

The Project Study Area and Potential Impact Areas

Definitions:

Environmental Process: The process within project development by which known environmental constraints are identified and potential and known impacts are (to the extent practicable) quantified and avoided, minimized, or mitigated so that a project can be cleared and permitted for further development. The environmental process refers to a portion of the development process within which the NEPA, Section 106, public involvement, Section 4(f), Section 7 (of the ESA), and the Section 404 (of the CWA) processes are completed. Typically, but not exclusively these processes are merged and completed within the Department's NEPA/404 merged process.

NEPA/404 Merged Process [Concurrence Point (CP) Process]: The process merging the National Environmental Policy Act and Clean Water Act as identified within the Statewide Implementation Agreement for highway projects in Iowa dated August 2001 and as supplemented in May 2009. This process introduces resource and regulatory input at key decision points within the environmental process and ensures that concerns of the resource and regulatory agencies can be addressed concurrently with project development. Refer to O.L.E. Policy 09A020 for additional information regarding the CP process.

Feasibility Study: A study typically completed in advance of beginning the environmental process to identify the issues within a potential project area and allow a better project study area to be defined should further project development be deemed feasible. Often this study includes (but is not limited to) a range of engineering solutions, a traffic analysis (crash and level of service), cost analysis, and a desktop review of potential project stopping issues within the human and natural environment. A feasibility study can recommend a minimum of two representative alternatives or a representative corridor for further study, but can't conclude with a preferred alternative. This study will conclude in a final feasibility study report that documents the analysis completed and can be used to initiate the environmental process for a project.

Environmental Resources: Any resource within the human and natural environment that has the potential to be modified, or impacted temporarily or permanently due to a potential project. Several examples of these types of resources are wetlands, streams, parks, floodplains, woodlands, archaeological and architectural sites of potential significance threatened and endangered species, potential hazardous material sites, etc.

Project Study Area: The Project Study Area is the area within which field data is collected to identify all known environmental resources. This area is established early in the development process and must be established large enough to encompass all potential conceptual project alternatives. For example if a bypass of a community is being considered, the project study area may (but is not required to) encompass an area through the community as well as an area bypassing the community since a final decision as to potential project alternatives has not been made early in the development process.

Potential Impact Area: An area identified for each preliminary alternative that evaluates potential impacts to environmental resources that were identified within the larger "Project Study Area". The size and accuracy of this area varies depending on the stage of development which will be discussed in further detail below.

Processes:

Responsibilities

If the project warrants a formal Concurrence Point Process (reference O.L.E. Policy # 09A020) by virtue of being classified as an Environmental Assessment (EA) or Environmental Impact Statement (EIS) or requiring an individual 404 permit, the project will be assigned to a Location Section project manager. It is the responsibility of the OLE project manager to manage the preliminary alternatives development in coordination with the Concurrence Process coordinator within the Office of Location and Environment.

Identifying The Desktop Review Area

Collection of environmental data will typically occur in two stages. The first stage of environmental data collection will involve collection of “desktop data” identifying any known or anticipated environmental constraints within a Desktop Review Area.

To begin this effort, the Location section (O.L.E.) project manager will delineate a Desktop Review Area. This delineation will include an extraordinarily wide area in the vicinity of the proposed project. This area will then be communicated to the Office Project Advisory Team (PAT). The PAT members will collect and provide readily available desktop data for any known or anticipated environmental constraints within the Desktop Review Area to allow the Location Section to further refine this area and develop a Project Study Area.

Identifying The Project Study Area

The collection of desktop data will allow the Location Section lead to begin development of preliminary alternatives that consider and avoid (or minimize) impacts to known or anticipated environmental resources. The development of these preliminary alternatives usually includes (but is not limited to) the delineation of several horizontal alignments that bound a range of alternatives that initially appear to meet the project purpose and need. Sound engineering judgment will be used to develop an adequate range of preliminary alternatives to aid in delineating a project study area that will bound future project development. Once an adequate Range of horizontal alignments has been developed a Project Study Area can be delineated and vetted with the PAT, PMT, and management.

A project study area is typically delineated by an area 500-1,500 feet beyond the outer edge of pavement for the various horizontal alignments, is typically considered the worst case scenarios for both mainline and side-roads, and is a recommended first cut for review by the PAT, PMT, and management. Once approved, this study area should not change since each change incurs cost and schedule impacts once field studies have begun. Time should be taken at the beginning of project development to adequately develop the range of potential project alternatives to delineate a generous yet reasonable project study area. Once the Project Study Area has been delineated and vetted, field data collection may begin.

