

## Software Requirements and Design Specifications

| SRS & SDS |                |                         |                |          |   |              |          |         |  |
|-----------|----------------|-------------------------|----------------|----------|---|--------------|----------|---------|--|
| No.       | Personnel Type | Page                    | Type           | Category | Description   | Dependencies | Priority | Action  | Comments   |
| 1         | General        | LR Client log-in portal | Functional     | Security | Each user needs to have a unique User ID and Password to access the software. New user must register with a valid email address.  |              | HIGH     | Develop | LR: The software has to ensure no duplication of User ID is allowed  |
| 2         | General        | LR Client log-in portal | Functional     | Security | The portal must check the correctness of user id and password supplied by the user. It must display error message if the user id and password do not match.   | 1            | HIGH     | Develop |  |
| 3         | General        | LR Client log-in portal | Non-functional | GUI      | Please refer to DBA mock-up screenshots page 1  | 1,2          | HIGH     | Develop |  |
| 4         | General        | General                 | Functional     | Web link | Clicking on the LR logo will bring the user to LR's webpage @ www.lr.org  |              | LOW      |         | LR: To be included in pilot development UX/UI.   |
| 5         | General        | DBA Product Selection   | Functional     | General  | The product selection page is where the user can select the product/tool which he/she intends to use.   |              | LOW      |         |  |
| 6         | General        | DBA Product Selection   | Functional     | Web link | The user will see a web link for each product/tool that his company/group has subscribed to. Each webpage link will direct the user to the home page of the selected product/tool   | 5            | LOW      |         | Infratek: Up to LR<br>LR: May not be included in the 1st prototype   |
| 7         | General        | DBA Product Selection   | Non-functional | GUI      | Please refer to DBA mock-up screenshots page 2  | 5,6          | LOW      |         |  |
| 8         | General        | DBA Project Selection   | Functional     | General  | The project selection page is where the user can select the project which he/she intends to view.   |              | HIGH     | Develop |  |
| 9         | General        | DBA Project Selection   | Functional     | Web link | <Project, Company, Site><br>The user will see a web link for each project he is given access rights to. This is to differentiate the analysis and insight information as per project basis.                                     | 8            | HIGH     | Develop | LR: Administrator is given the rights to administer users and user rights for each project. Refer to Item 20 |
| 10        | Administrator  | DBA Project Selection   | Functional     | Web link | <+ Create New Project><br>The <+ Create New Project> web link will navigate the user to the DBA Create New Project page. Only the administrator is given rights to create new project in the system, and will see the web link. | 8,9          | HIGH     | Develop | LR: For the pilot phase, <+ Create New Project> is limited to 20 sites/projects.                             |
| 11        | Administrator  | DBA Project Selection   | Functional     | Button   | The <Manage Accounts> button is only visible to an administrator. It navigates the administrator to the DBA Manage Accounts page.   | 8            | HIGH     | Develop |  |
| 12        | Administrator  | DBA Project Selection   | Functional     | Web link | <Data Analysis><br>The <Data Analysis> web link will navigate the user to a summary page showing the statistics of all the analysis across the projects   | 8            | LOW      |         | LR: To be included in pilot development UX/UI.   |
| 13        | General        | DBA Project Selection   | Non-functional | GUI      | Please refer to DBA mock-up screenshots page 3  | 8,9,10,11,12 | HIGH     | Develop |  |

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|-----------|----------------|-------------------------|----------------|----------------|---|--------------|----------|---------|---|
| No.       | Personnel Type | Page                    | Type           | Category       | Description   | Dependencies | Priority | Action  | Comments  |
| 14        | Administrator  | DBA Create New Project  | Functional     | General        | The DBA Create New Project window allows an administrator to create a new project in the system, which will have its own databases separate from all other projects in the system. All registered users will be added automatically, but will not have access rights until assigned by the administrator ("None").  | 8            | HIGH     | Develop |   |
| 15        | Administrator  | DBA Create New Project  | Functional     | Textbox        | <Project Name><br>The textbox is provided for the administrator to give a name to the newly created project in the system.  | 8,14         | HIGH     | Develop |   |
| 16        | Administrator  | DBA Create New Project  | Functional     | Textbox        | <Country><br>The textbox is provided for the administrator to identify the country in which the new project is created for.   | 8,14         | HIGH     | Develop |   |
| 17        | Administrator  | DBA Create New Project  | Functional     | Textbox        | <Site Name><br>The textbox is provided for the administrator to identify the location in which the new project is created for.  | 8,14         | HIGH     | Develop |   |
| 18        | Administrator  | LR Client log-in portal | Functional     | Drop down list | <Choose language><br>The drop down list contains two (4) languages (English and Norwegian) for user to select. The field titles and dropdown lists will be translated to the selected language accordingly.   |              | HIGH     | Develop | LR: For the pilot, only English. Other languages to be included for future development. An idea could also be a include a translation function, so that any foreign language/data<br><br>LR: For the pilot, 2 languages i.e. English and Norwegian will be available for field title and dropdown list. Other languages such as Finnish, Swedish, etc. (if required) can be included as part of future development. An idea could also be a include a translation function, so that any foreign language/data |
| 19        | Administrator  | DBA Create New Project  | Functional     | Button         | <Cancel><br>This allows the administrator to stop creation of a new project. All keyed in data will be lost and the DBA Create New Proejct window will close.   | 8,14         | HIGH     | Develop |   |
