

Column Name	Data Type	Remark
ID	Integer	
CROP_ID	Integer	
Crop_Name	nvarchar	
Suitability	nvarchar	
CADASTRAL_ID	Integer	



Column Name	Data Type	Remark
Survey_No	Integer	
Area in Hector	float	
BC Ratio	float	
Rank	Integer	

#### 4.73.5.4 MASTER\_BC\_RATIO

Column Name	Data Type	Remark
ID	Integer	
CROP_ID	Integer	
BC Ratio	float	

#### 4.73.5.5 MASTER\_EXPERTS

Column Name	Data Type	Remark
ID	Integer	
Expert_IN	Integer	
Name	nvarchar	
Surname	nvarchar	
email_ID	nvarchar	
Mobile_Number	Integer	
Phone_Number	Integer	



#### 4.73.5.6 LAND\_PARCEL\_INFORMATION

Column Name	Data Type	Remark
ID	Integer	
Cadastral_FID	Integer	Reference to Cadastral Table
Name	nvarchar	
Surname	nvarchar	
Area_Hectare	float	
Survey_Number	nvarchar	

### 4.74 DSS FOR LAND CAPABILITY CLASSIFICATION

#### 4.74.1 REQUIREMENT

-FRS Reference: Annexure-5 DSS Functions, Sl. No 3

DSS for delineating arable, and prime farm lands in the project districts (based on land capability assessment).

#### 4.74.2 REQUIREMENT UNDERSTANDING

This system is aimed to find out the general capability of the resources of an area for agricultural crops, forestry and other uses. In this Land Capability Assessment, the mapping units occurring in an area are grouped according to their limitations they pose for cultivation, the risk of damage if they are used for the identified use, and the way they respond to management interventions. In the capability system, mapping units are generally grouped at three levels – capability class, subclass and unit.

#### 4.74.3 MODULES

- Web form for information view/input related to crop



#### 4.74.3.1 MODULE DESCRIPTION

After successful login, user will click on 'Land Capability Classification' under Decision Support System.

A web page for Land Capability Classification DSS will be displayed to user.

- The web page will have the drop down for selecting District, Taluk, Village, Watershed name, Survey Number. The details of input fields in Web page is as mentioned in section 4.74.5.1
  - User will select the District, Taluk, Village, Micro Watershed and Survey number.
  - A query will be executed to find the Cadastral ID on basis of Selected Village, Taluk, District, and Survey Number from CADASTRAL table.
  - A query will be executed to find the Slope, Erosion, Drainage, Soil depth, Texture, Rock out Crops, EC, pH, Permeability from Parcel\_Characteristic table for the respective cadastral id.
  - A query will be executed on climate\_data to find the climate condition for the respective area.
  - Execute the query on Master\_Land\_capability Table to find
    - Class for Climate category against Climate value.
    - Class for Slope category against the slope value.
    - Class for Erosion category against Erosion value.
    - Class for Drainage category against Drainage value.
    - Class for Soil Depth category against Depth value.
    - Class for Soil Texture category against Texture value.
    - Class for Gravels category against Gravel value.
    - Class for Rockout crops category against Rockout\_Crops value.
    - Class for EC category against EC Value.
    - Class for pH category against pH Value.
    - Class for Permeability category against Permeability Value.
  - If the for all Class Value comes as 'I' then update the LCC as 'I'.
  - If any class value is greater than 'I', Get highest class value from all above for deciding the LCC.
- And add the lower case letter like e, w, s, or c to the Class number.

e.g, IIIw , the letter 'w' shows that the drainage or wetness is limitation in class III land.

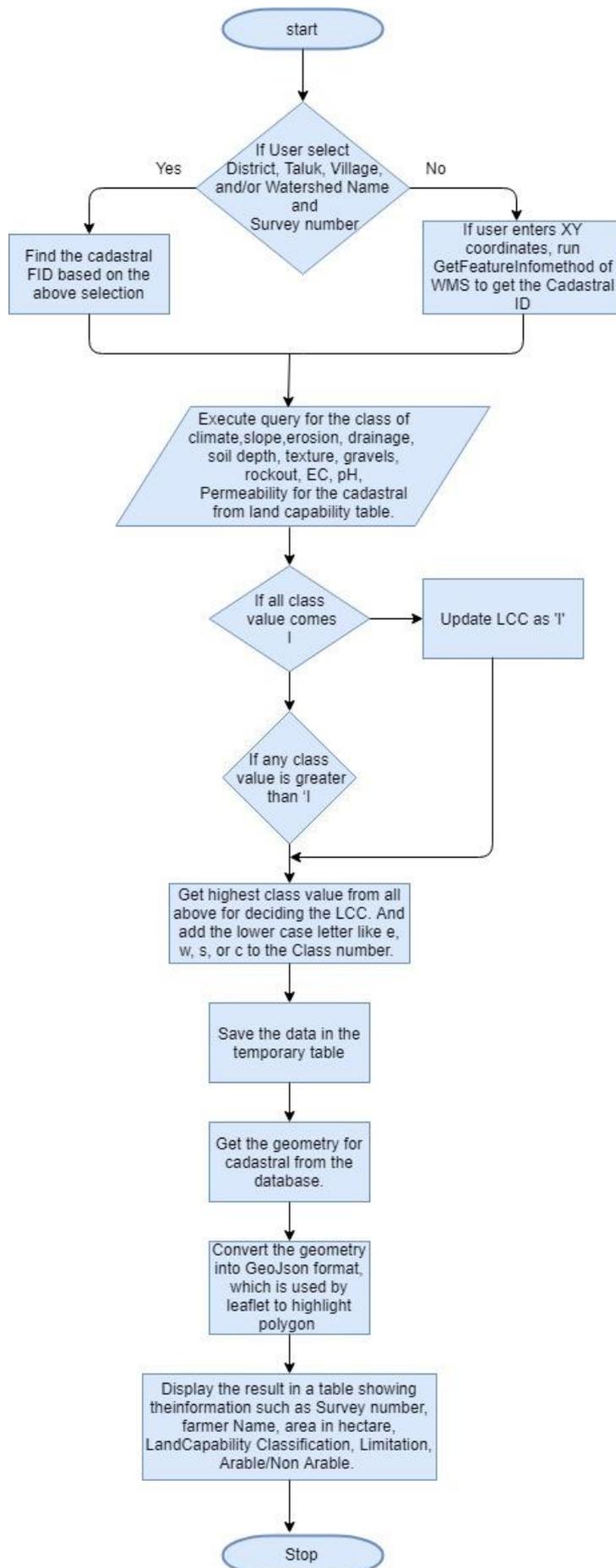
Below symbols will be used to show the limitations

- e – Erosion limitation
- w – Drainage Limitation
- s - Depth, Texture, gravel, rockout crop, EC,pH, Permeability limitation
- c – Climate Limitation



- Save the result in Land\_Capability Table with Id, Cadastral\_ID, LCC, Limitation.
- Fetch the Farmer Name from Land\_Parcel\_Information table against the selected survey Number. This table will be populated using the web service from BHOO MI.
- Fetch the Geometry from the Cadastral table against the Cadastral\_ID.
- Read the Coordinates of the geometry and create GeoJson polygon. Send GeoJson to Leaflet to display the polygon with Cyan color and overlay it on the map.
- Display the result in a table showing the information such as Survey number, farmer Name, area in hectare, Land Capability Classification, Limitation, Arable/Non Arable.
- Report Button will be provided along with the result row in table. On click of report Button, Report of the result along with the map will be generated in pdf format.

#### 4.74.4 LOGICAL FLOW DIAGRAM





#### 4.74.5 TECHNICAL DESCRIPTION

##### 4.74.5.1 INPUT FIELDS ON LAND CAPABILITY CLASSIFICATION DSS FORM

Attribute Name	Mandatory	Input Type	Remark
District	Yes	Drop Down	List of district in Karnataka
Taluk	Yes	Drop Down	Populated depending on the District Selected
Village	No	Drop Down	Populated depending on the Taluk Selected
Watershed Code	No	Drop Down	populated depending on the Taluk selected
Survey Number	No	Drop Down	Populated depending on the Village selected
Submit	-	Button	
Cancel	-	Button	

##### 4.74.5.2 RESULT VIEW OF LAND CAPABILITY CLASSIFICATION DSS

Survey No	Farmer Name	Area In Hectare	Land Capability Classes	Limitation	Arable
389	XYZ	2.3	IIs	Slope	Yes
389	PQR	1.2	IIs	Slope	Yes

##### 4.74.5.3 TABLE DEFINITION USED FOR THIS REQUIREMENT

###### 4.74.5.3.1 CADASTRAL

Column Name	Data Type	Remark
FID	Integer	
DXF_TEXT	nvarchar	
VILLAGE	nvarchar	
TALUK	nvarchar	
DISTRICT	nvarchar	
WS_CODE	nvarchar	

**4.74.5.3.2 PARCEL\_CHARACTERISTIC**

Column Name	Data Type	Remark
Cadastral_FID	Integer	
DEPTH	nvarchar	
SLOPE	nvarchar	
TEXTURE	nvarchar	
GRAVEL	nvarchar	
LANDFARM	nvarchar	
AVERAGE_RAINFALL	nvarchar	
EC	nvarchar	
PH	nvarchar	
ROCKOUT_CROPS	nvarchar	
PERMEABILITY	nvarchar	
SALINITY	nvarchar	
SOIL_DRAINAGE	nvarchar	

**4.74.5.3.3 DSS3\_RESULT**

Column Name	Data Type	Remark
Id	Integer	
ParcelCharacterID	Integer	
Survey_Number	nvarchar	
CADASTRAL_FID	Integer	
Farmer_id	nvarchar	



Column Name	Data Type	Remark
Area_in_Hectare	float	
Land_Capability	nvarchar	
Limitations	nvarchar	
Arable	bit	
LMD	datetime	
Flag	nvarchar	

#### 4.74.5.4 MASTER\_LAND\_CAPABILITY

Column Name	Data Type	Remark
ID	Integer	
Category	nvarchar	
LandForm	nvarchar	
Unit	nvarchar	
Min_Value	float	
Max_Value	float	
Value	nvarchar	
Class	Integer	

## 4.75 DSS FOR NUTRIENT MANAGEMENT

### 4.75.1 REQUIREMENT

-FRS Reference: Annexure-5 DSS Functions, Sl. No 4

### 4.75.2 REQUIREMENT UNDERSTANDING



### 4.75.3 MODULES

- Web form for information view/input related to crop

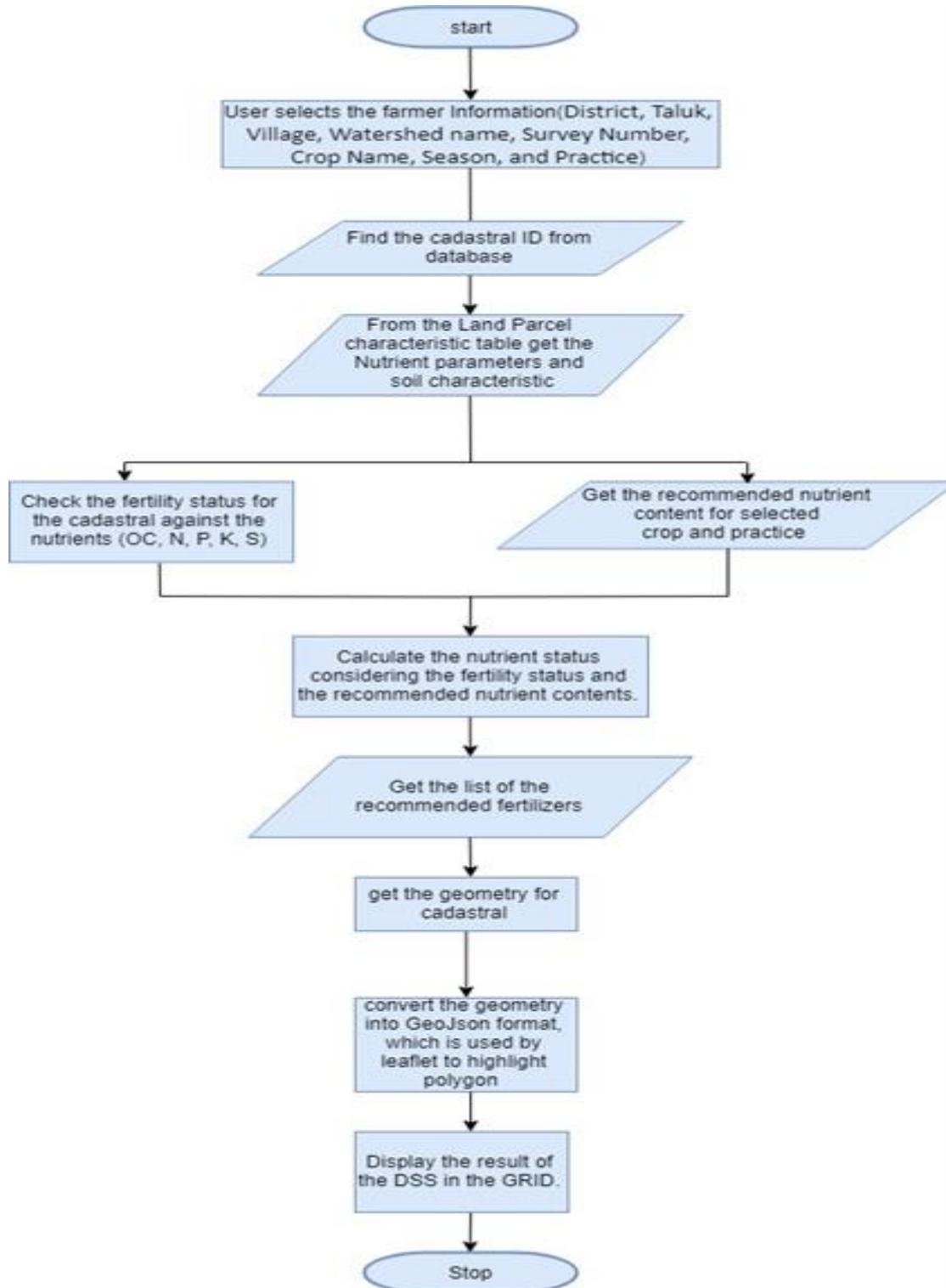
#### 4.75.3.1 MODULE DESCRIPTION

After successful login, user will click on 'Nutrient Management' under Decision Support System. A web page for Nutrient Management DSS will be displayed to user.

- The web page will have the drop down for selecting District, Taluk, Village, Watershed name, Survey Number, Crop Name, Season, and Practice. The details of input fields in Web page is as mentioned in section 4.75.5.1
- User will be able to select the District, Taluk, Village, Survey Number, Watershed, Season, Crop Name, and Practice.
- A query will be executed to find the Cadastral ID on basis of Selected Village, Taluk, District, Survey Number from CADASTRAL table.
- Select Values such as Nutrient parameters, soil characteristics from Land Parcel characteristic table against the respective Cadastral ID.
- Execute a query on "DSS4\_Soil\_Fertility\_Macro\_nutirent" and check the fertility status of macro nutrient OC, N, P, K, S.
- Get the recommended nutrient content for selected crop and practice by executing query on "Cropwise\_Ferti\_Recommend"
- Depending upon the Nutrient status adjust the nutrient values by executing query on "DSS4\_Macro\_Nutrient\_adjustment".
- Get the list of recommended fertilizers by executing query on "Nutrient\_Content\_Fertilizer".
- Execute Query on DSS4\_Basal\_Dose, DSS4\_Bio\_Fertilizer, DSS4\_TopDress\_Fertilizers, DSS4-Organic\_Manure to get the required recommendation using the Crop selected.
- Fetch the Geometry from the Cadastral table against the Cadastral\_ID.
- Read the Coordinates of the geometry and create GeoJson polygon. Send GeoJson to Leaflet to display the polygon with Cyan color and overlay it on the map.
- Display the result in a table showing the information such as Survey NO, Farmer Name, Area In Hectare, Crop Name, Bio-Fertilizers Gm/Ha, Organic Manure Tn/Ha, Fertilizer Required, Total Quantity in Kg (A), Basel Dose Kg(B), Top Dressing Kg C= (A-B), Total Cost for fertilizerC \* unit cost, POP.

- Report Button will be provided along with the result row in table. On click of report Button, Report of the result along with the map will be generated in pdf format.