Review and Approval

Prior to commencement of field studies, the project study area must be:

1. Vetted with the PAT and the PMT
2. Reviewed with the supervisor for the Location Section within O.L.E..

Identifying Potential Impact Area(s)

The Office of Location and Environment is involved at various stages within the project development process to begin the environmental process. Most often the Office is involved early in the planning stages prior to any substantial project development, but occasionally the environmental process begins after significant

project planning and/or conceptualization has occurred. An example of this would be when a feasibility study is completed prior to any environmental work being completed or when the project is initiated through another office. If another office initiates project development, that office is responsible for providing the project study area and potential impact areas for preliminary alternatives being considered under NEPA and the Concurrence Point Process.

Regardless of which office initiates project development, if the project warrants a formal Concurrence Point Process by virtue of being classified as EA, EIS, or if it requires an individual 404 permit, the project will be assigned to a Location Section project Lead within O.L.E. It is the responsibility of the Location Section lead to manage the alternative development in coordination with the O.L.E. Environmental Concurrence Coordinator (ECC) through the concurrence Point Process to determine which alternatives should be carried forward for evaluation at the respective Concurrence Point Event.

Identification and quantification of potential project impacts can occur at various stages of refinement during the project development process. As such, it is necessary to calculate impacts that will vary in levels of accuracy, types of project, and at stages in the development process while allowing flexibility for further design refinement to occur without incurring additional impacts to environmental resources. In all cases the project study area and potential impact area(s) should be identified and vetted with both the Project Management Team (PMT) and Project Advisory Team (PAT). If adjustments are needed to either expand or reduce a project study area or potential impact area, this guidance is intended to be flexible and allow such adjustment. This would include adjustments to show avoidance of environmental resources that will be avoided under most circumstances such as historic properties, cemeteries, etc.

Review and Approval

For projects classified as an EA or EIS, prior to the potential impact areas being used to quantify impacts at milestone events, the potential impact areas for the various alternatives must be:

1. Vetted with the PAT and the PMT.
2. Vetted with the Design Section Engineer who will be responsible for further development after the environmental process has concluded.
3. Reviewed with the supervisor of the Location Section within O.L.E..

When vertical data IS NOT available or unable to be used

Occasionally it may be necessary to delineate and quantify potential project impact areas without the application of vertical data. Some instances where this may be the case are as follows:

1. In the earlier stages of project development such as prior to NEPA classification or in some cases up to Concurrence Point 2, vertical information in the form of LIDAR or other photogrammetric data may not yet be available.
2. In some cases where there is potential for no environmental impacts or only minor environmental impacts such as the case when a project is classified as a categorical exclusion(CE), the project may be evaluated and cleared early in the project development process prior to availability of vertical design or application.
3. It may also be the case that the sheer number of alternatives under consideration is too large to consider application of vertical alignment without review and reduction in the number of alternatives prior to application of vertical geometry to the design.

In these cases, the potential impact area for each alternative under consideration will typically be delineated as follows:

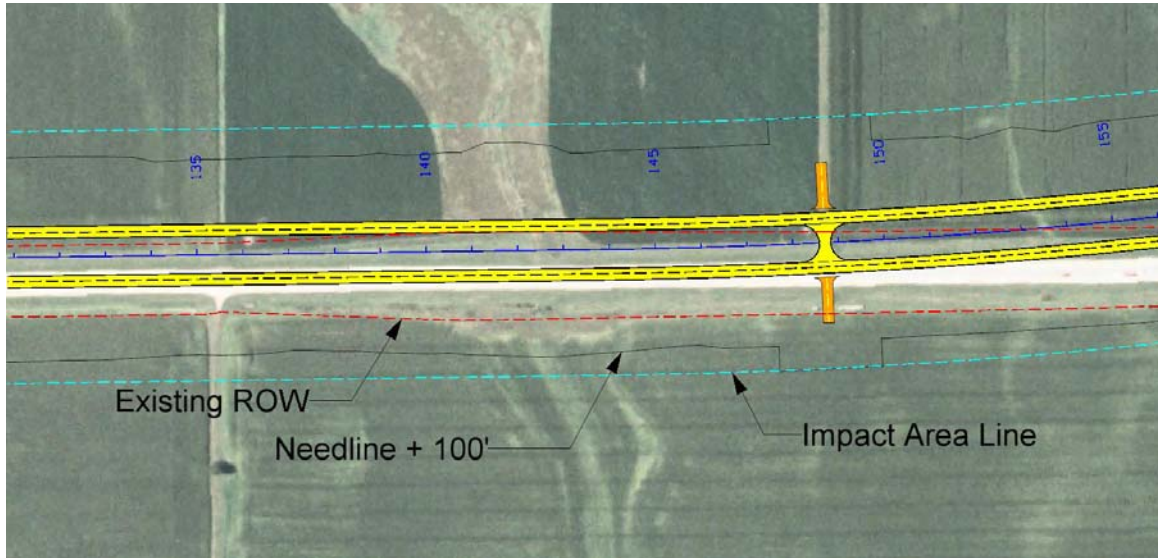
- In flat terrain, the potential impact area will be delineated by extending the outside edge of pavement on each side along mainline and side-roads by 200' and adding additional coverage as appropriate at side-roads, entrances, ramps and tapers if needed and adjusting as necessary and appropriate to avoid impacts to sensitive environmental areas.
- In rolling terrain, the potential impact area will be delineated by extending the outside edge of pavement on each side along mainline and side-roads by 300' and adding additional coverage as appropriate at side-roads, entrances, ramps and tapers if needed and adjusting as necessary and appropriate to avoid impacts to sensitive environmental areas.