| 20        | Administrator  | DBA Create New Project  | Functional     | Button         | <Create><br>This allows the administrator to confirm the creation of a new project. All keyed in data will be saved and the DBA Create New Proejct window will close. The administrator will see a new web link appear in the DBA Project Selection page. All users given access rights subsequently will also see the project web link appear in their DBA Proejct Selection page. | 8,14         | HIGH     | Develop |   |
| 21        | Administrator  | DBA Create New Project  | Non-functional | GUI            | Please refer to DBA mock-up screenshots pages 4 and 5   | 14           | HIGH     | Develop |   |
| 22        | Administrator  | DBA Manage Accounts     | Functional     | General        | The DBA Manage Accounts page is only available to administrators. The main purpose is to add and remove users, as well as assign access rights to users according to projects   |              | HIGH     | Develop | Infratek: If possible this should be connected to our AD, so that all Infratek users are included directly.<br><br>LR: For the pilot, user accounts will be created 1x without linking to Infratek's AD. Will be linked when pilot goes into further development.   |
| 23        | Administrator  | DBA Manage Accounts     | Functional     | Accounts link  | The user accounts will be linked to Infratek's Address Directory  | 22           | MEDIUM   |         |   |
| 24        | Administrator  | DBA Manage Accounts     | Functional     | Table          | <Username, Email><br>This table lists down all registered users from the company/group. The administrator is able to click on any user in the list and this will populate the table on the right, allowing the administrator to assign access rights to the selected user.  | 22           | HIGH     | Develop |   |

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|-----------|----------------|---------------------|----------------|------------|---|----------------|----------|---------|---|
| No.       | Personnel Type | Page                | Type           | Category   | Description   | Dependencies   | Priority | Action  | Comments  |
| 25        | Administrator  | DBA Manage Accounts | Functional     | Table      | <p>&lt;Project, Administrator, In-house, Field, Management, None&gt;</p> <p>This table lists down all existing projects created for the company/group. The table is empty first, and will populate once the administrator has selected a user from the table on the left. The administrator is then able to assign access rights to the selected user. By default, the user is assigned to "None" for all projects, which means he/she does not have access rights to any project. For each project, the administrator will have to assign one access rights type to the user (Administrator, In-house, Field, Management, None). In no situation can one user be assigned multiple access rights type.</p> | 22,24          | HIGH     | Develop |   |
| 26        | Administrator  | DBA Manage Accounts | Non-functional | GUI        | Please refer to DBA mock-up screenshots pages 6 and 7   | 22,24,25       | HIGH     | Develop |   |
| 27        | Administrator  | DBA Administrator   | Functional     | Monitoring | Each activity/modification (addition, insertion, deletion) inside the software has to be monitored and recorded based on the User ID and date of the activity (audit trail/ user history log).  |                | MEDIUM   |         |   |
| 28        | Administrator  | DBA Administrator   | Functional     | Print      | Administrator is given the rights to export reports on the system usage. For example, the number of analyses performed by each personnel, etc.  | 27             | MEDIUM   |         | LR: Client to provide a list of information (template) that are required to be exported, else LR will provide a default report. |
| 29        | General        | DBA Home            | Functional     | General    | The DBA Home page is the cover and introduction for the Digital Barrier Analysis tool. It contains information and instructions that are useful to the user. The title of the overview should clearly indicate the project name it is used.   |                | HIGH     | Develop |   |
| 30        | General        | DBA Home            | Functional     | Directory  | Home > Digital Barrier Analysis > Project XX<br>The above layout shows the pathway through which the user has navigated to arrive at the current page. It provides the main functions for the user to return to previous menu pages.  | 29             | HIGH     | Develop |   |
| 31        | General        | DBA Home            | Functional     | Web link   | The <Home> link allows the user to navigate back to the DBA Product Selection page, which is the page seen by the user after the client log-in portal.  | 29,30          | HIGH     | Develop |   |
| 32        | General        | DBA Home            | Functional     | Web link   | The <Digital Barrier Analysis> link allows the user to navigate back to the DBA Project Selection page, which is the page seen by the user after selecting Digital Barrier Analysis in the Product Selection page.  | 29,30          | HIGH     | Develop |   |
| 33        | Administrator  | DBA Home            | Functional     | Web link   | The <Manage Accounts> link is only visible to administrators. It will bring the administrator to the Manage Accounts page.  |                |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be unnecessary and will be removed from the form.                   |
| 34        | General        | DBA Home            | Functional     | Web link   | The <Username> link shows the user's ID. It will navigate the user to the User Summary page.  |                | LOW      |         | LR: To be included in pilot development UX/UI.  |
| 35        | General        | DBA Home            | Functional     | Menu       | The menu contains important tabs that will allow the user to navigate between pages of the Digital Barrier Analysis tool. The menu section on the left/top must have one item highlighted or bolded to indicate the current page the user is, whenever he is accessing the DBA tool.  | 29             | HIGH     | Develop |   |
| 36        | General        | DBA Home            | Functional     | Menu       | The <Overview> tab brings the user to the DBA Home page. It is only functional when the user is not on the DBA Home page.   | 29,35          | HIGH     | Develop |   |
| 37        | General        | DBA Home            | Functional     | Menu       | The <Create New Record> tab brings the user to the DBA Create New Record page. It is not functional when the user is already on the DBA Create New Record page.   | 29,35          | HIGH     | Develop |   |
| 38        | General        | DBA Home            | Functional     | Menu       | The <Results> tab brings the user to the DBA Results page. It is only functional after a record has been submitted for the project.   | 29,35          | HIGH     | Develop |   |
| 39        | General        | DBA Home            | Functional     | Menu       | The <Summary> tab brings the user to the DBA Summary page. It is not functional when the user is already on the DBA Summary page.   | 29,35          | HIGH     | Develop |   |