#### 4.75.4 LOGICAL FLOW DIAGRAM



#### 4.75.5 TECHNICAL DESCRIPTION

**4.75.5.1 INPUT FIELDS ON NUTRIENT MANAGEMENT DSS FORM**

Attribute Name	Mandatory	Input Type	Remark
District	Yes	Drop Down	List of district in Karnataka
Taluk	Yes	Drop Down	Populated depending on the District Selected
Village	No	Drop Down	Populated depending on the Taluk Selected
Watershed Code	No	Drop Down	populated depending on the Taluk selected
Survey Number	No	Drop Down	Populated depending on the Village selected
Crop Name	Yes	Drop Down	
Season	Yes	Drop Down	
Practice	Yes	Drop Down	
Submit	-	Button	
Cancel	-	Button	

**4.75.5.2 RESULT VIEW OF NUTRIENT MANAGEMENT DSS**

Survey NO	Farmer Name	Area In Hectare	Crop Type	Bio-Fertilizers Gm/Ha	Organic Manure Tn/Ha	Fertilizer Required	Total Quantity in Kg (A)	Basel Dose Kg (B)	Top Dressing Kg C= (A-B)	Total Cost for fertilizer C * unit cost	POP
389	Mr XYZ	1.2	Cotton	12	0.3	Di Ammonium Phosphate 18-46-0	144	144		123640	POP_Cott ton.pdf
						Urea	152	50	102	12654	

**4.75.5.3 TABLE DEFINITION USED FOR THIS REQUIREMENT****4.75.5.3.1 CADASTRAL**

Column Name	Data Type	Remark
FID	Integer	
SUREVY_NUMBER	nvarchar	
VILLAGE	nvarchar	
TALUK	nvarchar	



Column Name	Data Type	Remark
DISTRICT	nvarchar	
MWCODE	nvarchar	

#### 4.75.5.3.2 *PARCEL\_CHARACTERISTIC*

Column Name	Data Type	Remark
ID	Integer	
Cadastral_FID	Integer	
SURVEY_NUMBER	nvarchar	
Boron_Value	nvarchar	
Calcium_Value	nvarchar	
Copper_Value	nvarchar	
IRON_Value	nvarchar	
K2O_Value	nvarchar	
NITROGEN_Value	nvarchar	
OC_Value	nvarchar	
P205_Value	nvarchar	
SULPHUR_Value	nvarchar	
PH_Value	nvarchar	
ZINC_Value	nvarchar	
MANGNESIUM_Value	nvarchar	
EC_Value	nvarchar	

**4.75.5.3.3 DSS4\_SOIL\_FERTILITY\_MACRO\_NUTIRENT**

Column Name	Data Type	Remark
ID	Integer	
Nutrient	nvarchar	
Cal_Condition	nvarchar	
Min_Value	nvarchar	
Max_Value	nvarchar	
Value	nvarchar	
Suitablity	nvarchar	

**4.75.5.3.4 DSS4\_MACRO\_NUTRIENT\_ADJUSTMENT**

Column Name	Data Type	Remark
ID	Integer	
Nutrient	nvarchar	
Nutirent_status	nvarchar	
Cal_Calculation	nvarchar	
Value	float	

**4.75.5.3.5 CROPWISE\_FERTI\_RECOMMEND**



Column Name	Data Type	Remark
ID	Integer	
Crop	nvarchar	
Practice_Season	nvarchar	
Agro_Cliamtic_Zone	nvarchar	
Age_of_Plant	float	
N	nvarchar	
P205	float	
K20	float	
Mg	float	
S	float	
Zn	float	
B	float	
Fe	float	
Mn	float	
Ca	float	
Cu	float	
FYM	float	

#### 4.75.5.3.6 *NUTRIENT\_CONTENT\_FERTILIZER*

Column Name	Data Type	Remark
ID	Integer	



Column Name	Data Type	Remark
Fertilizer	nvarchar	
Total_N	float	
Neut_Ammoni_P2O5	float	
Water_Sol_P2O5	float	
Water_Sol_K2O	float	

#### 4.75.5.3.7 *DSS4\_BASAL\_DOSE*

Column Name	Data Type	Remark
ID	Integer	
Fertilizer_recommend_Id	Integer	
N	float	
P2O5	float	
K2O	float	
S	float	
Ca	float	
Mg	float	
Zn	float	
B	float	
Fe	float	
Mn	float	
Cu	float	
Mo	float	

#### 4.75.5.3.8 *DSS4\_BIO\_FERTILIZER*

Column Name	Data Type	Remark
ID	Integer	
Fertilizer_Recommend_ID	Integer	
Bio_Fertilizer	nchar(100)	



Column Name	Data Type	Remark
Seed_Treatment	Integer	
Seedling_treatment	Integer	
Soil_application	Integer	

#### 4.75.5.3.9 *DSS4\_TOPDRESS\_FERTILIZERS*

Column Name	Data Type	Remark
ID	Integer	
Fertilizer_recommend_Id	Integer	
Crop_Stage	nvarchar	
N	float	
P	float	
K	float	

#### 4.75.5.3.10 *DSS4-ORGANIC\_MANURE*

Column Name	Data Type	Remark
ID	Integer	
Fertilizer_Recommend_ID	Integer	
Organic_Manure	nchar(50)	

## 4.76 DSS FOR SURFACE RUNOFF

### 4.76.1 REQUIREMENT

-FRS Reference: Annexure-5 DSS Functions, Sl. No 5



This service aims at the estimation of Surface Runoff where the departmental users will be able to select the modules used.

#### 4.76.2 REQUIREMENT UNDERSTANDING

Surface Runoff occurs in the presence of excess Rainfall. Surface Runoff could be due to the saturation of the soil to full capacity or arrival of rainfall more quickly than soil can absorb or could be because of impervious areas/Land type that sends the runoff to surrounding soil. For Estimation of surface runoff, it is recommended by WDD to provide options by following the three methods as indicated below. The workflow and the parameters as required for SCSC & RM provided, for IR method it is being worked out in consultation with Hydrology knowledge partner of WDD:

1. SCS Curve Number method
2. Infiltration method
3. Rational method

#### 4.76.3 MODULES

After successful login, user will click on 'Surface Runoff' under Decision Support System. A web page for Surface Runoff DSS will be displayed to user.

- The web page will have the drop down for selecting District, Taluk, Village, Watershed name, Survey Number, Runoff Model. The details of input fields in Web page is as mentioned in section 4.76.5.1
- User will select the District, Taluk, Village, Micro Watershed, Survey number and Runoff model.
- Depending upon the Runoff model selected by the user

##### 4.76.3.1 SCS CURVE NUMBER METHOD

- If user select the SCS
- A query will be executed to find the Cadastral ID on basis of Selected Village, Taluk, District, and Survey Number from CADASTRAL table.
- Get the Soil texture, Slope, Landform ( Black, Red / lateritic) from the Parcel characteristics table for the respective cadastral ID.
- Based on the below table decide the Soil Hydrological group ( Table Master\_Hydrological\_Soil\_Texture)



HSG	Soil Textures
A	Sand, loamy sand,
B	Silt loam or sandy loam
C	Sandy clay loam
D	Clay loam, silty clay loam, sandy clay, silty clay, or clay

- A query will be executed to find current Land use for the selected survey number.
- If current land use is having Crop names. Query Master\_Crop to get Crop\_Class for the respective crop.
- Execute query on Master\_CN\_LULC\_SHG to find the Curve number (CN) depending upon the soil hydrological group and current landuse.
- For getting the AMC condition
  - Execute query on Rainfall\_data for the respective village to get 5 days antecedent rainfall as well as current day rainfall.
    - If rainfall < 35 mm then AMC = AMC-I
    - If rainfall between 35 to 52.5 mm then AMC = AMC-II
    - If rainfall > 52.5 then AMC = AMC-III
- Execute Query on Master\_Multiplication\_factor using derive curve number and AMC condition to get multiplication Factor (MF).

- Get adjusted CN number

$$\text{AdjCN} = \text{CN} * \text{MF}$$

Where AdjCN = Adjusted Curve Number

CN = Curve Number

MF= Multiplication factor

- Adjust Curve Number taking consideration of slope factor

$$SACN = \frac{1}{3}(\text{AdjCN} - \text{CN}) - (1 - 2e^{-13.86\alpha}) + \text{CN}$$

Where,

SACN - Slope adjusted CN

CN – Curve Number

AdjCN – Adjusted Curve Number

$\alpha$  - Soil slope (m/m)



- Estimate Potential Maximum Soil Moisture Retention of Runoff ( $P_e$ ) and Initial Abstraction ( $I_a$ ) factor using slope Adjusted Curve Number.

$$S = \frac{1000}{SACN} - 10$$

Where,

$S$  – Potential Maximum Soil Moisture Retention (in inches)

SACN - Slope adjusted CN

- Estimate Initial using following equation depending on the type of Soil and AMC.
  - For black soil region (AMC I) and Red soil/Laterite soil region (AMC I, AMC II, & AMC III):

$$I_a = 0.3 S$$

- For black soil region (AMC II & AMC III):

$$I_a = 0.1 S$$

Where,

$I_a$  – Initial Abstraction (in inches)

$S$  - Potential Maximum Soil Moisture Retention (in inches)

- Finally, Runoff is estimated using Daily Rainfall, the Potential maximum Soil Moisture Retention after runoff begins and Initial Abstraction. Multiply Daily rainfall by 25.4 to convert it into inches

$$P_e = \frac{(P - I_a)^2}{(P + I_a - S)^2}$$

Where,

$P_e$  – Runoff (in inches)

$P$  – Rainfall (in inches)

$I_a$  – Initial Abstraction (in inches)

$S$  - Potential maximum Soil Moisture Retention (in inches)

- Output will be converted from inches to mm by dividing the obtained value by 25.4.
- Fetch the Geometry from the Cadastral table against the Cadastral\_ID.
- Read the Coordinates of the geometry and create GeoJson polygon. Send GeoJson to Leaflet to display the polygon with Cyan color and overlay it on the map.



- Display the result in a table showing the information such as Survey No, Farmer Name, Area in Hectare, Interval, Runoff(mm).
- Report Button will be provided along with the result row in table. On click of report Button, Report of the result along with the map will be generated in pdf format.

#### 4.76.3.2 INFILTRATION METHOD

- A query will be executed to find the Cadastral ID on basis of Selected Village, Taluk, District, and Survey Number from CADASTRAL table.
- Get the Soil texture, Slope, Landform (Black, Red / lateritic) from the Parcel characteristics table for the respective cadastral ID.
- A query will be executed to find current Land use for the selected survey number.
- A query will be executed on Master\_Infiltration\_Rate to get constant infiltration rate depending Soil Texture and Land use.
- A query will be executed to find the hourly rainfall for last 24 Hours (rainfall value will be reset at 08:30 am daily).
- Calculate possible duration of rainfall for each hour as follows.
  - Sum up the duration till the rainfall value becomes constant and not getting changed.

e.g

Time	Rainfall
19:30:00	0
19:45:00	6
20:00:00	20.5
20:15:00	23
20:30:00	23

In above case Possible duration of rainfall is 45 Mnts.

- Calculate the Rainfall Peak Intensity (mm/hr)
  - $\text{Calc\_Rainfall} = \text{Rainfall} * 4$  for each 15 mnts record for the respective hour
  - If the each  $\text{Calc\_Rainfall} > 40$  then consider it else ignore the value
  - Take range starting from 40 – maximum  $\text{Calc\_Rainfall}$ . (e.g. 40-50)
- Estimate Average rainfall intensity by calculating average of Rainfall peak intensity
- Estimate the Net instantaneous Runoff rate by subtracting Constant infiltration rate (mm/hr) from Average rainfall intensity (mm/hr).

$\text{Net instantaneous runoff rate} = (\text{Average rainfall intensity}) - (\text{Constant infiltration rate})$



- Estimate Design runoff (mm) by multiplying Net instantaneous runoff rate with possible duration of rainfall.

$$\text{Design runoff depth} = (\text{Net instantaneous runoff}) \times (\text{possible duration of rainfall})$$

- Estimate Runoff against existing infiltration rate (mm/hr) by multiplying number of possible events and design runoff depth, runoff generated against existing infiltration rate (mm/hr) is assessed.

$$\text{Runoff generated against existing infiltration rate} = (\text{No. of possible events}) \times (\text{Design runoff depth})$$

- A query will be executed on DSS1\_Result table against the selected survey number to find out type of conservation structure. If it is Bunding then, the minimum length of the bund (m) is considered for calculating the Design runoff retained.

$$\text{Design Runoff Retained} = [(\text{Min. Length of the bund}) \times (\text{Anticipated Water Spread Area})] / 10$$

- If Runoff generated against Existing Infiltration rate > Design Runoff Retained

$$\text{Max. Runoff Excess} = (\text{Runoff generated against Existing Infiltration rate}) - (\text{Design Runoff Retained})$$

Else

$$\text{Max. Runoff Excess} = 0$$

- Fetch the Geometry from the Cadastral table against the Cadastral\_ID.
- Read the Coordinates of the geometry and create GeoJson polygon. Send GeoJson to Leaflet to display the polygon with Cyan color and overlay it on the map.
- Display the result in a table showing the information such as Survey No, Farmer Name, Area in Hectare, Interval, Runoff(mm).
- Report Button will be provided along with the result row in table. On click of report Button, Report of the result along with the map will be generated in pdf format.

#### 4.76.3.3 RATIONAL METHOD

- User will input "Maximum length of flow from remote point to the point of concentration (m)" and "Difference in elevation between the remote point and the point of outlet (m)" using Textbox.



- A query will be executed to find the Cadastral ID on basis of Selected Village, Taluk, District, and Survey Number from CADASTRAL table.
- Get the Soil texture, Slope, Landform (Black, Red / lateritic) from the Parcel characteristics table for the respective cadastral ID.
- A query will be executed to find current Land use for the selected survey number.
- A query will be executed to find the hourly rainfall for last 24 Hours (rainfall value will be reset at 08:30 am daily).
- A query will be executed to find current Land use for the selected survey number.
- A query will be executed on Master\_Runoff\_Coefficient to find the runoff Coefficient (C) using Land use, Soil Texture, Slope. If the land use or soil types are different for the area in such situations, weighted average value of C can be calculated as indicated below:

$$C_w = A_1 C_1 + A_2 C_2 + \dots + A_n C_n / A$$

Where,

A is the total area of the watershed,

C<sub>1</sub>, C<sub>2</sub>...,C<sub>n</sub> are the coefficients of runoff for the different homogeneous areas (equivalent of soil map unit areas) of size A<sub>1</sub>, A<sub>2</sub> ..... A<sub>n</sub> in ha respectively.

- Calculate Time of Concentration (T<sub>c</sub>)
  - It is the function of the length of the main channel (L, in m) and fall in elevation from the remotest point to the outlet (H, in m).
  - Alternatively, the Time of concentration (T<sub>c</sub>) can also be calculated from the empirical formula

$$T_c = 0.0195 K^{0.77}$$

Where K is the square root of L<sup>3</sup>/H

Where,

L - Maximum length of flow from remote point to the point of concentration (m).

H - Difference in elevation between the remote point and the point of outlet (m)

T<sub>c</sub> - Time of concentration (hours)



- Calculate Rainfall Intensity (I): Wherever the data on rainfall intensity is not available, it can be calculated as indicated below. Intensity of rainfall (I) for the desired frequency or recurrence interval and for duration equal to time of concentration can be worked out as follows;

$$I = \frac{K_1 T^a}{(b + T_c)^n}$$

Where,

$K_1$ ,  $a$ ,  $b$  and  $n$  are empirical constants to be selected from the Master\_Empirical\_Constant.

$T_c$  = Time of concentration in hours

$T$  = Recurrence interval or frequency (years) to be selected from Master\_Recurrence\_Interval depending Land user, slope and texture

- Peak rate of runoff can be estimated by rational method as below.

$$Q = \frac{CIA}{360}$$

Where,

$Q$  - Peak rate of runoff (Cubic meters per second, m/S)

$C$  - Coefficient of runoff (Table)

$A$  - Area of watershed (hectares)

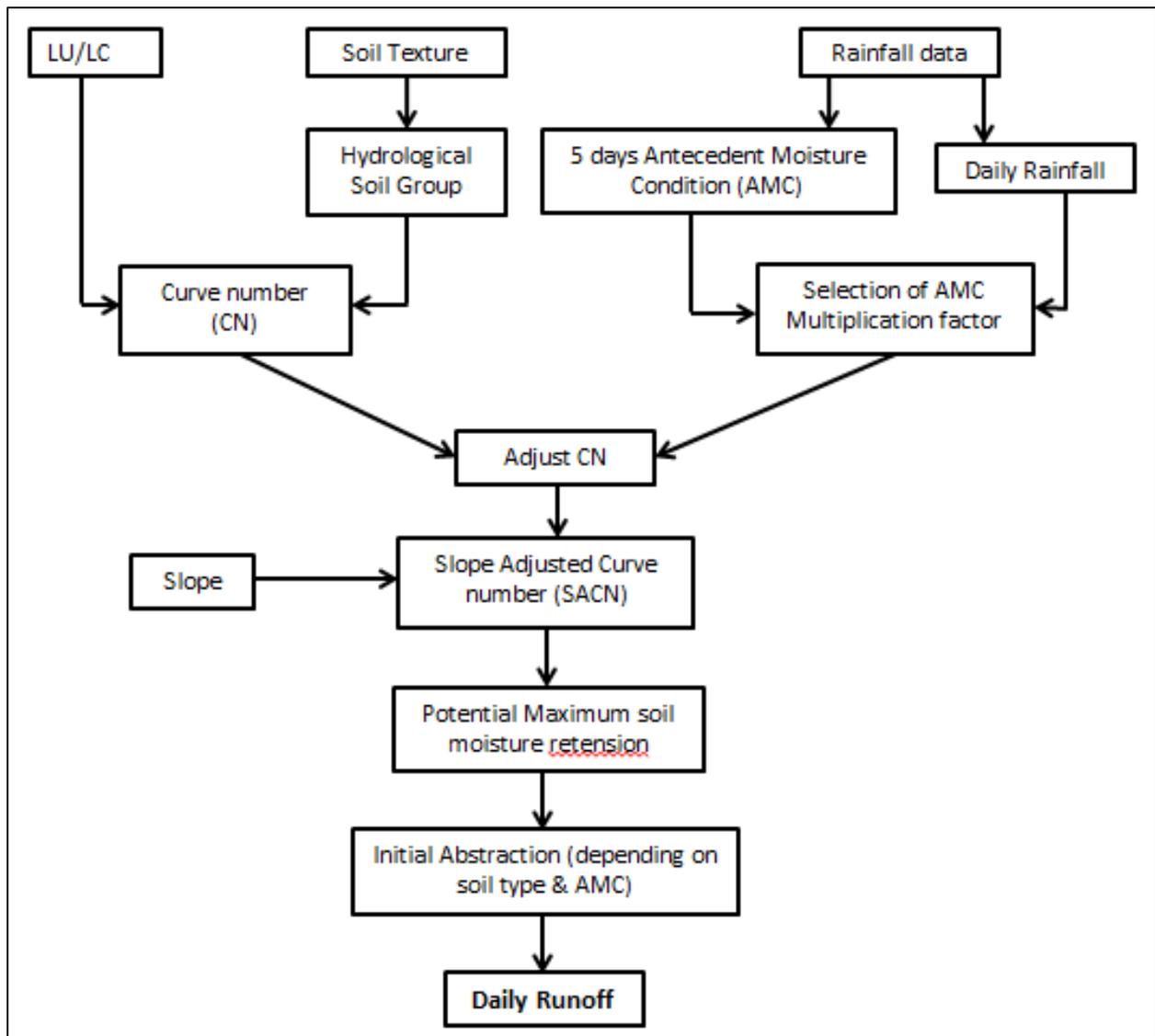
$I$  - Intensity of rainfall (mm/hour) for the duration equal to time of concentration

- Fetch the Geometry from the Cadastral table against the Cadastral\_ID.
- Read the Coordinates of the geometry and create GeoJson polygon. Send GeoJson to Leaflet to display the polygon with Cyan color and overlay it on the map.
- Display the result in a table showing the information such as Survey No, Farmer Name, Area in Hectare, Interval, Runoff(mm).
- Report Button will be provided along with the result row in table. On click of report Button, Report of the result along with the map will be generated in pdf format.