When vertical data IS available

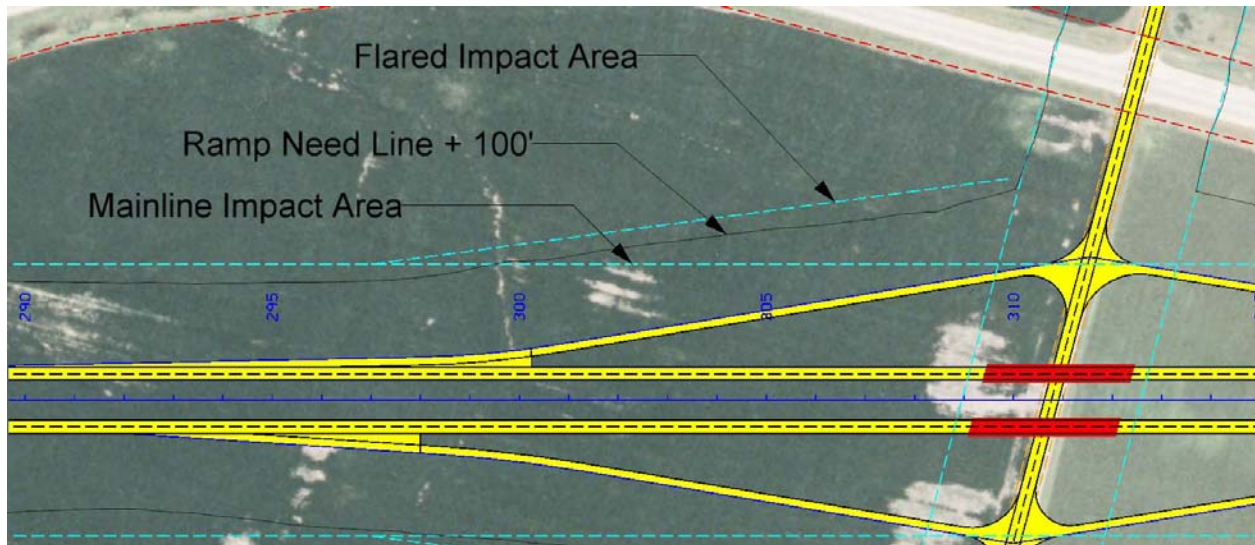
With the availability of LIDAR data, vertical data is often available in the earliest stages of development. When vertical geometry has been applied to the preliminary alternative(s) and data in the form of LIDAR or other photogrammetric is available, the O.L.E. project manager will delineate a potential impact area for each viable preliminary alternative so that the potential environmental impacts associated with each alternative can be evaluated. To delineate a potential impact area, it will be necessary to:

1. Identify the approximate impact area
 - a. Acquire all approximate need lines for the project including
 - i. Mainline
 - ii. Side-roads
 - iii. Ramps & Loops
 - iv. Entrances
 - v. Borrow sites (if available)
2. Copy these initial need lines parallel an offset distance away from centerline to accommodate future ditching, benching, etc. This initial offset or “buffer” distance will be somewhat dependant on the terrain in the area and the stage of development of the project design. Judgment should be used in determining the appropriate buffer distance, but general guidance is outlined below. The need lines with the addition of the buffer distance will help delineate an approximate impact area.
 - a. The following buffer distances should be used as a starting point (adjusted as necessary) at the different points in time throughout the development of the project.
 - i. Concurrence Points 1-4, P0, & D0-D2 – 100 feet
 - ii. D5 Plans to ROW – 25-50 feet
3. In the earlier stages of development (such as through events CP1-4, D0, & P0), design judgment should be used to “smooth” the approximate impact area. The need lines will fluctuate back and forth as proportionate to the terrain & profile in the area. It is desirable to smooth this area to more accurately represent what may actually be impacted by highway improvements after future development and design. In the later stages of development (such as D2-D5) judgment should be used to determine if it is necessary to smooth the approximate impact area. To “smooth” the approximate impact area:

- a. Find the offset distances on mainline and side roads that encompass the approximate impact area and use this distance to further refine or “smooth” the impact area.
- b. In the example below, the adjusted need lines (original need lines + 100’) were offset from centerline between 225’ to 275’. A constant offset of 275’ was used for the refined needs line.