| 40        | General        | DBA Home            | Functional     | Textbox    | The text area contains a brief introduction of the Digital Barrier Analysis tool. It can also be customised to include instructions or messages that will be displayed to all users.  | 29             | HIGH     | Develop |   |
| 41        | General        | DBA Home            | Functional     | Button     | The <Start Analysis> button navigates the user to the DBA Workshop page.  | 24             | HIGH     | Develop |   |
| 42        | General        | DBA Home            | Non-functional | GUI        | Please refer to DBA mock-up screenshots page 8  | 29,30,35,40,41 | HIGH     | Develop |   |
| 43        | Administrator  | DBA Setting         | Functional     | General    | The DBA Setting page is only available to appointed administrators. It is where the administrator can edit pre-defined lists and risk matrix in the tool.   |                | HIGH     | Develop |   |

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|-----------|----------------|--------------------------|----------------|-------------|--|--------------|----------|---------|---|
| No.       | Personnel Type | Page                     | Type           | Category    | Description  | Dependencies | Priority | Action  | Comments  |
| 44        | Administrator  | DBA Setting              | Functional     | Web link    | <p>&lt;Pre-defined Lists - Work Type&gt;</p> <p>The edit link opens an overlay in which the administrator can view the current list of work types, and edit/add/remove work types which will be applied to all projects/users. This will affect the &lt;Work Type&gt; drop down list in DBA Create/Update Record page, as well as any formatting of the blank barrier analysis template which can be exported from the DBA Workshop page.</p>  | 43           | HIGH     | Develop |   |
| 45        | Administrator  | DBA Setting              | Functional     | Web link    | <p>&lt;Pre-defined Lists - Work Operations&gt;</p> <p>The edit link opens an overlay in which the administrator can select a work type and view associated work operations, and edit/add/remove work operations which will be applied to all projects/users. This will affect the &lt;Work Operation&gt; drop down list in DBA Create/Update Record page, as well as any formatting of the blank barrier analysis template which can be exported from the DBA Workshop page.</p>   | 43           | HIGH     | Develop |   |
| 46        | Administrator  | DBA Setting              | Functional     | Web link    | <p>&lt;Pre-defined Lists - Potential Incident&gt;</p> <p>The edit link opens an overlay in which the administrator can select a work type and work operation, and view associated potential incidents, and edit/add/remove potential incidents which will be applied to all projects/users. This will affect the &lt;Potential Incident&gt; drop down list in DBA Create/Update Record page, as well as any formatting of the blank barrier analysis template which can be exported from the DBA Workshop page.</p>  | 43           | HIGH     | Develop |   |
| 47        | Administrator  | DBA Setting              | Functional     | Risk Matrix | The administrator is allowed to change the description of each consequence and barrier level. The administrator can also edit the risk category of individual boxes in the risk matrix. All changes will apply to all projects/users. The changes will be reflected in the risk matrices in DBA Workshop page, as well as any formatting of the blank barrier analysis template which can be exported from the DBA Workshop page.  | 43           | HIGH     | Develop |   |
| 48        | Administrator  | DBA Setting              | Functional     | Button      | The <Save> button allows the administrator to save all changes made.   | 43           | HIGH     | Develop |   |
| 49        | Administrator  | DBA Setting              | Non-functional | GUI         | Please refer to DBA mock-up screenshots pages 9 to 12  | 43,47,48     | HIGH     | Develop |   |
| 50        | In-house       | DBA Workshop             | Functional     | General     | The DBA Workshop is the page that allows user to export templates for the Barrier Analysis workshop, and import and export data generated as outcome of the workshop.  |              | HIGH     | Develop |   |
| 51        | In-house       | DBA Workshop             | Functional     | Button      | The <Export Template> button allows the user to export a blank template for use in the Barrier Analysis workshop. This is highly recommended so that data can be captured in the intended format and avoid errors when imported into the system.   | 50           | HIGH     | Develop |   |
| 52        | In-house       | DBA Workshop             | Functional     | Button      | The <Export Records> button allows the user to export all existing records within the system, which could be data imported from a Barrier Analysis workshop or data created through the DBA Create New Record page.  | 50           | MEDIUM   |         |   |
| 53        | In-house       | DBA Workshop             | Functional     | Button      | The <Import Recrds> button allows the user to import a completed Barrier Analysis spreadsheet created from a Barrier Analysis workshop.  | 50           | HIGH     | Develop |   |
| 54        | In-house       | DBA Workshop             | Functional     | Table       | The table displays all existing records in the system. The user can filter each column according to needs.   | 50           | HIGH     | Develop |   |
| 55        | In-house       | DBA Workshop             | Functional     | Risk Matrix | <p>The risk matrix displays the number of records in each category. The risk matrix on top shows the count before implementation of suggestions, while the bottom shows the count after implementation of suggestions. The user can click on the numbers in each category and this will filter the records displayed in the table on the left.</p> <p>The consequence and barrier levels can be renamed by the administrator under DBA Settings page. The acceptance criteria can be set by the administrator under the DBA Settings page and it will be updated and reflected in DBA Workshop page.</p> | 50           | HIGH     | Develop |   |
| 56        | General        | DBA Workshop             | Non-functional | GUI         | Please refer to DBA mock-up screenshots page 13  | 50,54,55     | HIGH     | Develop |   |
| 57        | General        | DBA Create/Update Record | Functional     | General     | The DBA Create/Update Record page is a form which will allow the user to submit new and update existing records for each potential incident of all work operations and types.  |              | HIGH     | Develop | <p>Infratek: Must also be possible to submit new work operations and work types.</p> <p>LR: Client to clarify if this is meant for adding to the list of work operations and types. This is available through the DBA Settings page. If not, will require more explanation to better understand this requirement.</p> |