#### 4.76.4 LOGICAL FLOW DIAGRAM

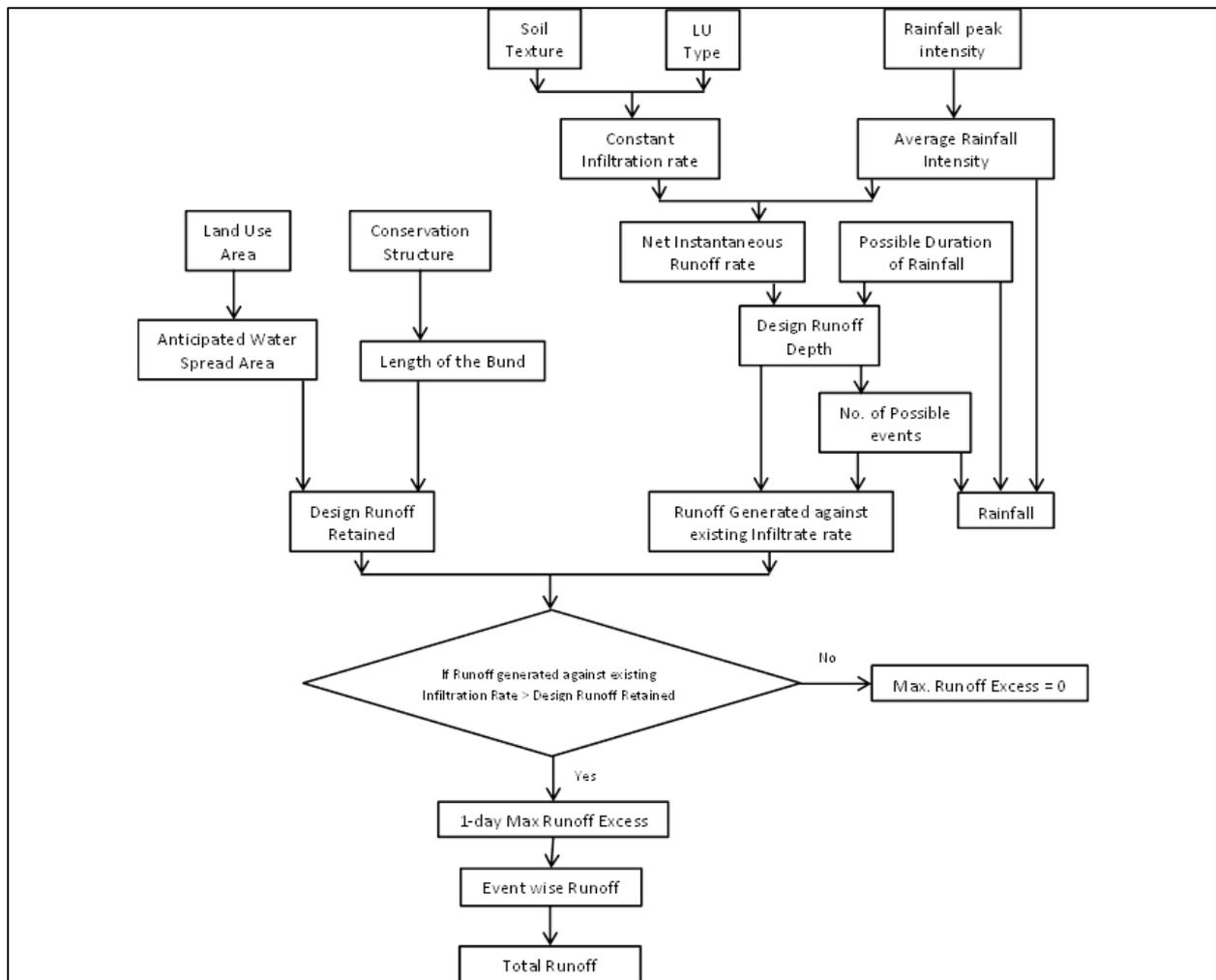


#### 4.76.4.1 LOGICAL FLOW DIAGRAM

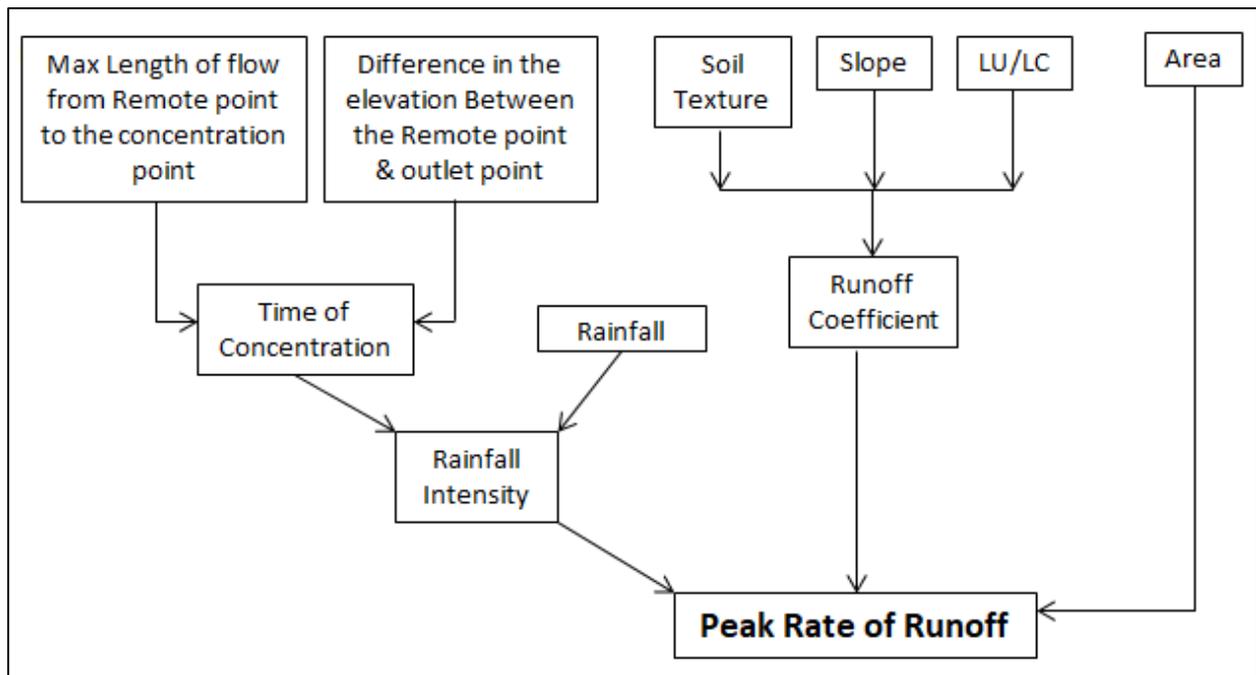




### 4.76.4.2 LOGICAL DIAGRAM INFILTRATION METHOD



### 4.76.4.3 LOGICAL DIAGRAM RATIONAL METHOD



### 4.76.5 TECHNICAL DESCRIPTION

#### 4.76.5.1 INPUT FIELDS ON SURFACE RUNOFF DSS FORM

Attribute Name	Mandatory	Input Type	Remark
District	Yes	Drop Down	List of district in Karnataka
Taluk	Yes	Drop Down	Populated depending on the District Selected
Village	No	Drop Down	Populated depending on the Taluk Selected
Watershed Code	No	Drop Down	populated depending on the Taluk selected
Survey Number	No	Drop Down	Populated depending on the Taluk selected
Runoff Model	Yes	Drop Down	SCS Curve Method, Infiltration Method, Rational Method.
Submit	-	Button	
Cancel	-	Button	

#### 4.76.5.2 RESULT VIEW OF SURFACE RUNOFF DSS

Survey No	Farmer Name	Area in Hectare	Interval	Runoff ( mm)
389	Mr. XYZ	1.2	Hourly (1pm-2pm)	125



Watershed Code	Management Unit	Area in Hectare	Interval	Runoff ( mm)
Dattamati	LMU-5	120	Hourly (1pm-2pm)	94
Dattamati	LMU-8	150	Hourly (1pm-2pm)	85

#### 4.76.5.3 TABLE DEFINITION USED FOR THIS REQUIREMENT

##### 4.76.5.3.1 *CADASTRAL*

Column Name	Data Type	Remark
FID	Integer	
SUREVY_NUMBER	nvarchar	
VILLAGE	nvarchar	
TALUK	nvarchar	
DISTRICT	nvarchar	
MWCODE	nvarchar	

##### 4.76.5.3.2 *PARCEL\_CHARACTERISTIC*

Column Name	Data Type	Remark
Cadastral_FID	Integer	
TEXTURE	nvarchar	
LCC	nvarchar	
SLOPE	nvarchar	

##### 4.76.5.3.3 *MASTER\_HYDROLOGICAL\_SOIL\_TEXTURE*

Column Name	Data Type	Remark
HSG	nvarchar	



Column Name	Data Type	Remark
Soil_Texture	nvarchar	

#### 4.76.5.3.4 **MASTER\_SLOPE**

Column Name	Data Type	Remark
SLOPE_CODE	nchar	
SLOPE_DESCRIPTION	nvarchar	

#### 4.76.5.3.5 **MASTER\_CROP**

Column Name	Data Type	Remark
CLU_CODE	nvarchar	
Quality	nvarchar	

#### 4.76.5.3.6 **RAINFALL\_DATA**

Column Name	Data Type	Remark
Taluk_Name	nvarchar	
RainDate	date	
RainTime	nvarchar	
Rain	float	

#### 4.76.5.3.7 **MASTER\_MULTIPLICATION\_FACTOR**

Column Name	Data Type	Remark
Taluk_Name	nvarchar	
RainDate	date	
RainTime	nvarchar	
Rain	float	



#### 4.76.5.3.8 MASTER\_CN\_LULC\_SHG

Column Name	Data Type	Remark
ID	Integer	
Land_Cover	nvarchar	
Hydro_Soil_Grp_A	Integer	
Hydro_Soil_Grp_B	Integer	
Hydro_Soil_Grp_C	Integer	
Hydro_Soil_Grp_D	Integer	

### 4.77 DSS FOR DESIGNING OF FARM POND SIZE

#### 4.77.1 REQUIREMENT

-FRS Reference: Annexure-5 DSS Functions, Sl. No 6

#### 4.77.2 REQUIREMENT UNDERSTANDING

Farm ponds are small tanks or reservoirs constructed for the purpose of storing water essentially from surface runoff. Size of the farm pond depends upon the area that can be spared from cultivation, availability of area that can be benefited by protective irrigation, expected runoff, workability and water lifting facilities. Farm ponds are constructed by excavating the soil, by depositing the soil on the bunds.

#### 4.77.3 MODULES

- Web form for information view/input related to Designing of Farm Pond size

#### 4.77.4 MODULE DESCRIPTION

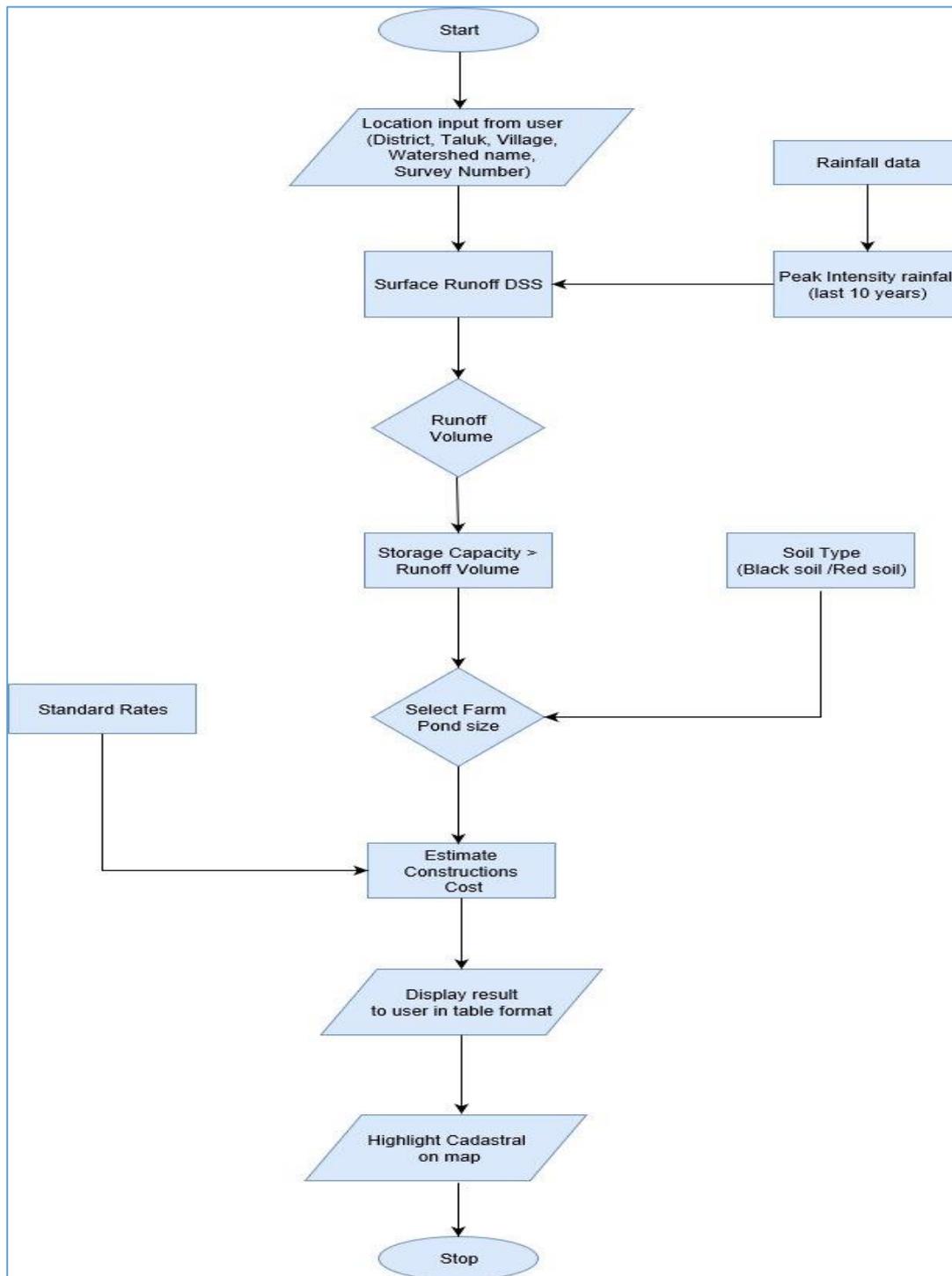
After successful login, user will click on 'Farm Pond Size' under Decision Support System. A web page for Farm Pond Size DSS will be displayed to user.

- The web page will have the drop down for selecting District, Taluk, Village, Watershed name, Survey Number. The details of input fields in Web page is as mentioned in section 4.77.6.1
- User will select the District, Taluk, Village, Micro Watershed, Survey number.
- Execute query on rainfall data to get Peak Intensity Rainfall from the last 10 years.
- Execute Surface Runoff DSS for the Selected Survey Number considering peak intensity rainfall.
- Execute the Query on DSS6\_Farm\_Pond\_Size table using Landform (Black soil/red soil) and storage capacity which will be higher than the runoff calculation.
- Estimate Cost of construction using table Master\_Cost\_Construction table.



- Fetch the Geometry from the Cadastral table against the Cadastral\_ID.
- Read the Coordinates of the geometry and create GeoJson polygon. Send GeoJson to Leaflet to display the polygon with Cyan color and overlay it on the map.
- Display the result in a table showing the information such as Survey No, Farmer Name, Area in Hectare, Peak Intensity Rainfall (mm), Runoff, Farm Pond Size, Storage Capacity ( Cu. M), Cost of Construction.
- Report Button will be provided along with the result row in table. On click of report Button, Report of the result along with the map will be generated in pdf format.

#### 4.77.5 LOGICAL FLOW DIAGRAM



#### 4.77.6 TECHNICAL DESCRIPTION

##### 4.77.6.1 INPUT FIELDS ON FARM POND SIZE DSS FORM

Attribute Name	Mandatory	Input Type	Remark
District	Yes	Drop Down	List of district in Karnataka



Attribute Name	Mandatory	Input Type	Remark
Taluk	Yes	Drop Down	Populated depending on the District Selected
Village	No	Drop Down	Populated depending on the Taluk Selected
Watershed Code	No	Drop Down	populated depending on the Taluk selected
Survey Number	No	Drop Down	Populated depending on the Village selected
Submit	-	Button	
Cancel	-	Button	

#### 4.77.6.2 RESULT VIEW OF FARM POND SIZE DSS

Survey No	Farmer Name	Area in Hectare	Peak Intensity Rainfall (mm)	Runoff	Farm Pond Size	Storage Capacity (Cu. M)	Cost of Construction
30	Mr. XYZ	1.2	107	12	10X10X20	12	37500

#### 4.77.6.3 TABLE DEFINITION USED FOR THIS REQUIREMENT

##### 4.77.6.3.1 CADASTRAL

Column Name	Data Type	Remark
FID	Integer	
SUREVY_NUMBER	nvarchar	
VILLAGE	nvarchar	
TALUK	nvarchar	
DISTRICT	nvarchar	
MWCODE	nvarchar	

##### 4.77.6.3.2 DSS6\_FARM\_POND\_SIZE

Column Name	Data Type	Remark
ID	Integer	



Column Name	Data Type	Remark
Soil_Type	nvarchar	
Farm_Pond	nvarchar	
Slide_Slope	nvarchar	
Storage_Capacity	Integer	
Catch_Area_ha	Integer	

## 4.78 DSS FOR CROP WATER REQUIREMENT

### 4.78.1 REQUIREMENT

-FRS Reference: Annexure-5 DSS Functions, Sl. No 7

DSS for estimating the crop water requirement at MWS/SWS levels based on the existing land use or crops that are planned to be taken up for cultivation at MWS or higher levels

### 4.78.2 REQUIREMENT UNDERSTANDING

The amount of water that needs to be supplied to the cropped field is defined as crop water requirement or Crop Evapotranspiration (ETC). Crop water requirement will be estimated using FAO 56 method. The common approach to calculate ETc is to estimate a reference crop Evapotranspiration (ET0) using weather variables from nearby weather station, and multiplying it by an appropriate crop coefficient (Kc).