| 58        | General        | DBA Create/Update Record | Functional     | Button      | The <Select Record> button navigates the user to the DBA Select Record page.   | 57           | HIGH     | Develop |   |



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|-----------|----------------|---|------------|-----------------|--|--------------|----------|---------|--|
| No.       | Personnel Type | Page  | Type       | Category        | Description  | Dependencies | Priority | Action  | Comments   |
| 59        | General        | DBA<br>Create/Update<br>Record              | Functional | Checkbox        | <Create New><br>If the user checks this checkbox, a new record will be created in the system.  | 57,58        | HIGH     | Develop |  |
| 60        | General        | DBA<br>Create/Update<br>Record              | Functional | Checkbox        | <Update><br>If the user checks this checkbox, the record selected through the DBA<br>Select Record page will be updated in the system.   | 57,58        | HIGH     | Develop |  |
| 61        | General        | <del>DBA<br/>Create/Update<br/>Record</del> | Functional | Drop down list  | <del>The drop down list contains predefined categories that the user can select<br/>for his submission. This prevents miscategorization due to typography errors<br/>and is more user friendly as an input option.</del>   |              |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be<br>unnecessary and will be removed from the form. |
| 62        | General        | <del>DBA<br/>Create/Update<br/>Record</del> | Functional | <del>Icon</del> | <del>A &lt;?&gt; icon beside the work type input field containing explanations and<br/>provide further clarity to the user. Help text will be displayed when the user<br/>mouseover the icon.</del>  |              |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be<br>unnecessary and will be removed from the form. |
| 63        | General        | DBA<br>Create/Update<br>Record              | Functional | Drop down list  | TBC.<br><Work Type><br>The drop down list contains predefined categories that the user can select<br>for his submission. This prevents miscategorization due to typography errors<br>and is more user friendly as an input option.   | 57           | HIGH     | Develop |  |
| 64        | General        | DBA<br>Create/Update<br>Record              | Functional | Icon            | A <?> icon beside the work type input field containing explanations and<br>provide further clarity to the user. Help text will be displayed when the user<br>mouseover the icon.<br><br>"Type of work that is carried out. This is used as a way of categorizing work<br>operations."  | 57,63        | HIGH     | Develop |  |
| 65        | General        | DBA<br>Create/Update<br>Record              | Functional | Drop down list  | <Work Operation><br>The drop down list contains predefined categories that the user can select<br>for his submission. This prevents miscategorization due to typography errors<br>and is more user friendly as an input option.  | 57           | HIGH     | Develop |  |
| 66        | General        | DBA<br>Create/Update<br>Record              | Functional | Icon            | A <?> icon beside the work operation input field containing explanations and<br>provide further clarity to the user. Help text will be displayed when the user<br>mouseover the icon.<br><br>"The work operation that is carried out. This is used to identify potential<br>incidents."  | 57,65        | HIGH     | Develop |  |
| 67        | General        | DBA<br>Create/Update<br>Record              | Functional | Drop down list  | <Potential Incident><br>The drop down list contains predefined categories that the user can select<br>for his submission. This prevents miscategorization due to typography errors<br>and is more user friendly as an input option.  | 57           | HIGH     | Develop |  |
| 68        | General        | DBA<br>Create/Update<br>Record              | Functional | Icon            | A <?> icon beside the potential incident input field containing explanations<br>and provide further clarity to the user. Help text will be displayed when the<br>user mouseover the icon.<br><br>"What potential incident could happen for this work operation. If several<br>risks are relevant, submit as separate records." | 57,67        | HIGH     | Develop |  |
| 69        | General        | DBA<br>Create/Update<br>Record              | Functional | Textbox         | <Incident Description><br>The textbox is provided for user to elaborate on the identified potential<br>incident.   | 57           | HIGH     | Develop |  |
| 70        | General        | DBA<br>Create/Update<br>Record              | Functional | Icon            | A <?> icon beside the incident description input field containing explanations<br>and provide further clarity to the user. Help text will be displayed when the<br>user mouseover the icon.<br><br>"This is just a further explanation to the scenario, to better understand what<br>could happen. Not mandatory."             | 57,69        | HIGH     | Develop |  |
| 71        | General        | DBA<br>Create/Update<br>Record              | Functional | Drop down list  | <Consequence><br>The drop down list contains predefined categories that the user can select<br>for his submission. This prevents miscategorization due to typography errors<br>and is more user friendly as an input option.   | 57           | HIGH     | Develop |  |

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|-----------|------------------|--|------------|----------------|--|--------------|----------|---|----------|------------------|---|---|-----------|--|---|----------|--|---|-------------|---|-------|------|---------|--|
| No.       | Personnel Type   | Page   | Type       | Category       | Description  | Dependencies | Priority | Action  | Comments |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 72        | General          | DBA<br>Create/Update<br>Record   | Functional | Icon           | A <?> icon beside the consequence input field containing explanations and provide further clarity to the user. Help text will be displayed when the user mouseover the icon. <table><tr><td>1</td><td>Safe</td><td>Insignificant personnel injury, e.g. first aid treatment needed</td></tr><tr><td>2</td><td>A certain danger</td><td>Small personnel injuries, e.g. medical treatment needed</td></tr><tr><td>3</td><td>Dangerous</td><td>Critical personnel injury, e.g. loss time injury (or alternative work)</td></tr><tr><td>4</td><td>Critical</td><td>Life threatening personnel injury or persistent injury</td></tr><tr><td>5</td><td>Catastrophe</td><td>Death/several seriously injured personnel</td></tr></table> | 1            | Safe     | Insignificant personnel injury, e.g. first aid treatment needed | 2        | A certain danger | Small personnel injuries, e.g. medical treatment needed | 3 | Dangerous | Critical personnel injury, e.g. loss time injury (or alternative work) | 4 | Critical | Life threatening personnel injury or persistent injury | 5 | Catastrophe | Death/several seriously injured personnel | 57,71 | HIGH | Develop |  |
| 1         | Safe             | Insignificant personnel injury, e.g. first aid treatment needed        |            |                |  |              |          |   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 2         | A certain danger | Small personnel injuries, e.g. medical treatment needed                |            |                |  |              |          |   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 3         | Dangerous        | Critical personnel injury, e.g. loss time injury (or alternative work) |            |                |  |              |          |   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 4         | Critical         | Life threatening personnel injury or persistent injury                 |            |                |  |              |          |   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 5         | Catastrophe      | Death/several seriously injured personnel                              |            |                |  |              |          |   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 73        | General          | DBA<br>Create/Update<br>Record   | Functional | Drop down list | <Consequence Type><br><br>The drop down list contains predefined categories that the user can select for his submission. This prevents miscategorization due to typography errors and is more user friendly as an input option.  | 57           | HIGH     | Develop   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 74        | General          | DBA<br>Create/Update<br>Record   | Functional | Icon           | A <?> icon beside the consequence type input field containing explanations and provide further clarity to the user. Help text will be displayed when the user mouseover the icon.<br><br>TBC.  | 57,73        | HIGH     | Develop   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 75        | General          | DBA<br>Create/Update<br>Record   | Functional | Textbox        | <Existing Barriers - Barrier Description><br><br>The textbox is provided for user to elaborate on the identified existing barrier.   | 57           | HIGH     | Develop   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 76        | General          | DBA<br>Create/Update<br>Record   | Functional | Drop down list | <Existing Barriers - Type><br><br>The drop down list contains predefined categories that the user can select for his submission. This prevents miscategorization due to typography errors and is more user friendly as an input option.  | 57,75        | HIGH     | Develop   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 77        | General          | DBA<br>Create/Update<br>Record   | Functional | Drop down list | <Existing Barriers - Dependency><br><br>The drop down list contains predefined categories that the user can select for his submission. This prevents miscategorization due to typography errors and is more user friendly as an input option. The options are dependent on the number of existing barriers that have been identified i.e. s/n. If there is only 1 existing barrier, there will not be any available selection. The selected dependency cannot be the barrier item itself.  | 57,75        | HIGH     | Develop   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 78        | General          | DBA<br>Create/Update<br>Record   | Functional | Textbox        | <Existing Barriers - Dependency Description><br><br>The textbox is provided for user to elaborate on the identified dependency.  | 57,75        | HIGH     | Develop   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 79        | General          | DBA<br>Create/Update<br>Record   | Functional | Button         | The <X> button allows the user to delete a barrier item. The entry fields will be removed from the GUI and s/n will be updated if necessary. If there is only 1 barrier item, the entry fields will not be removed, instead the existing text and selected fields will be cleared.   | 57,75        | HIGH     | Develop   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 80        | General          | DBA<br>Create/Update<br>Record   | Functional | Scroll Bar     | A scroll bar is provided to prevent text overcrowding in the event that there are many barrier items added.  | 57,75        | HIGH     | Develop   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |
| 81        | General          | DBA<br>Create/Update<br>Record   | Functional | Button         | The <Add Barrier> button allows the user to create an additional row of entry fields for Existing Barriers. This function reduces the need for having too many entry fields on the page i.e. cluttering problem.   | 57,75        | HIGH     | Develop   |          |                  |   |   |           |  |   |          |  |   |             |   |       |      |         |  |

| SRS & SDS          |   |                          |                |                |   |                               |   |                    |  |           |   |       |      |         |  |
|--------------------|---|--------------------------|----------------|----------------|---|-------------------------------|---|--------------------|--|-----------|---|-------|------|---------|--|
| No.                | Personnel Type  | Page                     | Type           | Category       | Description   | Dependencies                  | Priority  | Action             | Comments   |           |   |       |      |         |  |
| 82                 | General   | DBA Create/Update Record | Functional     | Icon           | <p>A &lt;?&gt; icon beside the existing barriers input field containing explanations and provide further clarity to the user. Help text will be displayed when the user mouseover the icon.</p> <p>"List the existing barriers in place to avoid the scenario to happen, and the barriers in place to reduce the consequence if it happens. Barriers can be of the following types:</p> <table><tr><td>Technical (T)</td><td>A technical is a barrier that is working without any needed action from a person, i.e. the barrier will physically stop the event chain or physically reduce the consequence.</td></tr><tr><td>Organisational (O)</td><td>A barrier that is related to organisational issues like procedures, organisation, manning, etc. and is dependent on actions from people to work.</td></tr><tr><td>Human (M)</td><td>A barrier totally dependent on the personnel for doing the right behaviour (e.g. education, training, instructions, procedures, etc.)</td></tr></table> <p>Do a short evaluation of the barriers and their independence from each other. Comment on the barrier's "coverage" i.e. if it is covering all scenarios, or only a limited number, and also if special actions are needed. Another factor is if all barriers are related to the same person or action, or if there are more people or work stages involved."</p> | Technical (T)                 | A technical is a barrier that is working without any needed action from a person, i.e. the barrier will physically stop the event chain or physically reduce the consequence. | Organisational (O) | A barrier that is related to organisational issues like procedures, organisation, manning, etc. and is dependent on actions from people to work. | Human (M) | A barrier totally dependent on the personnel for doing the right behaviour (e.g. education, training, instructions, procedures, etc.) | 57,75 | HIGH | Develop |  |