### 4.78.3 MODULES

- Web form for information view/input related to Crop Water Requirement

### 4.78.4 MODULE DESCRIPTION

After successful login, user will click on 'Crop Water Requirement' under Decision Support System. A web page for Crop Water Requirement DSS will be displayed to user.

- The web page will have the drop down for selecting District, Taluk, Village, Watershed name, Survey Number, Crop Name, Date of Sowing. The details of input fields in Web page is as mentioned in section 4.78.6.1



- User will select the District, Taluk, Village, Micro Watershed, Survey number, Crop Name, Date of Sowing
- Execute query on Master\_Crop table to find out Kc value at initial stage ( $K_{c\ ini}$ ), kc value at mid – season stage ( $K_{c\ mid\ (tab)}$ ), kc value end season stage ( $K_{c\ end\ (tab)}$ ), mean maximum plant/crop height for mid s ( $h$ ), crop duration.
- Calculate the number of days after Sowing by subtracting date of sowing from current date.
- Execute query on Weather\_Data table to find out temperature, wind speed, humidity, solar radiation, sunshine hours. Calculate minimum Relative humidity ( $RH_{min}$ ), Mean Wind speed ( $u_2$ ).
- If user selects initial stage time period for a particular crop, then initial crop coefficient ( $K_{Cini}$ ) value for the same crop will be fetched from crop coefficient table.
- Likewise, if user selects mid stage/end stage for a particular crop, using the middle crop coefficient ( $K_{Cmid\ (tab)}$ ) or *end of the late season growth stage*, end crop coefficient ( $K_{Cend\ (tab)}$ ) value from crop coefficient table, it follows the below mentioned equation.

- Calculate  $K_{c\ mid}$ :

$$K_{C\ mid} = K_{C\ mid\ (Tab)} + [0.04(u_2 - 2) - 0.004(RH_{min} - 45)] \left(\frac{h}{3}\right)^{0.3}$$

Where,

$K_{c\ mid\ (Tab)}$  - value for  $K_{c\ mid}$  is taken from given Table,

$u_2$  - Mean value for daily wind speed at 2m height over grass during the midseason growth stage [ $m\ s^{-1}$ ],

$RH_{min}$  - mean value for daily minimum relative humidity during the mid-season growth stage [%],

$h$  - Mean crop height during the mid-season stage [m],

- Calculate  $K_{c\ end}$ :

$$K_{C\ end} = K_{C\ end\ (Tab)} + [0.04(u_2 - 2) - 0.004(RH_{min} - 45)] \left(\frac{h}{3}\right)^{0.3}$$

Where,

$K_{c\ end\ (Tab)}$  - value for  $K_{c\ end}$  taken from Table

$u_2$  - Mean value for daily wind speed at 2m height over grass during the late-season growth stage [ $m\ s^{-1}$ ],

$RH_{min}$  - mean value for daily minimum relative humidity during the late-season growth stage [%]

$H$  - mean plant height during the late season stage [m]



- Mean wind speed ( $u_2$ ) at 2 m above ground surface will be calculated as:

$$u_2 = u_z \frac{4.87}{\ln(67.8z - 5.42)}$$

Where

$u_2$  – wind speed at 2 m above ground surface [m s<sup>-1</sup>]

$u_z$  – measured wind speed at z m above ground surface [ms<sup>-1</sup>]

z – height of measurement above ground surface [m].

- Execute query on climate\_data table and calculate Net radiation ( $R_n$ ), mean daily air Temperature (T)
  - Estimate Slope of saturation vapour pressure curve ( $\Delta$ ) using below equation

$$\Delta = \frac{4098 \left[ 0.6108 \exp \left( \frac{17.27T}{T + 237.3} \right) \right]}{(T + 237.3)^2}$$

Where,

$\Delta$  - slope of saturation vapour pressure curve at air temperature T [kPa °C<sup>-1</sup>],

T- Mean daily air temperature [°C],  $xp[.] - 2.7183$  (base of natural logarithm) raised to the power [..]

- Estimate Soil Heat flux (G), where G for a day or ten days, it is relatively small and so it may be ignored in the calculation. Thus:

$$G_{day} = 0$$

- Atmospheric pressure (P):

$$P = 101.3 \left( \frac{293 - 0.0065z}{293} \right)^{5.26}$$

Where,

P - Atmospheric pressure [kPa],

z - Elevation above sea level [m]

- Calculate Psychrometric constant ( $\gamma$ ):

$$\gamma = 0.665 \times 10^{-3} P$$

Where,



$\gamma$  - Psychrometric constant [kPa °C<sup>-1</sup>]

P - Atmospheric pressure [kPa],

- $e^{\circ}(T_{min})$  and  $e^{\circ}(T_{max})$  are calculated as follows:

$$e^{\circ}(T_{min}) = 0.6108 \exp \left[ \frac{17.27 T_{min}}{T_{min} + 237.3} \right]$$

$$e^{\circ}(T_{max}) = 0.6108 \exp \left[ \frac{17.27 T_{max}}{T_{max} + 237.3} \right]$$

Where,

$e^{\circ}(T_{min})$  – Minimum saturation vapour pressure at the air temperature  $T_{min}$  [kPa],

$T_{min}$  – Minimum air temperature [°C],

$e^{\circ}(T_{max})$  – Maximum saturation vapour pressure at the air temperature  $T_{min}$  [kPa],

$T_{max}$  – Maximum air temperature [°C],

$\exp[.]$  - 2.7183 (base of natural logarithm) raised to the power [..].

- Calculate Mean saturation vapour pressure ( $e_s$ ):

$$e_s = \frac{e^{\circ}(T_{max}) + e^{\circ}(T_{min})}{2}$$

Where,

$e_s$  - Mean saturation vapour pressure [kPa],

$e^{\circ}(T_{min})$  – Minimum saturation vapour pressure at the air temperature  $T_{min}$  [kPa],

$e^{\circ}(T_{max})$  – Maximum saturation vapour pressure at the air temperature  $T_{min}$  [kPa]

- Calculate Actual vapour pressure ( $e_a$ )

$$e_a = \frac{e^{\circ}(T_{min}) \frac{RH_{max}}{100} + e^{\circ}(T_{max}) \frac{RH_{min}}{100}}{2}$$

Where,

$e_a$  – Actual vapour pressure [kPa]

$e^{\circ}(T_{min})$  – Saturation vapour pressure at daily minimum temperature [kPa]



$e^{\circ} (T_{\max})$  – Saturation vapour pressure at daily maximum temperature [kPa]

$RH_{\max}$  – Maximum Relative Humidity [%]

$RH_{\min}$  – Minimum Relative Humidity [%]

- Calculate Slope of saturation vapour pressure curve ( $\Delta$ )

$$\Delta = \frac{4098 \left[ 0.6108 \exp \left( \frac{17.27T}{T + 237.3} \right) \right]}{(T + 237.3)^2}$$

Where,

$\Delta$  - slope of saturation vapour pressure curve at air temperature T [kPa °C<sup>-1</sup>],

T - air temperature [°C],

exp[...]- 2.7183 (base of natural logarithm) raised to the power [...].

- Calculate Potential Evapotranspiration (PET)

$$ET_0 = \frac{0.408\Delta(R_n - G) + \gamma \frac{900}{T + 273} u_2 (e_s - e_a)}{\Delta + \gamma(1 + 0.34u_2)}$$

Where,

$ET_0$  – Reference Evapotranspiration [mm day<sup>-1</sup>]

$R_n$  – Net radiation at the crop surface [MJ m<sup>-2</sup> day<sup>-1</sup>]

G – Soil Heat flux density [MJ m<sup>-2</sup> day<sup>-1</sup>]

T – Mean daily air temperature at 2m height [°C]

$U_2$  – Wind speed at 2m height [m s<sup>-1</sup>]

$e_s$  – Saturation vapour pressure [k Pa]

$e_a$  – Actual vapour pressure [k Pa]

$(e_s - e_a)$  – Saturation vapour pressure deficit [kPa]

$\Delta$  - Slope vapour pressure curve [kPa °C<sup>-1</sup>]

$\gamma$  - Psychrometric constant [kPa °C<sup>-1</sup>]

- Calculate Crop Water Requirement (Crop Evapotranspiration ( $ET_c$ )) depending on crop coefficient of selected growth stage ( $K_{C\text{ini}}$ ,  $K_{C\text{mid}}$  or  $K_{C\text{end}}$ )

$$ET_c = K_c ET_0$$

Where,

$ET_c$  - Crop evapotranspiration [mm d<sup>-1</sup>],

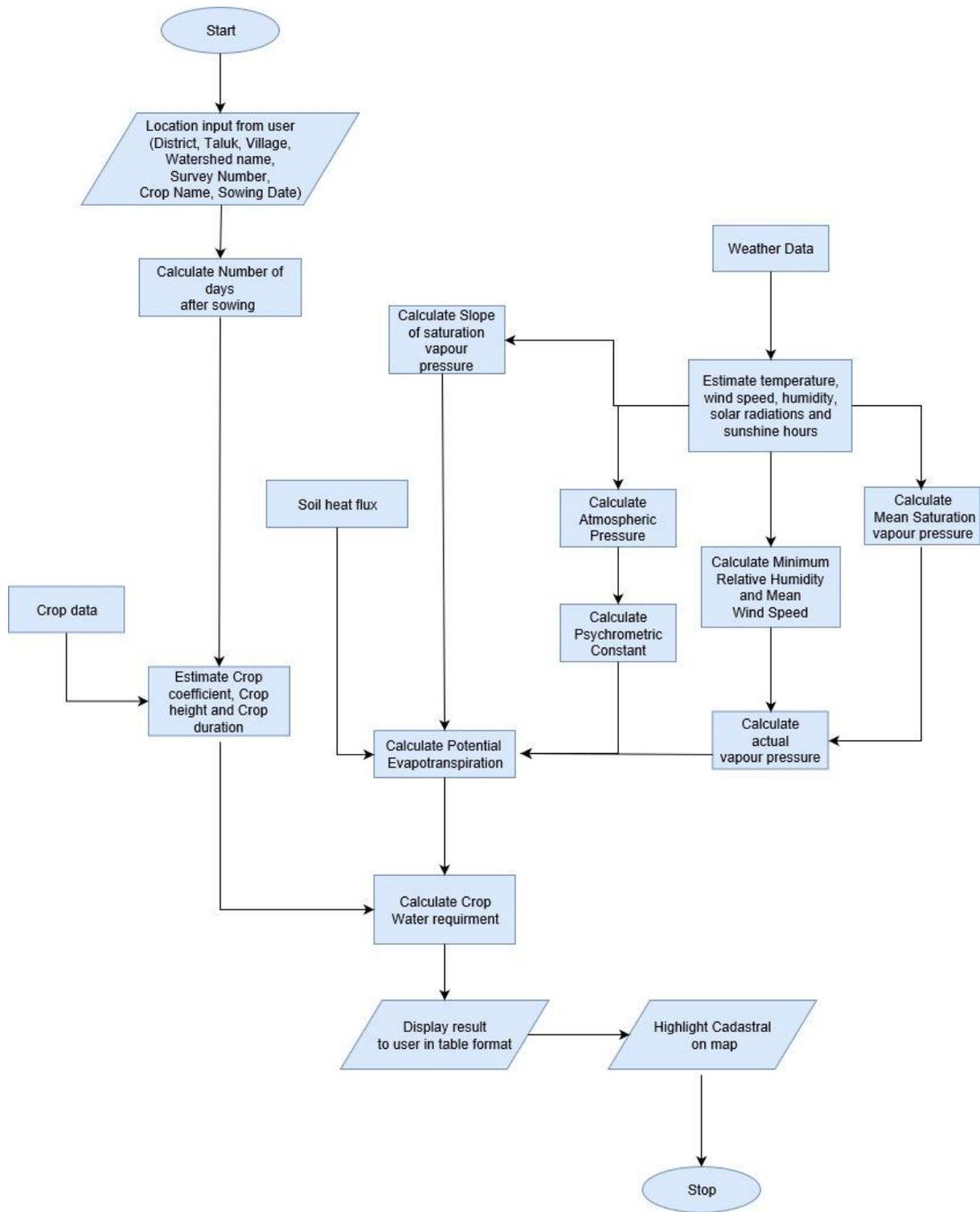
$K_c$  - Crop coefficient [ $K_{C\text{ini}}$ ,  $K_{C\text{mid}}$  or  $K_{C\text{end}}$ ],



ET<sub>o</sub> - Reference crop evapotranspiration [mm d<sup>-1</sup>].

- Calculate Available soil moisture content using DSS for Water Balance.
- Fetch the Geometry from the Cadastral table against the Cadastral\_ID.
- Read the Coordinates of the geometry and create GeoJson polygon. Send GeoJson to Leaflet to display the polygon with Cyan color and overlay it on the map.
- Display the result in a table showing the information such as Survey No, Farmer Name, Area in Hectare, Crop Name, Crop Stage (days), Water Required mm/day, Water Required in Ltr/day ( mm \* 10000\*area)(A), Available Soil Moisture Content, Balance C =A-B.
- Report Button will be provided along with the result row in table. On click of report Button, Report of the result along with the map will be generated in pdf format.

#### 4.78.5 LOGICAL FLOW DIAGRAM



#### 4.78.6 TECHNICAL DESCRIPTION

##### 4.78.6.1 INPUT FIELDS ON CROP WATER REQUIREMENT DSS FORM

Attribute Name	Mandatory	Input Type	Remark
District	Yes	Drop Down	List of district in Karnataka



Attribute Name	Mandatory	Input Type	Remark
Taluk	Yes	Drop Down	Populated depending on the District Selected
Village	No	Drop Down	Populated depending on the Taluk Selected
Watershed Code	No	Drop Down	populated depending on the Taluk selected
Survey Number	No	Drop Down	Populated depending on the Village selected
Crop Name	Yes	Drop Down	
Date of Sowing	Yes	Text Box	
Submit	-	Button	
Cancel	-	Button	

#### 4.78.6.2 RESULT VIEW OF CROP WATER REQUIREMENT DSS

Survey No	Farmer Name	Area in Hectare	Crop Name	Crop Stage (days)	Water Required mm/day	Water Required in Ltr/day ( mm * 10000*area) (A)	Available Soil Moisture Content	Balance C =A-B
30	Mr. XYZ	1.2	Cotton	15	12	120	30	90

#### 4.78.6.3 TABLE DEFINITION USED FOR THIS REQUIREMENT

##### 4.78.6.3.1 CADASTRAL

Column Name	Data Type	Remark
FID	Integer	
SUREVY_NUMBER	nvarchar	
VILLAGE	nvarchar	
TALUK	nvarchar	
DISTRICT	nvarchar	
MWCODE	nvarchar	

##### 4.78.6.3.2 MASTER\_CROP



Column Name	Data Type	Remark
Id	Integer	
Crop_Id	Integer	
Crop_Name	nvarchar	
Crop_Type	nvarchar	
Crop_duration	Integer	
Crop_Category	nvarchar	
Ripining_stage	Integer	
Crop_Coefficient_Initial	float	
Crop_Coefficient_Mid	float	
Crop_Coefficient_End	float	
CLU_CODE	nvarchar	
Quality	nvarchar	

#### 4.78.6.3.3 CROP\_SEASON

Column Name	Data Type	Remark
ID	Integer	
Season_Id	Integer	Linked to Master_Season
Crop_Id	Integer	Linked to Master_Crop
SownPeriod_From	Integer	Month number
SownPeriod_To	Integer	Month number
Harvesting_From	Integer	Month number
Harvesting_To	Integer	Month number
SeasonDuration	Integer	



Column Name	Data Type	Remark
Sowing_Duration	Integer	
Mid_duration	Integer	
Harvesting_Duration	Integer	

#### 4.78.6.3.4 WEATHER\_DATA

Column Name	Data Type	Remark
ID	Integer	
District	Integer	
Taluka	Integer	
Hobli	Integer	
Recorded_Date	Date	
Min_Temperature	float	
Max_Temperature	float	
Min_Humidity	float	
Max_Humidity	float	
Min_WindSpeed	float	
Max_WindSpeed	float	
Wind_Direction	float	
Solar_Radiation	float	
Sunshine_Duration	float	

#### 4.78.6.3.5 RAINFALL\_DATA

Column Name	Data Type	Remark
Taluk_Name	nvarchar	



Column Name	Data Type	Remark
Hobli	nvarchar	
RainDate	date	
RainTime	nvarchar	
Rain	float	

## 4.79 DSS FOR WATER BALANCE REQUIREMENT

### 4.79.1 REQUIREMENT

-FRS Reference: Annexure-5 DSS Functions, Sl. No 8

DSS for estimating water balance at MWS or higher levels, taking into account the RF, crop requirement, Runoff, evaporation and other losses, soil moisture.

### 4.79.2 REQUIREMENT UNDERSTANDING

The amount of water that needs to be supplied to the cropped field is defined as crop water requirement or Crop Evapotranspiration (ETC). Crop water requirement will be estimated using FAO 56 method. The common approach to calculate ETc is to estimate a reference crop Evapotranspiration (ET0) using weather variables from nearby weather station, and multiplying it by an appropriate crop coefficient (Kc).