| Technical (T)      | A technical is a barrier that is working without any needed action from a person, i.e. the barrier will physically stop the event chain or physically reduce the consequence. |                          |                |                |   |                               |   |                    |  |           |   |       |      |         |  |
| Organisational (O) | A barrier that is related to organisational issues like procedures, organisation, manning, etc. and is dependent on actions from people to work.                              |                          |                |                |   |                               |   |                    |  |           |   |       |      |         |  |
| Human (M)          | A barrier totally dependent on the personnel for doing the right behaviour (e.g. education, training, instructions, procedures, etc.)   |                          |                |                |   |                               |   |                    |  |           |   |       |      |         |  |
| 83                 | General   | DBA Create/Update Record | Functional     | Textbox        | <p>&lt;Suggestions (if any)&gt;</p> <p>The textbox is provided for user to raise any suggestions e.g. to add new barriers. The suggestion will be reviewed for implementation.</p>  | 57                            | HIGH  | Develop            |  |           |   |       |      |         |  |
| 84                 | General   | DBA Create/Update Record | Functional     | Icon           | <p>A &lt;?&gt; icon beside the work type input field containing explanations and provide further clarity to the user. Help text will be displayed when the user mouseover the icon.</p> <p>"Here we should come up with suggestions to improvement of the barriers for those scenarios that need to be in the acceptable or tolerable area."</p>  | 57,83                         | HIGH  | Develop            |  |           |   |       |      |         |  |
| 85                 | General   | DBA Create/Update Record | Functional     | Button         | The <Submit> button allows the user to send the completed form to the server, which will be logged and stored in a project specific database. The user will then be directed to the DBA Results page.   | 57,83                         | HIGH  | Develop            |  |           |   |       |      |         |  |
| 87                 | General   | DBA Create/Update Record | Non-functional | GUI            | Please refer to DBA mock-up screenshots pages 14 and 16   | 57,58,63,65,67,69,71,73,75,83 | HIGH  | Develop            |  |           |   |       |      |         |  |
| 88                 | General   | DBA Select Record        | Functional     | General        | The DBA Select Record page allows the user to select and use existing records. In this page, the user is to search for existing records based on <Work Type>, <Work Operation> and <Potential Incident>.  | 57,58                         | HIGH  | Develop            | LR: Identified as a feature/function but not fully developed yet. Can be discussed with the Client to understand requirements.                   |           |   |       |      |         |  |
| 89                 | General   | DBA Select Record        | Functional     | Drop down list | <p>&lt;Work Type&gt;</p> <p>The drop down list contains predefined categories that the user can select. This will filter to relevant work operations for selection.</p>   | 57,88                         | HIGH  | Develop            |  |           |   |       |      |         |  |
| 90                 | General   | DBA Select Record        | Functional     | Drop down list | <p>&lt;Work Operation&gt;</p> <p>The drop down list contains predefined categories that the user can select. This will filter to relevant potential incidents for selection.</p>  | 57,88                         | HIGH  | Develop            |  |           |   |       |      |         |  |
| 91                 | General   | DBA Select Record        | Functional     | Drop down list | <p>&lt;Potential Incident&gt;</p> <p>The drop down list contains predefined categories that the user can select.</p>  | 57,88                         | HIGH  | Develop            |  |           |   |       |      |         |  |
| 92                 | General   | DBA Select Record        | Functional     | Button         | The <Cancel> button will close the DBA Select Record page and none of the existing record is selected for use.  | 57,88                         | HIGH  | Develop            |  |           |   |       |      |         |  |
| 93                 | General   | DBA Select Record        | Functional     | Button         | The <Select> button will close the DBA Select Record page and data from the selected record will populate the fields in DBA Create/Update Record page.  | 57,88                         | HIGH  | Develop            |  |           |   |       |      |         |  |
| 94                 | General   | DBA Select Record        | Non-functional | GUI            | Please refer to DBA mock-up screenshots page 15   | 88                            | HIGH  | Develop            |  |           |   |       |      |         |  |
| 95                 | General   | DBA User Summary         | Functional     | General        | The DBA User Summary page provides a brief summary and history of user actions e.g. list the past 5 record submissions. The main purpose is to provide quick information about the user activity.   |                               | LOW   |                    | LR: Identified as a feature/function but requirement not fully developed. To be discussed with the Client, likely not key for MVP.               |           |   |       |      |         |  |
| 96                 | General   | DBA User Summary         | Non-functional | GUI            | N.a.  | 95                            | LOW   |                    | LR: GUI will be designed in future development.  |           |   |       |      |         |  |
| 97                 | Field   | DBA Results              | Functional     | General        | The DBA Results page allows the user to extract existing records in the system according to a selected work type and work operation. The relevant potential incidents will be consolidated, which the user can then choose to print a verification checklist in PDF format for use out in the field.  |                               | HIGH  | Develop            |  |           |   |       |      |         |  |

| SRS & SDS |                |             |                |                |  |              |          |         |   |
|-----------|----------------|-------------|----------------|----------------|--|--------------|----------|---------|---|
| No.       | Personnel Type | Page        | Type           | Category       | Description  | Dependencies | Priority | Action  | Comments  |
| 98        | Field          | DBA Results | Functional     | Drop down list | <p>&lt;Work Type&gt;</p> <p>The drop down list contains predefined categories that filters the results by work type. There is a "Select all" option that returns all the work types.</p>   | 97           | HIGH     | Develop |   |
| 99        | Field          | DBA Results | Functional     | Drop down list | <p>&lt;Work Operation&gt;</p> <p>The drop down list contains predefined categories that filters the results by work operation. There is a "Select all" option that returns all the work operations.</p>  | 97           | HIGH     |         |   |
| 100       | Field          | DBA Results | Non-functional | GUI            | <p>The user will select the &lt;Work Type&gt; and &lt;Work Operation&gt; and the following information will be presented:☐</p> <ul style="list-style-type: none"> <li>- Project name and number</li> <li>- Work type and operation category selected</li> <li>- Potential incidents</li> <li>- Risk level of each incident☐</li> <li>- Barriers that are put in-place</li> </ul> <p>Based on the extracted records above, a summary is presented in the format of a risk matrix.</p>   | 97           | HIGH     | Develop |   |
| 101       | Field          | DBA Results | Functional     | Button         | <p>&lt;Save as PDF&gt; button☐</p> <p>☐</p> <p>This exports selected results as one (1) PDF document. The Field Engineer can then print a hardcopy of the document to be used for on-site verification. The following information will be included in the document:</p> <p><b><u>Extracted from software</u></b></p> <ul style="list-style-type: none"> <li>- Project name and number</li> <li>- Work type and operation category selected</li> <li>- Potential incidents</li> <li>- Risk level of each incident</li> <li>- Barriers that are put in-place</li> </ul> <p><b><u>To be filled in during Verification exercise</u></b></p> <ul style="list-style-type: none"> <li>- Verification box for barriers</li> <li>- Recommendations</li> <li>- Additional potential incidents</li> <li>- Additional safeguards</li> <li>- Performed by</li> <li>- Approved by</li> <li>- Photos attached</li> <li>- Safe Job Analysis conducted</li> </ul> | 97           | HIGH     | Develop | LR: SJA process can be digitised in future development.   |
| 102       | Field          | DBA Results | Functional     | Button         | <p>&lt;Upload Photos&gt; button</p> <p>This allows user to upload photos that are relevant for the project. It shall be noted that photos uploaded into the software will be stored in a general folder created for each project.</p>  | 97           | MEDIUM   |         | LR: To be included in pilot development UX/UI.  |
| 103       | Field          | DBA Results | Functional     | Button         | <p>&lt;Upload Document&gt; button</p> <p>This allows user to upload documents that are relevant for the project. It shall be noted that documents uploaded into the software will be stored in a general folder created for each project.</p>  | 97           | MEDIUM   |         | LR: To be included in pilot development UX/UI.  |
| 104       | Field          | DBA Results | Functional     | Button         | <p><del>&lt;View Summary&gt; button☐</del></p> <p><del>☐</del></p> <p><del>This opens the "Summary" page which presents the overall results numerically and/or graphically.☐</del></p>   |              |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be unnecessary and will be removed from the form. |
| 105       | Field          | DBA Results | Functional     | Button         | <p><del>&lt;Edit Existing Record&gt; button☐</del></p> <p><del>☐</del></p> <p><del>This brings the user back to "Create New Record" tab to allow editing of previous work item submitted. It shall be noted that edited worksheet will be recorded in a log sheet managed by Administrator.☐</del></p> <p><del>☐</del></p> <p><del>Refer to PDF Page 9 — DBA Results</del></p>   |              |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be unnecessary and will be removed from the form. |
| 106       | Field          | DBA Results | Functional     | Administrative | <p><del>&lt;Log Sheet&gt;☐</del></p> <p><del>☐</del></p> <p><del>Method to track any edits/changes made to work item submitted. This will be managed by Administrator only thus it will only show in Administrator's account.</del></p>  |              |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be unnecessary and will be removed from the form. |



| SRS & SDS |                |             |                |                 |  |              |          |         |  |
|-----------|----------------|-------------|----------------|-----------------|--|--------------|----------|---------|--|
| No.       | Personnel Type | Page        | Type           | Category        | Description  | Dependencies | Priority | Action  | Comments   |
| 107       | Field          | DBA Results | Functional     | Risk Assessment | <del>&lt;Consequence Level&gt;</del><br><del>This is determined from the Consequence Rating Matrix based on the parameters defined by user in "Create New Record" tab:</del><br><del>-Consequence</del><br><del>-Consequence type</del><br><del>&lt;Probability level&gt;</del>  |              |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be unnecessary and will be removed from the form.  |
| 108       | Field          | DBA Results | Functional     | Risk Assessment | <del>This is determined from the Probability Rating Matrix based on the parameters defined by user in "Create New Record" tab:</del><br><del>-Number of barrier(s)</del><br><del>-Type of each barrier</del><br><del>-Dependency of each barrier</del><br><del>&lt;Risk level&gt;</del>  |              |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be unnecessary and will be removed from the form.  |
| 109       | Field          | DBA Results | Functional     | Risk Assessment | <del>This is determined from the combination of "Consequence level" and "Probability level" using the Risk Matrix provided by COMPANY.</del>   |              |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be unnecessary and will be removed from the form.  |
| 110       | Field          | DBA Results | Non-functional | GUI             | Please refer to DBA mock-up screenshots page 17 to 19  | 97           | HIGH     | Develop |  |
| 111       | General        | DBA Summary | Functional     | General         | The DBA Summary page allows the user to view key statistics relating to the project. This includes the consolidation of suggestions in the system and allows the user to follow through with an action plan.<br><br><Overall Summary><br><br>Shows current status through the following numbers:<br><br>- Number of records<br>- Number of recommendations<br>- Number of critical issues to be resolved |              | HIGH     | Develop |  |