### 4.79.3 MODULES

- Web form for information view/input related to Crop Water Requirement

### 4.79.4 MODULE DESCRIPTION

After successful login, user will click on 'Water Balance' under Decision Support System. A web page for Water Balance DSS will be displayed to user.

- The web page will have the drop down for selecting District, Taluk, Village, Watershed name, Survey Number. The details of input fields in Web page is as mentioned in section 4.78.6.1
- User will select the District, Taluk, Village, Micro Watershed, Survey number.
- Calculate Surface runoff using DSS for Surface runoff
- Calculate ETc using DSS for Crop water Requirement.



- Subtract runoff from the rainfall obtained for that particular day.

$$\Delta S = P - P_e$$

Where,

$\Delta S$  = Water Balance

P= Rainfall

$P_e$ = Surface Runoff

- To initiate the water balance for the root zone, the initial depletion  $D_{r,i-1}$  should be estimated.

Calculation of initial depletion ( $D_{r,i-1}$ ) is given as:

$$D_{r,i-1} = 1000(\theta_{FC} - \theta_{i-1})Z_r$$

Where,

$\theta_{FC}$  – Water content at field capacity [ $m^3 m^{-3}$ ] (from data)

$Z_r$ – The rooting depth [m] (from data)

$\theta_{i-1}$  is the average soil water content for the effective root zone. Following heavy rain or irrigation, the user can assume that the root zone is near field capacity, i.e.,  $D_{r,i-1} \approx 0$

- Calculate the Readily Available soil Water (RAW):

$$RAW = pTAW$$

Where,

RAW - Readily available soil water in the root zone [mm],

p - Average fraction of Total Available Soil Water (TAW) that can be depleted from the root zone before moisture stress (reduction in ET).

- Calculate the Total Available soil Water (TAW):

$$TAW = 1000(\theta_{FC} - \theta_{WP})Z_r$$

Where,



TAW – Total available Soil water in the root zone [mm]

$\theta_{FC}$  – Water content at field capacity [ $m^3 m^{-3}$ ] (from data)

$\theta_{WP}$  – Water content at wilting point [ $m^3 m^{-3}$ ] (from data)

$Z_r$  – The rooting depth [m] (from data)

- Excess balanced water beyond soil depth is assumed as Deep percolation. It is estimated as follows:

$$DP_i = (P_i - P_{e,i}) + I_i - ET_{C,i} - D_{r,i-1} \geq 0$$

Where,

DP - water loss out of the root zone by deep percolation on day i [mm]

$P_i$  - rainfall on day i [mm]

$P_{e,i}$  - runoff from the soil surface on day i [mm]

$I_i$  - net irrigation depth on day i that infiltrates the soil [mm]

$ET_{C,i}$  - crop evapotranspiration on day i [mm]

$D_{r,i-1}$  - water content in the root zone ( $D_r$ ) at the end of the previous day, i-1 [mm]

- Irrigation is required when  $D_{r,i} \geq RAW$ .

On day 1,  $D_{r,i-1} = RAW$

- Irrigation for the particular crop will be with reference to Package of Practice.
- Add Irrigation (I) value to the Soil Moisture storage ( $\Delta S$ )
- Subtract the Deep Percolation (DP) from Soil moisture storage ( $\Delta S$ )
- If RAW is lesser than  $ET_c$ , adjust crop water requirement ( $ET_{C,adj}$ ) based on moisture stress. The effects of soil water stress are described by multiplying the Crop coefficient ( $K_c$ ) by the water stress coefficient ( $K_s$ ):

$$ET_{C,adj} = K_s K_c ET_o$$

Where,

$ET_{C,adj}$  – Adjusted crop water requirement



$K_C$  – Crop Coefficient

$K_S$  – Water stress coefficient

$ET_o$  – Potential evapotranspiration

- For  $D_r > RAW$ ,  $K_s$  is given by:

$$K_S = \frac{TAW - D_r}{TAW - RAW} = \frac{TAW - D_r}{(1 - p)TAW}$$

Where,

$K_S$  - Water stress coefficient

$D_r$  - root zone depletion [mm],

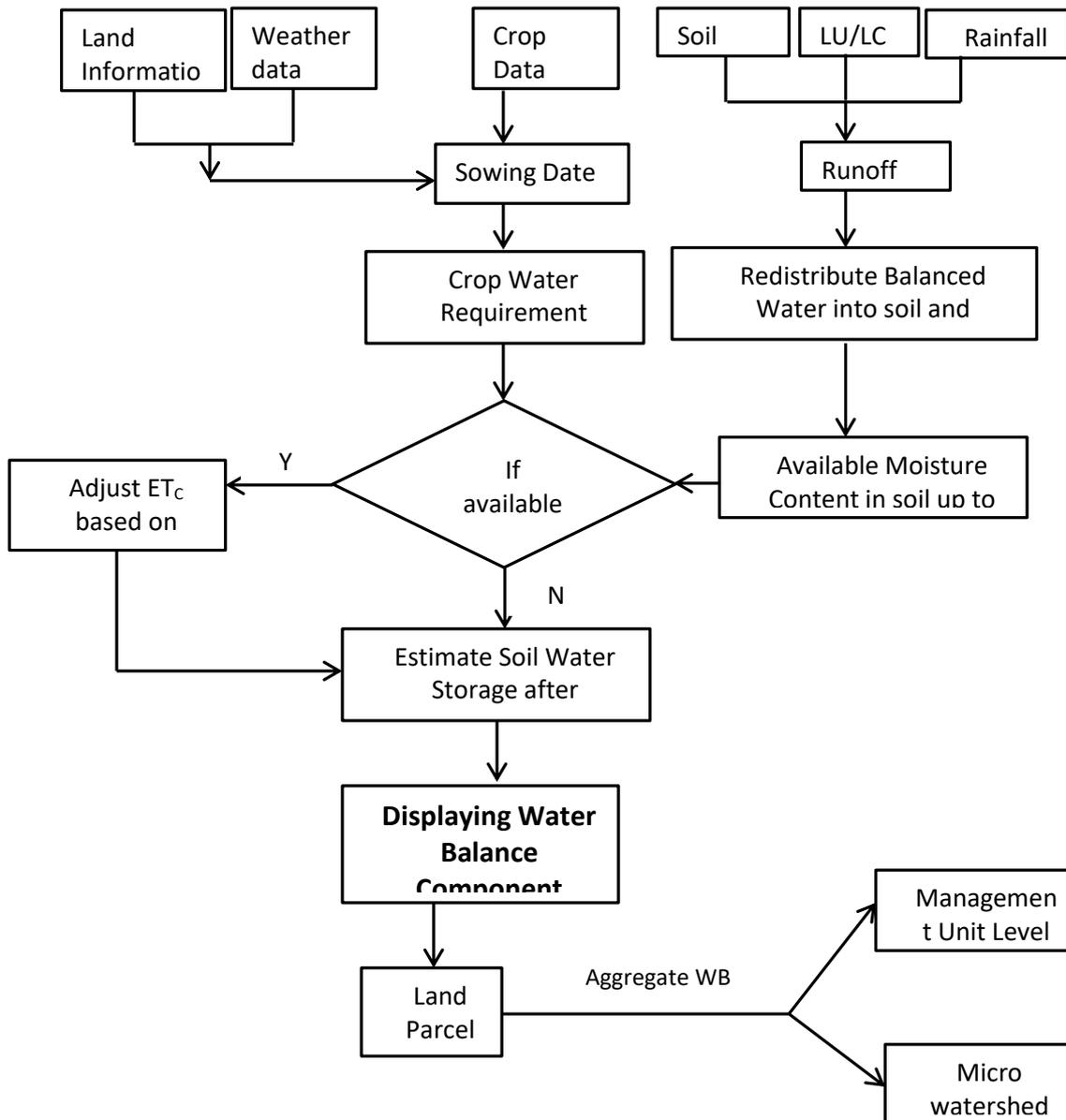
TAW - total available soil water in the root zone [mm],

RAW - Readily available soil water in the root zone [mm]

$p$  - Fraction of TAW that a crop can extract from the root zone without suffering water stress.

- When the root zone depletion ( $D_r$ ) is smaller than RAW,  $K_s = 1$
- Fraction of TAW,  $P$  will be taken from the data provided.
- Subtract ETC adj from soil moisture storage ( $\Delta S$ ).
- Fetch the Geometry from the Cadastral table against the Cadastral\_ID.
- Read the Coordinates of the geometry and create GeoJson polygon. Send GeoJson to Leaflet to display the polygon with Cyan color and overlay it on the map.
- Display the result in a table showing the information such as Watershed, Management Unit, Area in Hectare, Rain fall ( mm), Soil Moisture Balance, Water Balance.
- Report Button will be provided along with the result row in table. On click of report Button, Report of the result along with the map will be generated in pdf format.

#### 4.79.5 LOGICAL FLOW DIAGRAM



#### 4.79.6 TECHNICAL DESCRIPTION

##### 4.79.6.1 INPUT FIELDS ON CROP WATER BALANCE DSS FORM

Attribute Name	Mandatory	Input Type	Remark
District	Yes	Drop Down	List of district in Karnataka
Taluk	Yes	Drop Down	Populated depending on the District Selected
Village	No	Drop Down	Populated depending on the Taluk Selected
Watershed Code	No	Drop Down	populated depending on the Taluk selected
Survey Number	No	Drop Down	Populated depending on the Village selected
Submit	-	Button	



Attribute Name	Mandatory	Input Type	Remark
Cancel	-	Button	

#### 4.79.6.2 RESULT VIEW OF WATER BALANCE DSS

Watershed	Management Unit	Area in Hectare	Rain fall ( mm)	Soil Moisture Balance	Water Balance
Dattamatti	LMU8	150	125	32	108

#### 4.79.6.3 TABLE DEFINITION USED FOR THIS REQUIREMENT

##### 4.79.6.3.1 *CADASTRAL*

Column Name	Data Type	Remark
FID	Integer	
SUREVY_NUMBER	nvarchar	
VILLAGE	nvarchar	
TALUK	nvarchar	
DISTRICT	nvarchar	
MWCODE	nvarchar	

##### 4.79.6.3.2 *WEATHER\_DATA*

Column Name	Data Type	Remark
ID	Integer	
District	Integer	
Taluka	Integer	
Hobli	Integer	
Recorded_Date	Date	



Column Name	Data Type	Remark
Min_Temperature	float	
Max_Temperature	float	
Min_Humidity	float	
Max_Humidity	float	
Min_WindSpeed	float	
Max_WindSpeed	float	
Wind_Direction	float	
Solar_Radiation	float	
Sunshine_Duration	float	

#### 4.79.6.3.3 RAINFALL\_DATA

Column Name	Data Type	Remark
Taluk_Name	nvarchar	
Hobli	nvarchar	
RainDate	date	
RainTime	nvarchar	
Rain	float	

## 4.80 DSS FOR WATER BUDGETING REQUIREMENT

### 4.80.1 REQUIREMENT

-FRS Reference: Annexure-5 DSS Functions, Sl. No 9



DSS for water budgeting taking into consideration the needs of various uses/users at MWS/ Village level- crop needs, human needs, livestock needs etc.

#### 4.80.2 REQUIREMENT UNDERSTANDING

Water Budgeting (WB) approach is geared towards ensuring optimum, equitable and most efficient use of water. This involves gaining an understanding of water availability, a community's existing needs and requirements of water, crop planning based on water availability, optimizing irrigation, equitable sharing of water towards human needs, livestock needs etc

#### 4.80.3 MODULES

- Web form for information view/input related to Crop Water Requirement

#### 4.80.4 MODULE DESCRIPTION

After successful login, user will click on 'Water Budgeting' under Decision Support System. A web page for Water Budgeting DSS will be displayed to user.

- The web page will have the drop down for selecting District, Taluk, Village, Watershed name, Survey Number. The details of input fields in Web page is as mentioned in section 4.78.6.1
- User will select the District, Taluk, Village, Micro Watershed.
- Calculate Water Balance, water percolation (DP) using DSS for Water Balance
- Calculate ETC using DSS for Crop water Requirement.
- Calculate Surface Runoff using DSS for Surface Runoff
- Estimate Water availability in micro watershed
  - Measured capacities of surface water bodies
  - 30% of runoff generated through watershed:
    - This is 30% of Runoff which will be considered for harvesting within Watershed boundary and rest 70% is allowed to flow at downstream location such that it will not significantly affect riverine ecosystem.
  - Amount of water percolation in soil (deep percolation component in water balance DSS)
- Estimate water required for irrigation based on the crop water requirement and irrigation requirement

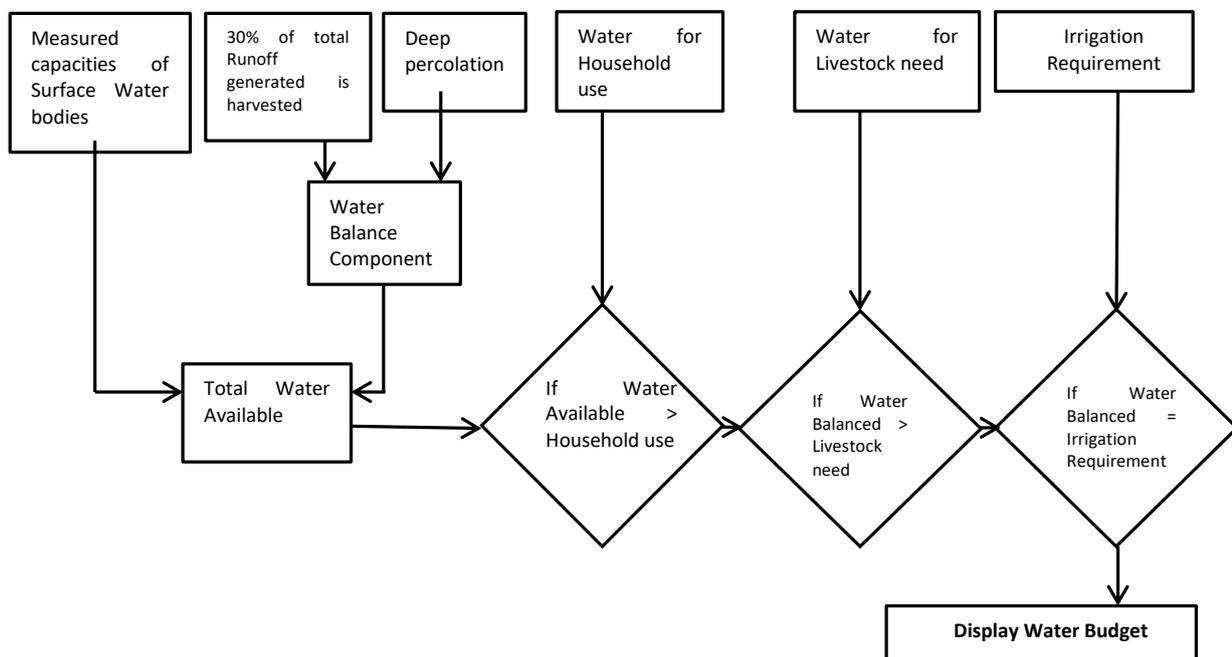
Water required for irrigation = Crop water requirement + Irrigation losses

- Estimate water requirement for household use



- If water available > Human need → then display water budget
- Estimate water required for livestock purpose
- If water available > Livestock need → then display water budget
- Estimate water available for irrigation by subtracting water required for human need + livestock from total water available
- Fetch the Geometry from the Soil\_Phase table against the LMU for the selected Watershed.
- Read the Coordinates of the geometry and create GeoJson polygon. Send GeoJson to Leaflet to display the polygon with Cyan color and overlay it on the map.
- Display the result in a table showing the information such as Survey No, Farmer Name, Area in Hectare, Crop Name, Crop Stage (days), Water Required mm/day, Water Required in Ltr/day ( mm \* 10000\*area)(A), Available Soil Moisture Content, Balance C =A-B.
- Report Button will be provided along with the result row in table. On click of report Button, Report of the result along with the map will be generated in pdf format.

#### 4.80.5 LOGICAL FLOW DIAGRAM



#### 4.80.6 TECHNICAL DESCRIPTION

**4.80.6.1 INPUT FIELDS ON WATER BUDGET DSS FORM**

Attribute Name	Mandatory	Input Type	Remark
District	Yes	Drop Down	List of district in Karnataka
Taluk	Yes	Drop Down	Populated depending on the District Selected
Village	No	Drop Down	Populated depending on the Taluk Selected
Watershed Code	No	Drop Down	populated depending on the Taluk selected
Submit	-	Button	
Cancel	-	Button	

**4.80.6.2 RESULT VIEW OF WATER BUDGET DSS**

Watershed code	Management Unit	Area in Hectare	Rainfall	Water Balance ( subtract 25% from) (A) Liters	Human Need (B) Liters	Live stock Need (C) Liters	Crop Water Need (D) Liters	Balance E= A-B-C-D Liters

**4.80.6.3 TABLE DEFINITION USED FOR THIS REQUIREMENT****4.80.6.3.1 WEATHER\_DATA**

Column Name	Data Type	Remark
ID	Integer	
District	Integer	
Taluka	Integer	
Hobli	Integer	
Recorded_Date	Date	
Min_Temperature	float	
Max_Temperature	float	
Min_Humidity	float	



Column Name	Data Type	Remark
Max_Humidity	float	
Min_WindSpeed	float	
Max_WindSpeed	float	
Wind_Direction	float	
Solar_Radiation	float	
Sunshine_Duration	float	

#### 4.80.6.3.2 *RAINFALL\_DATA*

Column Name	Data Type	Remark
Taluk_Name	nvarchar	
Hobli	nvarchar	
RainDate	date	
RainTime	nvarchar	
Rain	float	

#### 4.80.6.3.3 *CENSUS\_DATA*

Column Name	Data Type	Remark
ID	Integer	
District	Integer	
Taluka	Integer	
Village	Integer	
Human_population	Integer	



Column Name	Data Type	Remark
Livestock_population	Integer	

## 4.81 USER DASHBOARD

### 4.81.1 REQUIREMENT

User Dashboard

This service aims at displaying role based dashboards which will provide actionable insights.

### 4.81.2 REQUIREMENT UNDERSTANDING

These dashboards will be developed for different users of the system for quick analysis and informational awareness. Farmers will be able to easily view at glance details such as suitable crops for his farm, weather information. The Departmental users will be able to quickly see through information like area wise fertility data. Soil characteristics, current land use and queries raised by farmers.

### 4.81.3 MODULES

- Farmer Dashboard
- Planner Dashboard
- Implementation monitoring Dashboard
- Subject Matter Expert Dashboard

#### 4.81.3.1 FARMER DASHBOARD

- After Login based on the role assigned users will be directed to the respective dashboards.
- Location Info sub module will query the survey number for logged in farmer user from the database table FARM\_DETAILS. Using Leaflet controls this survey number will be displayed on the GIS Map.
- Weather Info sub module will gather the current weather parameters/information for that particular area (user's location information) from database table populated by consuming the Web service published by KSNMDC. This weather information will be displayed on the dashboard.
- Recommendation sub module will query the "Crop\_Selection\_DSS" database table which will display the crop details suitable for his farm. This will be mainly the result of the DDS 2 "Crop



Selection”. Similarly recommendations for nutrients suitable for his land will be displayed based on the results of DSS4 “Nutrient Management” for his farm.

- Notification sub module will fetch the status (TRANSACTION\_LOG) of queries raised by the farmer and based on any updates like rejected/accepted/responded will display the latest information on the dashboard.
- Farmer Calendar sub module will allow user to create events for planning various farming related activities and further will query the Calender\_Events database table which show event details and reminder related the planned activities.

Similar Design will be followed for other Dashboards: Planner’s Dashboard, SME’s Dashboard and Implementation Monitoring Dashboard.

#### 4.81.4 DATA STORAGE

After successful validations, data shall be stored in following tables.

##### 4.81.4.1 CALENDER\_EVENTS:

For both departmental and non-departmental users.

ColumnName	Values
EventID	System generated unique ID
Subject	Input from web form
Description	Input from web form
Start	Input from web form
End	Input from web form
ThemeColor	Input from web form
IsFullDay	Input from web form
edit_flag	flag set for editing/ non-editing events
UserID	Reference value from User_Login_Details table

**4.81.4.2 CROP\_SELECTION\_DSS:**

ColumnName	Values
ID	System generated unique ID
Survey_Number	Varchar2
Farmer_Name	Varchar2
Area_In_Hecture	Varchar2
Crop	Varchar2
Season	Varchar2
Suitability_Class	Varchar2
Benefit_Ratio	Varchar2
Rank	Varchar2
FarmerID	Varchar2

**4.81.4.3 WEATHER\_INFO:**

ColumnName	Values
WID	System generated unique ID
Current_Temp	Float
Wind_Speed	Float
Current_Humidity	Float
Rain_Fall	Float
Village_Code	Integer

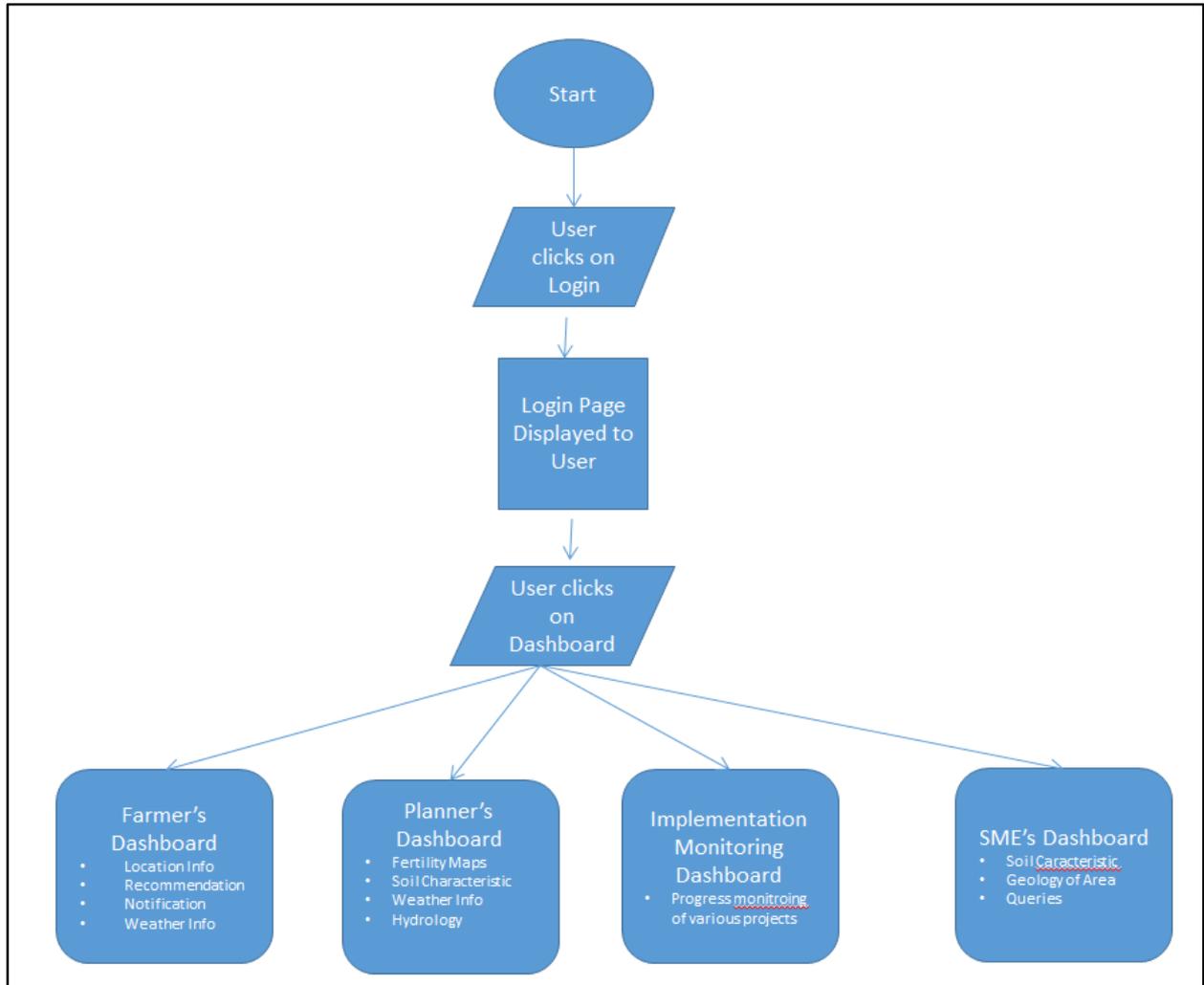
**4.81.4.4 TRANSACTION\_LOG:**

ColumnName	Values
ID	System generated unique ID using sequence
Process_Name	ID related to 'AddNewQuery' value from master_processname table
Process_ID	URN from user_queries table
Flag	ID related to 'Open' value from master_trans_flag table
From_User	SME_ID value to whom query is sent
To_User	Initially when query is raised, this shall be '0'
Received_Date	Date on which query is received to SME
Response_Date	Date on which response for query is given
Remark	

**4.81.4.5 FARM\_DETAILS:**

ColumnName	Values
ID	System generated unique ID using sequence
FARMER_ID	Integer
Survey_Number	Varchar2
Revenue_Village	Integer
Subdivision_Number	Varchar2
Sub_Survey_Number	Varchar2
Farm_Size	Integer
Soil_Type	Integer
Land_Type	Integer
Type_Of_Cultivation	Integer
ManPower	Integer
Type_Of_Area	Integer
Tuber_Crops	Varchar2
Crop_Details	Varchar2
Crop_Cycles	Varchar2
Crop_Grown	Varchar2
Type_Of_Irrigation	Integer
Type_Of_Planting	Integer

**4.81.5 LOGICAL FLOW DIAGRAM**



## 4.82 CONTENT MANAGEMENT SYSTEM

Using Content Management System Administrator will be able to manage the Content of the Website.

### 4.82.1 ADDING CONTENT

- After login by Administrator, CMS dashboard will be displayed.

wddcms

Dashboard

New

- Form
- Page
- Projection

Content

Content Definition

Blog

New Blog

Queries

Comments

Taxonomies

Widgets

Media

Navigation

Form Submissions

Tags

Layouts

### Welcome to WDD CMS Dashboard

User: admin | Change password | Logout

**Get up and running**

Start by exploring the menu on the left and familiarize yourself with Orchard. As for the basics, we suggest changing the theme, adding some pages, setup up a blog, and configuring basic settings.

**Get more goodies**

Change the way your site works and looks with themes and modules. There's plenty to choose from in the Orchard Gallery. We're always adding things, so be sure to check back often to see what's new.

**Read the Docs**

Are you ready to go deeper and become an Orchard expert? Take a look at the Orchard Documentation to learn about how everything connects together and what makes Orchard tick.

**Make friends**

Find friends that share your interest of Orchard. There are a couple ways that you can discuss and get connected to the project including mailing lists, forums and IRC.

- In navigation Side bar for Admin, New section click on “Page” option.

wddcms

Dashboard

New

- Form
- Page
- Projection

Content

Content Definition

Blog

New Blog

Queries

Comments

Taxonomies

Widgets

Media

Navigation

Form Submissions

Tags

Layouts

Elements

Modules

### New Page

User: admin | Change password | Logout

Title \*

You must provide a title for this content item

**Add New Page**

Permalink

http://localhost:8080/

Save the current item and leave the input empty to have it automatically generated using the pattern Title e.g., my-page.

Set as home page

Check to promote this content as the home page.

Layout

Clipboard, keyboard shortcuts, etc.

- Layout
- Content
  - Break
  - Content Item

Drag an element from the toolbox and drop it here to add content.

- Add Title in title input box

The screenshot shows the 'New Page' form in the wddcms interface. The left sidebar contains a navigation menu with 'Page' highlighted. The main form has the following fields and options:

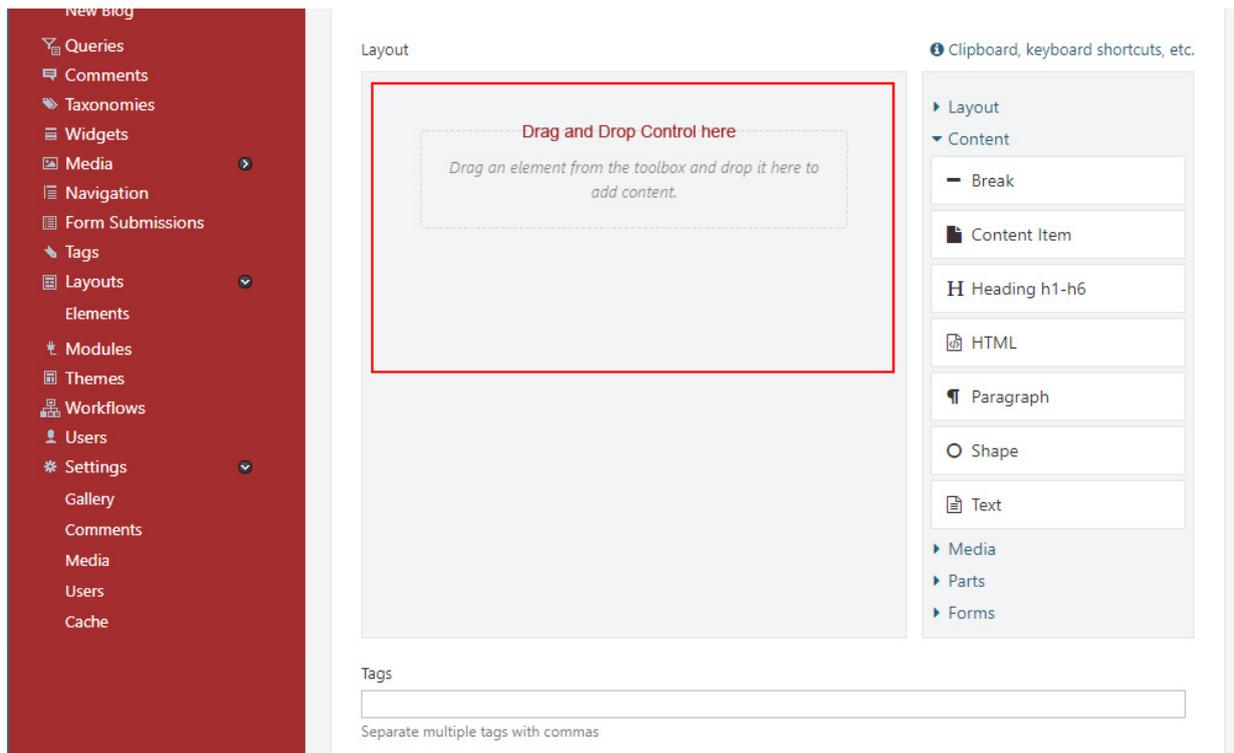
- Title \***: A text input field containing 'Add Page Title Here'. Below it, a message reads: 'You must provide a title for this content item'.
- Permalink**: A text input field containing 'http://localhost:8080/'. Below it, a message reads: 'Save the current item and leave the input empty to have it automatically generated using the pattern Title e.g., my-page.'
- Set as home page**: A checkbox that is currently unchecked. Below it, a message reads: 'Check to promote this content as the home page.'
- Layout**: A large dashed box containing the text: 'Drag an element from the toolbox and drop it here to add content.'
- Right-hand side control panel**: A panel with a title 'Clipboard, keyboard shortcuts, etc.' and a 'Content' section containing a 'Content Item' button.

- Create link for page

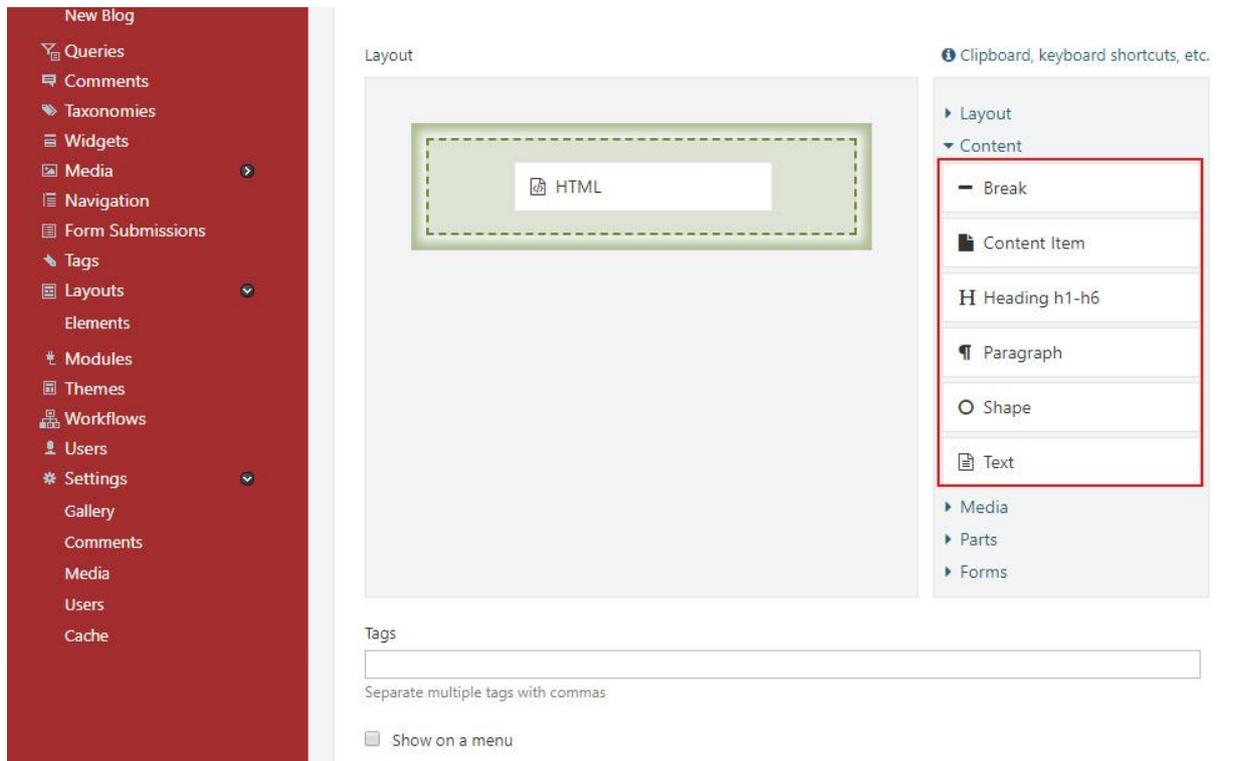
The screenshot shows the 'New Page' form in the wddcms interface. The left sidebar contains a navigation menu with 'Page' highlighted. The main form has the following fields and options:

- Title \***: An empty text input field. Below it, a message reads: 'You must provide a title for this content item'.
- Permalink**: A text input field containing 'http://localhost:8080/ Add URL here or leave blank automatically generated url'. Below it, a message reads: 'Save the current item and leave the input empty to have it automatically generated using the pattern Title e.g., my-page.'
- Set as home page**: A checkbox that is currently unchecked. Below it, a message reads: 'Check to promote this content as the home page.'
- Layout**: A large dashed box containing the text: 'Drag an element from the toolbox and drop it here to add content.'
- Right-hand side control panel**: A panel with a title 'Clipboard, keyboard shortcuts, etc.' and a 'Content' section containing a 'Content Item' button.