| 112       | General        | DBA Summary | Functional     | Drop down list  | <Work Type><br>The drop down list contains predefined categories that the user can select for his submission. This prevents miscategorization due to typography errors and is more user friendly as an input option.   | 111          | MEDIUM   |         | LR: To be included in pilot development UX/UI.   |
| 113       | General        | DBA Summary | Functional     | Drop down list  | <Work Operation><br>The drop down list contains predefined categories that the user can select for his submission. This prevents miscategorization due to typography errors and is more user friendly as an input option.  | 111          | MEDIUM   |         | LR: To be included in pilot development UX/UI.   |
| 114       | General        | DBA Summary | Non-functional | Graphs          | <Risk Level Bar Graph><br>Depicts the risk level for each work incident of interest, evaluated by the assigned consequence rating and existing barriers.   | 111          | MEDIUM   |         | LR: To be included in pilot development UX/UI.   |
| 115       | General        | DBA Summary | Non-functional | Graphs          | <Barrier statistics bar graph><br>Depicts the total number of barriers and the breakdown into the various types (i.e. M, T, O) for each work incident of interest.   | 111          | MEDIUM   |         | LR: To be included in pilot development UX/UI.   |
| 116       | General        | DBA Summary | Functional     | Graphs          | <del>&lt;Barrier Type Pie Chart&gt;</del><br><del>Represents the percentages of M, T or O type barrier.</del>  |              |          | Delete  | LR: Only existing barriers are considered<br>LR: Based on Infratek's requirement, this item is deemed to be unnecessary and will be removed from the form. |
| 117       | General        | DBA Summary | Functional     | Button          | <del>&lt;Time Period Bar&gt;</del><br><del>Allows user to define period of interest for risk statistics line graph.</del>  |              |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be unnecessary and will be removed from the form.  |
| 118       | General        | DBA Summary | Functional     | Drop-down list  | <del>&lt;Drop down list for Risk Category&gt;</del><br><del>Presents in risk statistics line graph.</del>  |              |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be unnecessary and will be removed from the form.  |
| 119       | General        | DBA Summary | Non-functional | Graphs          | <del>&lt;Risk Statistics Line Graph&gt;</del><br><del>Presents the number of records for each risk category (i.e. Acceptable, Tolerable, ALARP and Not Acceptable) against time.</del>   |              |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be unnecessary and will be removed from the form.  |
| 120       | General        | DBA Summary | Functional     | Button          | <del>&lt;Export Records to PDF&gt; Button</del><br><del>Exports records to PDF format.</del>   |              |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be unnecessary and will be removed from the form.  |
| 121       | General        | DBA Summary | Functional     | Button          | <del>&lt;Export Records to Excel&gt; Button</del><br><del>Exports records to Excel format.</del>   |              |          | Delete  | LR: Based on Infratek's requirement, this item is deemed to be unnecessary and will be removed from the form.  |
| 122       | General        | DBA Summary | Functional     | Button          | <Export Charts to PDF> Buttons<br>Exports charts to PDF format.  | 111          | MEDIUM   |         | LR: To be included in pilot development UX/UI.   |

| SRS & SDS |                |                 |                |          |  |              |          |         |  |
|-----------|----------------|-----------------|----------------|----------|--|--------------|----------|---------|--|
| No.       | Personnel Type | Page            | Type           | Category | Description  | Dependencies | Priority | Action  | Comments   |
| 123       | General        | DBA Summary     | Non-functional | Table    | <Recommendations List><br>All suggestions in the system, from upload of the Barrier Analysis worksheet or new record or update record, will be consolidated and shown here in the system.  | 111          | HIGH     | Develop |  |
| 124       | General        | DBA Summary     | Functional     | Button   | <Edit Action Plan> button<br>This brings the user to the DBA Action Plan page.   | 111          | MEDIUM   |         | LR: To be included in pilot development UX/UI.   |
| 125       | General        | DBA Summary     | Functional     | Button   | <Export recommendations list>  | 111          | HIGH     | Develop |  |
| 126       | General        | DBA Summary     | Non-functional | GUI      | Please refer to DBA mock-up screenshots pages 20 and 21  | 111          | HIGH     | Develop |  |
| 127       | General        | DBA Action Plan | Functional     | General  | The DBA Action Plan page allows the user to edit the consolidated list of suggestions and update their statuses.   | 111          | MEDIUM   |         |  |
| 128       | General        | DBA Action Plan | Functional     | Table    | The user is able to edit the fields in the table, to update the status of any listed suggestion.   | 111,127      | MEDIUM   |         |  |
| 129       | General        | DBA Action Plan | Functional     | Button   | <Cancel> button<br>This will allow the user to navigate back to the DBA Summary page without saving changes made to any field in the table.  | 127          | MEDIUM   |         |  |
| 130       | General        | DBA Action Plan | Functional     | Button   | <Save> button<br>This will allow the user to save any changes made to any field in the table. The user will then be brought back to the DBA Summary page.  | 127          | MEDIUM   |         |  |
| 131       | General        | DBA Action Plan | Non-functional | GUI      | Please refer to DBA mock-up screenshots page 22  | 127          | MEDIUM   |         |  |
| 132       | General        | -               | Functional     | General  | Development of an App for use on mobile devices.   |              | MEDIUM   |         | LR: For the pilot phase, the web browser will be responsive to screen size (responsive web design) |
| 133       | Field          | DBA Results     | Functional     | Button   | <Safe Job Analysis> button<br>This brings the user to the Safe Job Analysis page whereby the SJA process is digitised within this tool. The Field Engineer is able to perform SJA within the tool, save and store the information. | 101          | MEDIUM   |         |  |

**LEGEND:**  
**HIGH** Items that will be developed for the pilot phase  
**MEDIUM** Items that are client requirements but will not be developed under the pilot phase  
**LOW** Items that are good-to have but will no tbe developed under the pilot phase