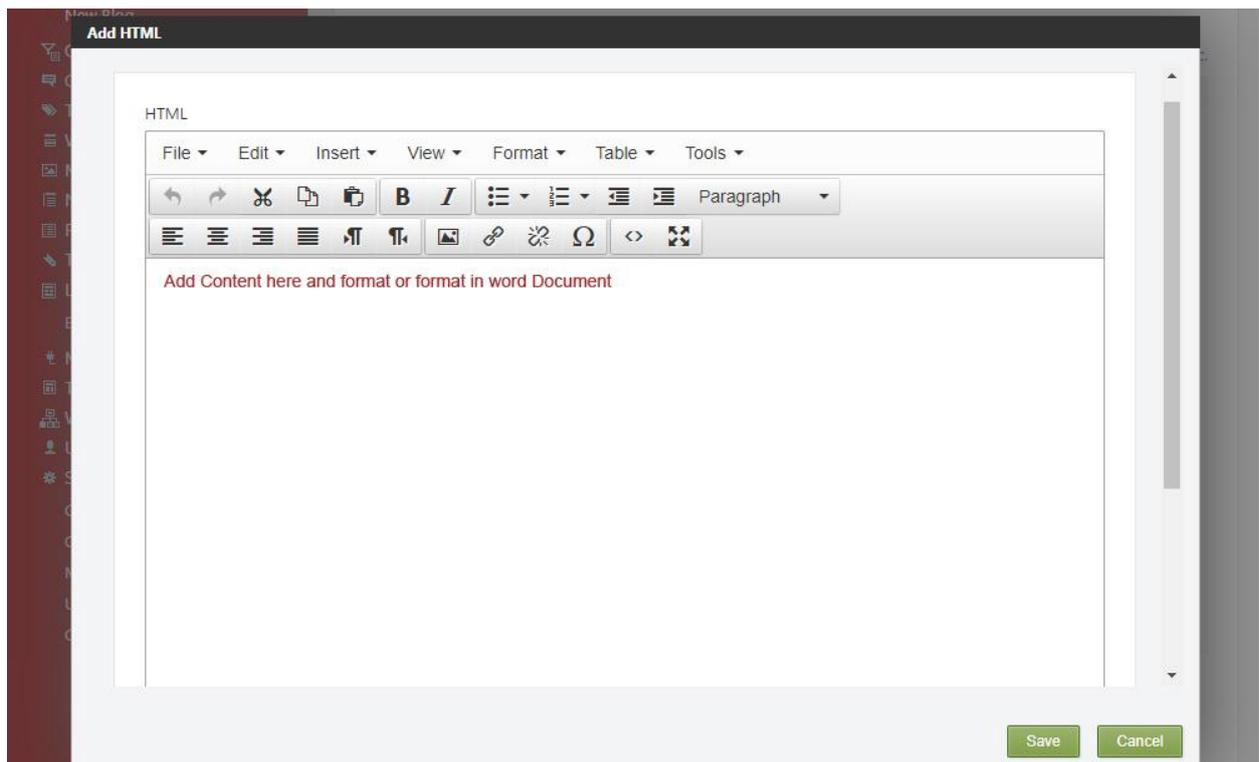
- Layout section Admin can **add controls** from right hand side controls under Content eg. HTML, Text.



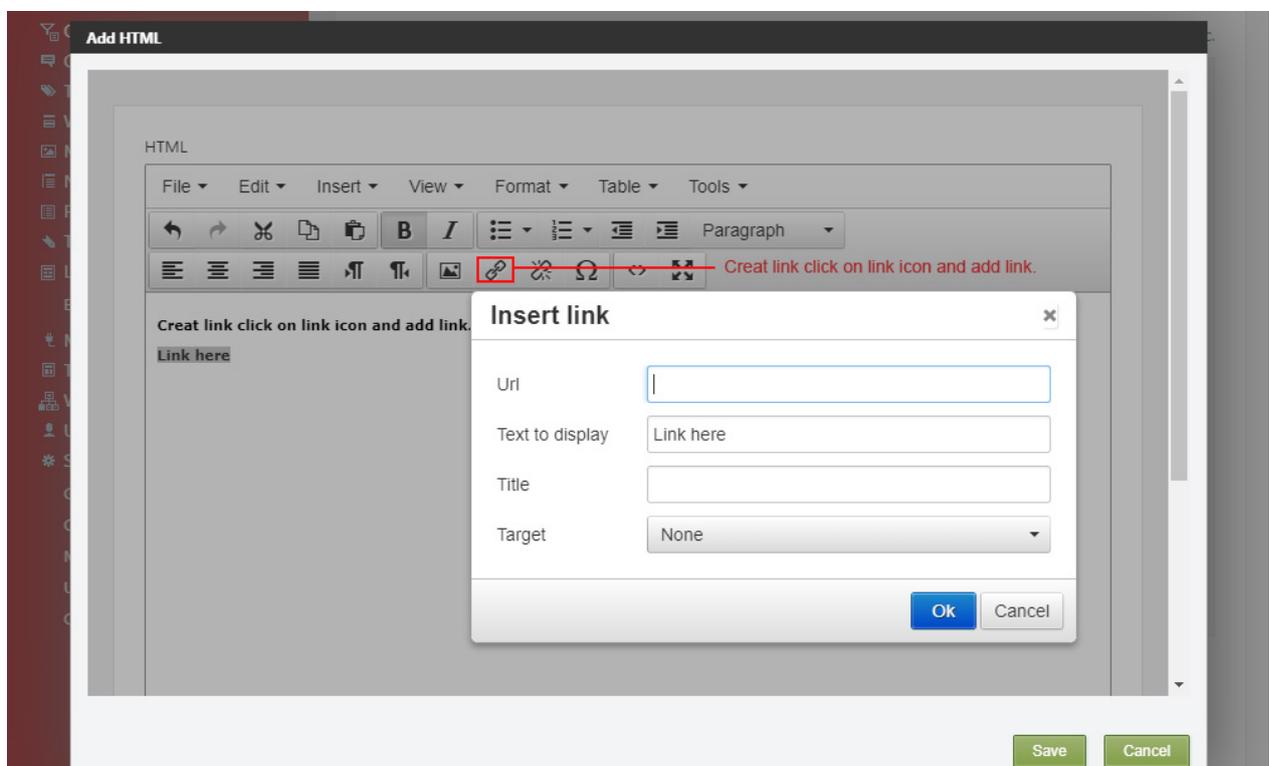
- Drag and drop control in layout area.



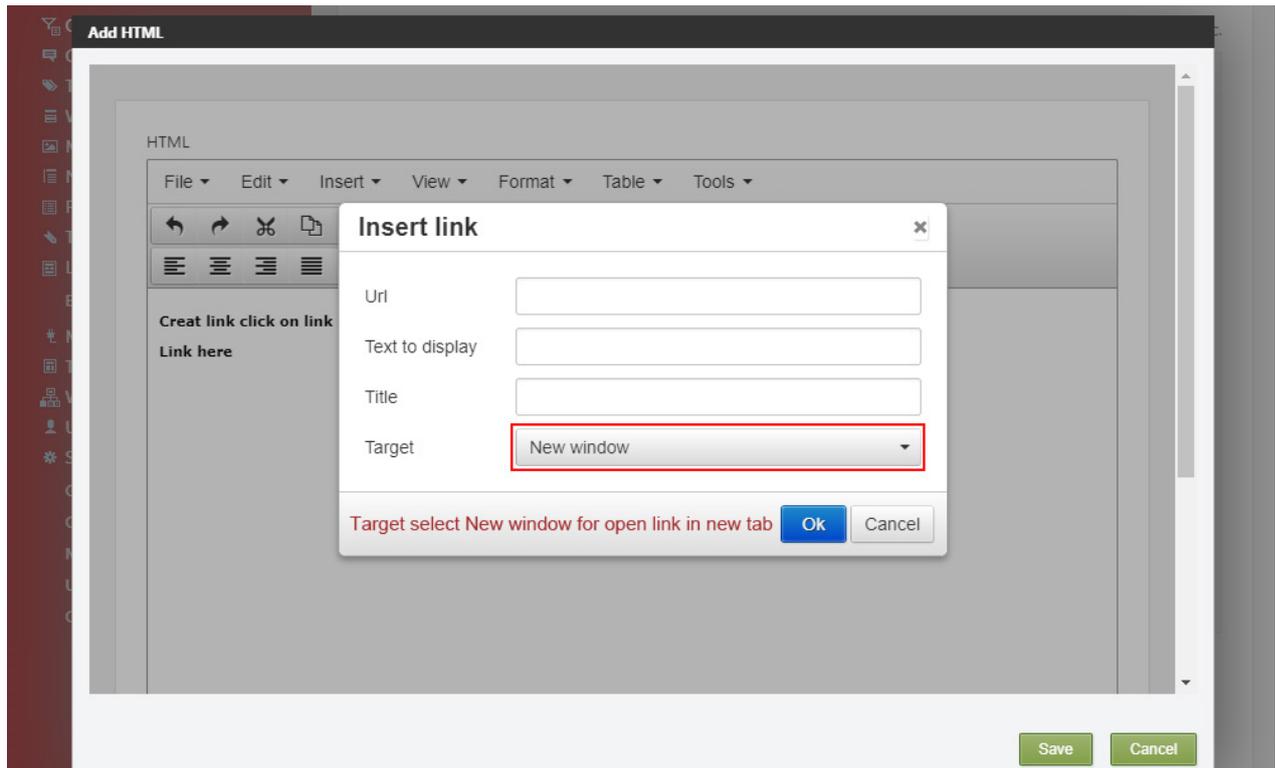
- After adding “HTML” control, popup will open. Admin will be able to format the content.



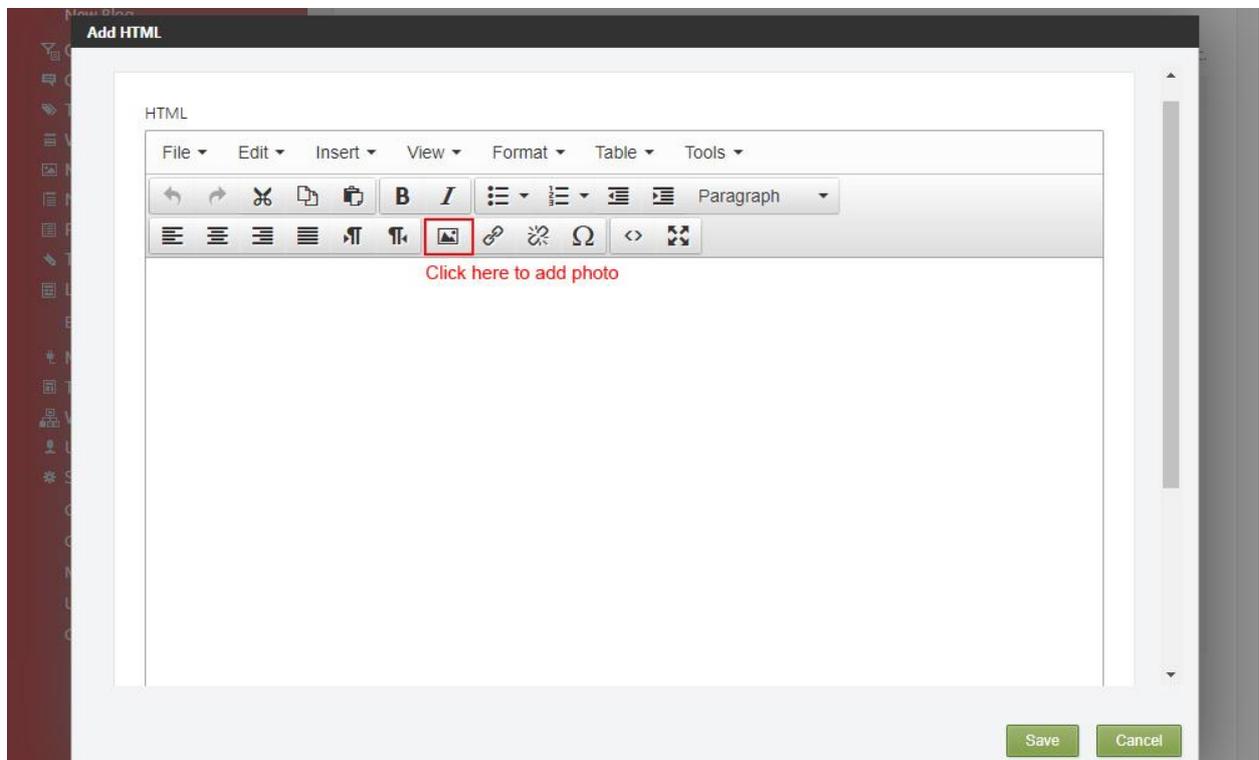
- Adding link in content



- If link needs to be open in New tab in browser, admin can select Target “New window”

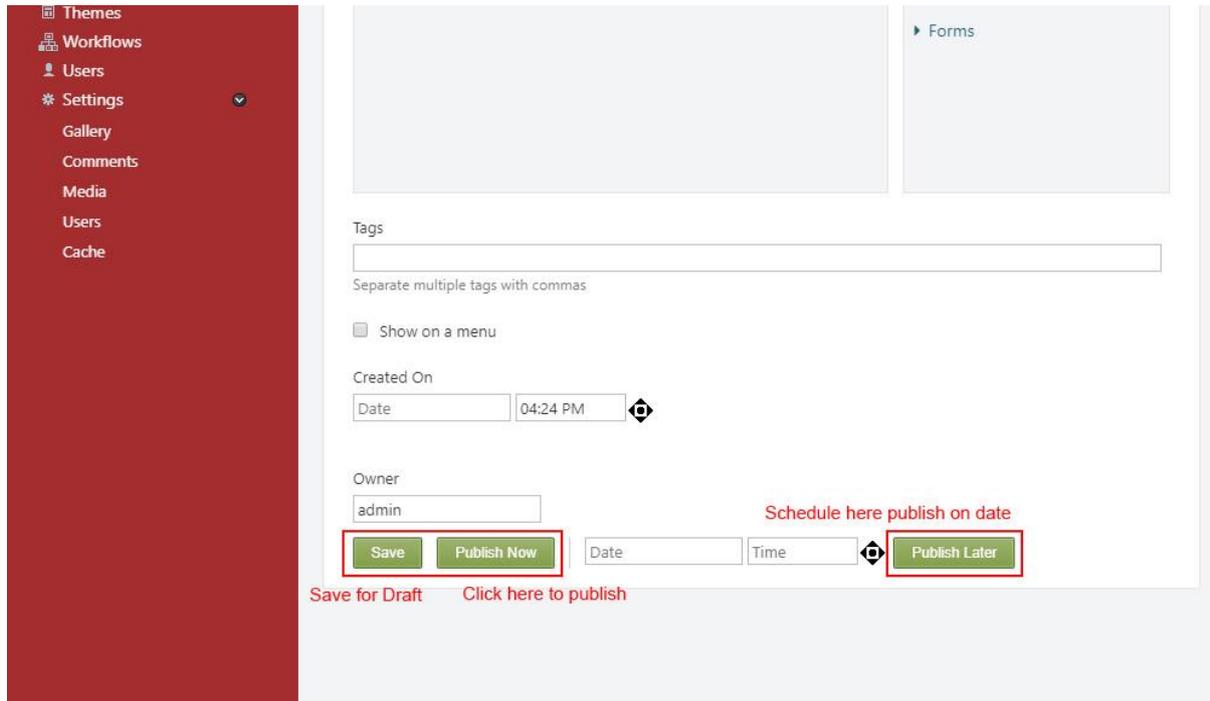


- Click here to add Photo in Image icon.



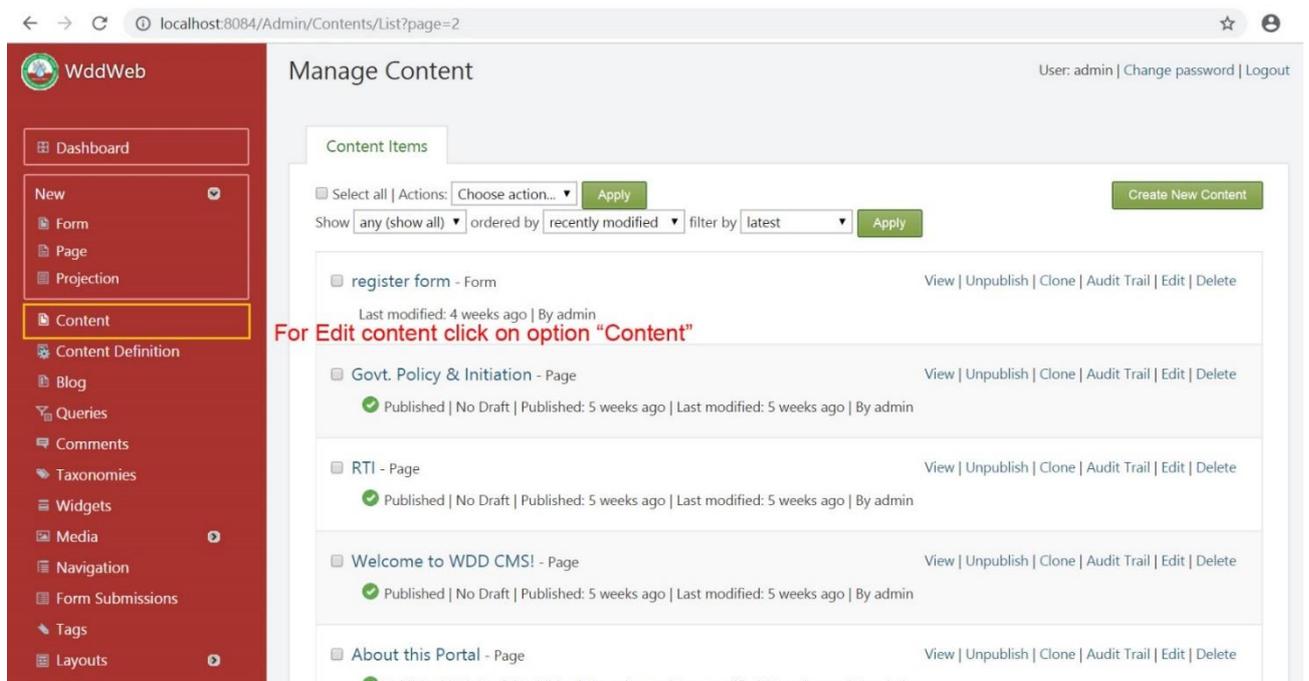


- After content added user can save as draft or publish same time. If Admin want to publish content on schedule date and time then choose date/time and click publish later.



### 4.82.2 EDITING CONTENT

- Edit content click on left side menu “Content”





- All Draft and published pages will be listed

The screenshot shows the 'Content Items' management page. On the left is a red sidebar with navigation options: Dashboard, New (Form, Page, Projection), Content, Content Definition, Blog, Queries, Comments, Taxonomies, Widgets, Media, Navigation, Form Submissions, Tags, Layouts, Modules, Themes, and Workflows. The main content area has a 'Content Items' header and a 'Create New Content' button. Below the header are filters for 'Select all | Actions: Choose action...' and 'Show any (show all) ordered by recently modified filter by latest'. A table lists content items:

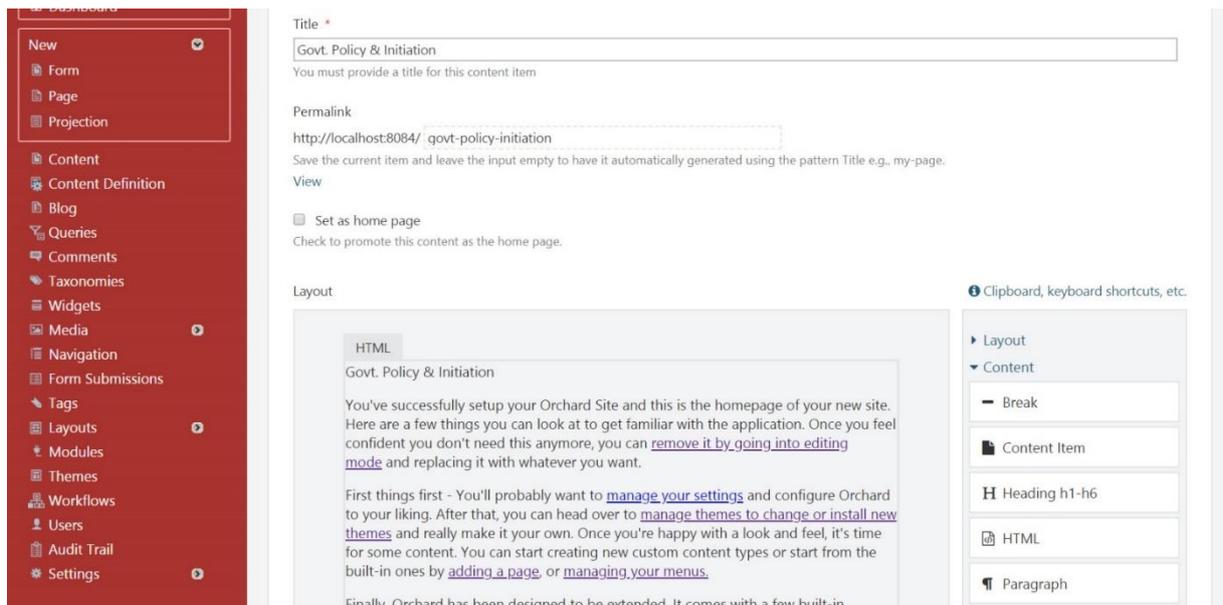
Title	Status	Actions
register form - Form		View   Unpublish   Clone   Audit Trail   Edit   Delete
Govt. Policy & Initiation - Page	Published	View   Unpublish   Clone   Audit Trail   <b>Edit</b>   Delete
RTI - Page	Published	View   Unpublish   Clone   Audit Trail   Edit   Delete
Welcome to WDD CMS! - Page	Published	View   Unpublish   Clone   Audit Trail   Edit   Delete
About this Portal - Page	Published	View   Unpublish   Clone   Audit Trail   Edit   Delete

At the bottom, it says 'Showing items 11 - 15 of 15'.

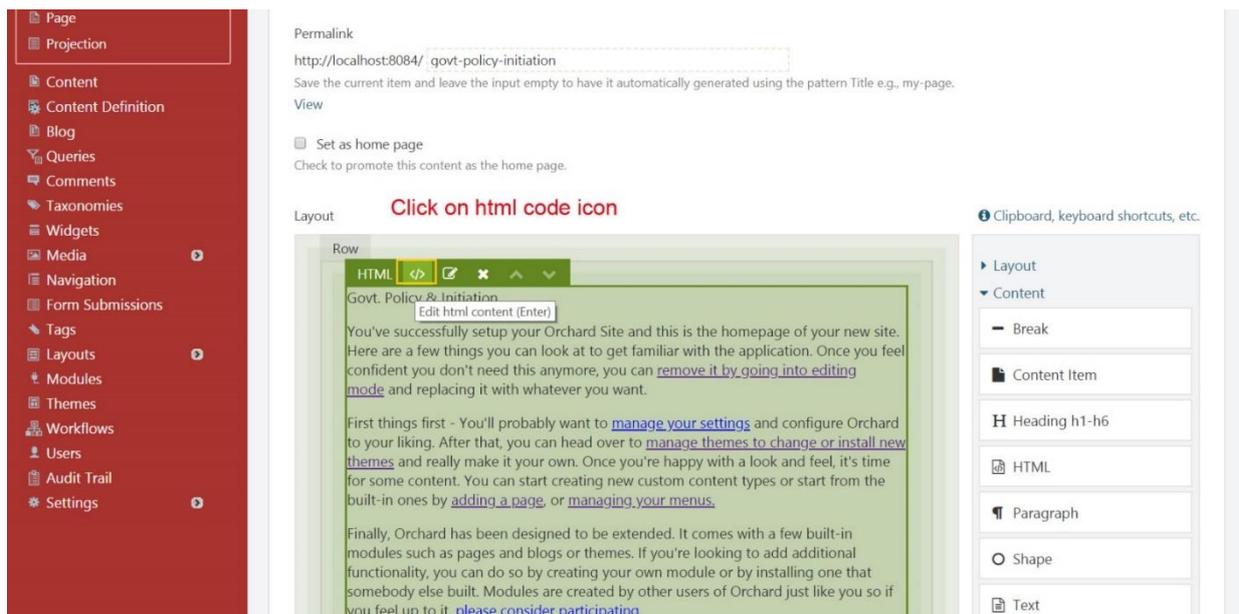
- Click "Edit" for add and edit content in existing page.

This screenshot is identical to the previous one, but with a red text annotation 'Click on edit option for add or change content' pointing to the 'Edit' link in the 'Govt. Policy & Initiation - Page' row.

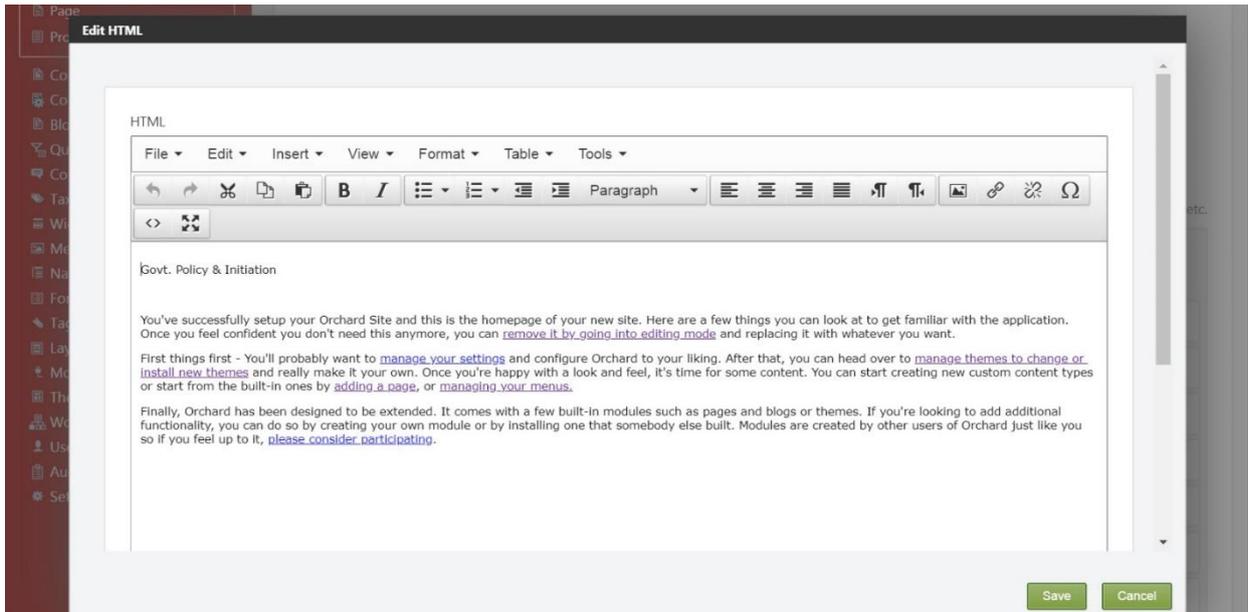
- Editor page will get opened



- Click on html control edit button



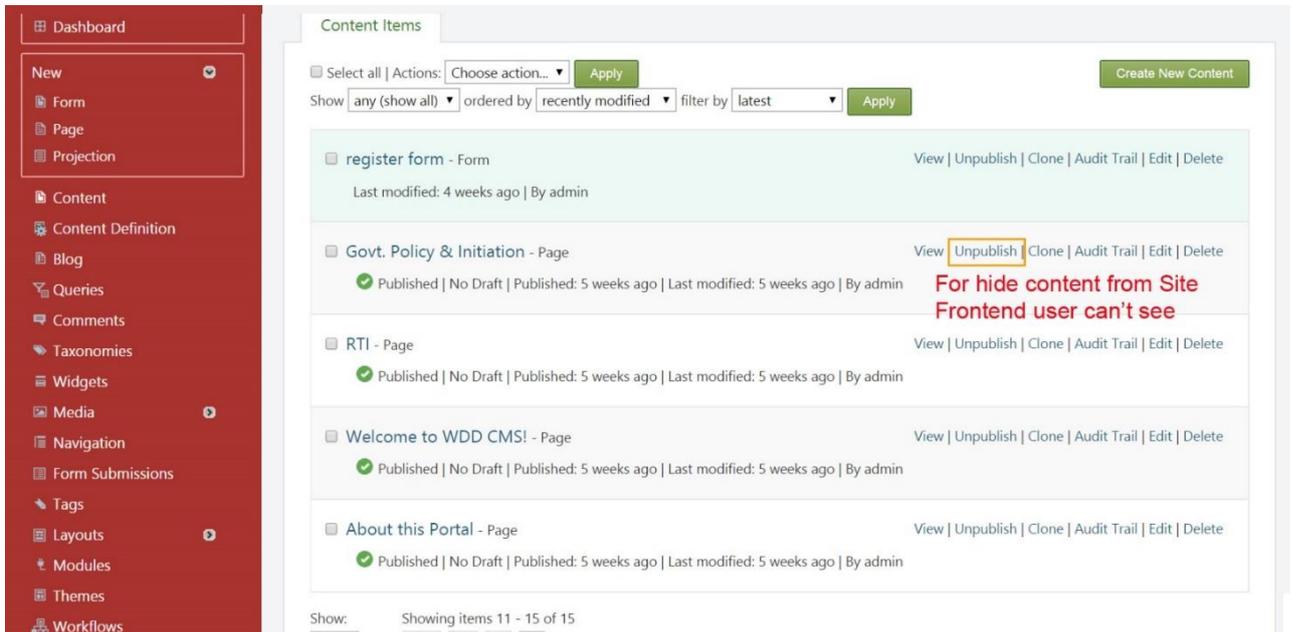
- Html editor popup open



- Click on save button and content update.

### 4.82.3 CONTENT HIDE FROM FRONTEND (UNPUBLISHED)

- Click on right side option unpublish and content remain in backend (Admin section)



- Admin can delete content



Content Items

Select all | Actions: Choose action... | Apply | Create New Content

Show any (show all) ordered by recently modified filter by latest | Apply

<input type="checkbox"/> register form - Form	View   Unpublish   Clone   Audit Trail   Edit   Delete
Last modified: 4 weeks ago   By admin	
<input type="checkbox"/> Govt. Policy & Initiation - Page	View   Unpublish   Clone   Audit Trail   Edit   Delete
Published   No Draft   Published: 5 weeks ago   Last modified: 5 weeks ago   By admin	
<b>Click on Delete option for</b>	
<input type="checkbox"/> RTI - Page	View   Unpublish   Clone   Audit Trail   Edit   Delete
Published   No Draft   Published: 5 weeks ago   Last modified: 5 weeks ago   By admin	
<input type="checkbox"/> Welcome to WDD CMS! - Page	View   Unpublish   Clone   Audit Trail   Edit   Delete
Published   No Draft   Published: 5 weeks ago   Last modified: 5 weeks ago   By admin	
<input type="checkbox"/> About this Portal - Page	View   Unpublish   Clone   Audit Trail   Edit   Delete
Published   No Draft   Published: 5 weeks ago   Last modified: 5 weeks ago   By admin	

Show: Showing items 11 - 15 of 15

- Audit Trial Content history when publish and if deleted

Content Items

Select all | Actions: Choose action... | Apply | Create New Content

Show any (show all) ordered by recently modified filter by latest | Apply

<input type="checkbox"/> register form - Form	View   Unpublish   Clone   Audit Trail   Edit   Delete
Last modified: 4 weeks ago   By admin	
<input type="checkbox"/> Govt. Policy & Initiation - Page	View   Unpublish   Clone   Audit Trail   Edit   Delete
Published   No Draft   Published: 5 weeks ago   Last modified: 5 weeks ago   By admin	
<b>Audit Trail for view History and restore article</b>	
<input type="checkbox"/> RTI - Page	View   Unpublish   Clone   Audit Trail   Edit   Delete
Published   No Draft   Published: 5 weeks ago   Last modified: 5 weeks ago   By admin	
<input type="checkbox"/> Welcome to WDD CMS! - Page	View   Unpublish   Clone   Audit Trail   Edit   Delete
Published   No Draft   Published: 5 weeks ago   Last modified: 5 weeks ago   By admin	
<input type="checkbox"/> About this Portal - Page	View   Unpublish   Clone   Audit Trail   Edit   Delete
Published   No Draft   Published: 5 weeks ago   Last modified: 5 weeks ago   By admin	

Show: Showing items 11 - 15 of 15

- Admin can restore deleted article form recycle bin



WddWeb

Dashboard

New

- Form
- Page
- Projection

- Content
- Content Definition
- Blog
- Queries
- Comments
- Taxonomies
- Widgets
- Media
- Navigation
- Form Submissions
- Tags
- Layouts

### Audit Trail

User: admin | Change password | Logout

History Recycle Bin

From: [Date] To: [Date] Category: [ ] User: [ ] Sort by: [Event name (alphabetical)]

Apply

Category	Event	User	Client IP	Timestamp	Summary	Comment
Content Items	Created	admin		Friday, September 7, 2018 11:27:15 AM	The form register form was created.	Details
Content Items	Published	admin		Wednesday, September 12, 2018 5:22:05 PM	Version 7 of the form register form was published.	Details
Content Items	Published	admin		Wednesday, September 12, 2018 5:06:45 PM	Version 6 of the form register form was published.	Details   Restore
Content Items	Published	admin		Wednesday, September 12, 2018 5:06:07 PM	Version 5 of the form register form was published.	Details   Restore

- option to view Audit Trail for view content history

Blog

- Queries
- Comments
- Taxonomies
- Widgets
- Media
- Navigation
- Form Submissions
- Tags
- Layouts
- Modules
- Themes
- Workflows
- Users
- Audit Trail**
- Settings

register form - Form View | Unpublish | Clone | Audit Trail | Edit | Delete  
Last modified: 4 weeks ago | By admin

RTI - Page View | Unpublish | Clone | Audit Trail | Edit | Delete  
Published | No Draft | Published: 5 weeks ago | Last modified: 5 weeks ago | By admin

Welcome to WDD CMS! - Page View | Unpublish | Clone | Audit Trail | Edit | Delete  
Published | No Draft | Published: 5 weeks ago | Last modified: 5 weeks ago | By admin

About this Portal - Page View | Unpublish | Clone | Audit Trail | Edit | Delete  
Published | No Draft | Published: 5 weeks ago | Last modified: 5 weeks ago | By admin

Show: 10 Showing items 11 - 14 of 14

Audit Trail for view History and restore article

Orchard v.1.10.2.0

- Restore Deleted content



The screenshot shows the 'Audit Trail' section of the WddWeb application. The sidebar on the left contains navigation options such as Dashboard, Content, Content Definition, Blog, Queries, Comments, Taxonomies, Widgets, Media, Navigation, Form Submissions, Tags, Layouts, Modules, Themes, and Workflows. The main content area is titled 'Audit Trail' and includes tabs for 'History' and 'Recycle Bin'. Below the tabs, there is an 'Actions:' dropdown menu and an 'Execute' button. A table displays the audit trail entries:

Content Item	Removed	View   View Audit Trail   Restore
Govt. Policy & Initiation	10/14/2018 5:51 PM	View   View Audit Trail   <b>Restore</b>
	10/14/2018 4:56 PM	View   View Audit Trail   Restore

Showing items 1 - 2 of 2

**Click on restore link**

#### 4.82.4 SEARCH CONTENT

CMS provides the ability to index and search content items in the application. The indexing functionality is provided by enabling the Indexing feature.

In addition to the Indexing, the Search feature provides the ability to query the index (by keyword) to return a list of content items matching the query on the front end.

### 4.83 APPLY ONLINE

#### 4.83.1 REQUIREMENT

FR\_LRIP\_088 Tenders

This activity enables the user to access links of various schemes being implemented by various Departments.

#### 4.83.2 REQUIREMENT UNDERSTANDING

- System will display the List of Schemes published by various departments as well as link will be provided to access the URLs. The information will be managed using content management system. The administrator will be able to add/change the link using CMS.