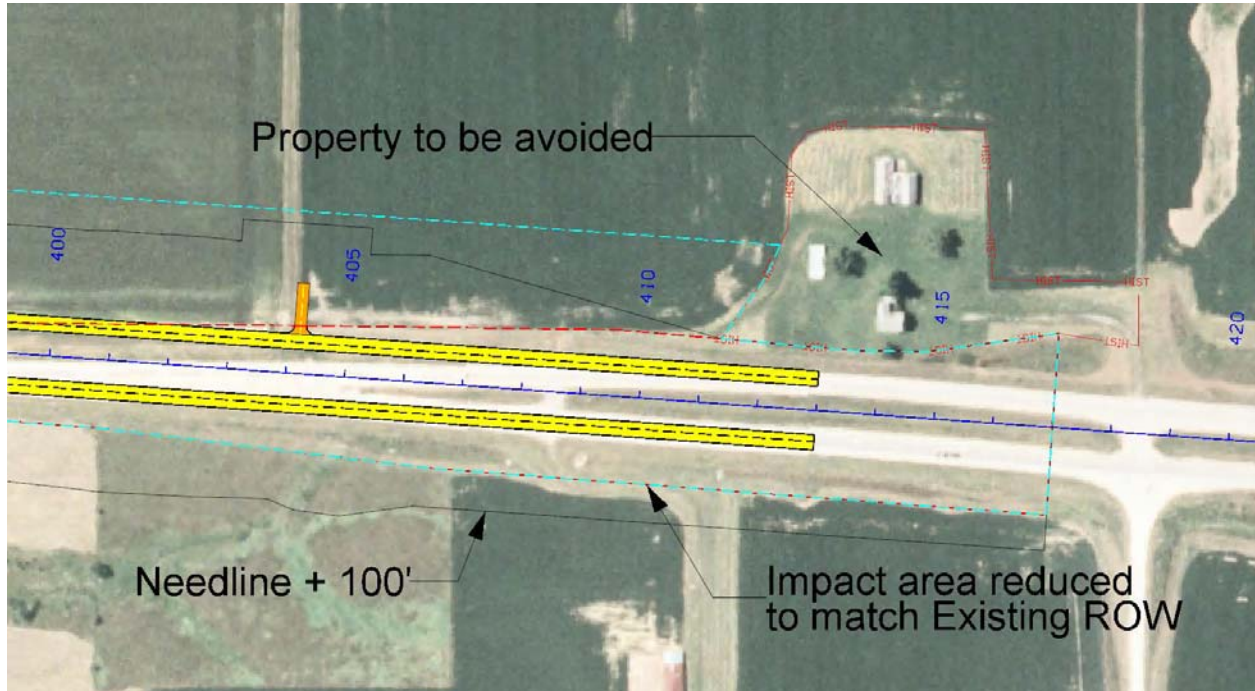


- c. At interchanges, flare out the impact line to accommodate the adjusted need lines at the ramps.



4. Modify sensitive areas as needed.

Occasionally there will be environmentally sensitive areas or parcels that require total avoidance or efforts to minimize impacts to the property. In those cases, it is the responsibility of the design team to first ensure that the existing ROW can be maintained and the area can be avoided and then to exclude that area from the potential impact area noting this area in the Microstation .OLE file (reference O.L.E. Policy 07B021) as an area to be avoided.



5. Modify the impact area to include any existing ROW within the project area that may be disturbed. Natural resources within the existing ROW (if they are anticipated to be disturbed with construction) must be included as potential impacts. In some cases (such as in the case of a complete re-alignment) it may be necessary to assume that the entire existing ROW (in addition to the proposed new ROW) is disturbed due to tie-in's, requirements for transfer of jurisdiction, etc.
6. Review the adjusted impact area in depth with the Office of Design Section Engineer that will be further developing the project once it passes from O.L.E. to the Office of Design. The intent is to ensure agreement that the adjusted impact area gives reasonable flexibility for further design refinement. After this review, adjust the impact area as necessary to provide flexibility for future design.
7. Review the adjusted impact area with both the PAT, PMT, and the supervisor of the Location Section within O.L.E. and make any further adjustments deemed necessary.

8. Create a closed shape from the impact area line work (example at right). Multiple shapes may be used if there are non-contiguous impact areas. This shape(s) will be used to calculate potential impacts for each of the alternatives. An example table depicting potential impact calculations is below. Refer to Office Policy 09A020 for further information regarding the CP process.

	No Build	Alternative A	Alternative B	Alternative E	Alternative F
Environmental					
Cultural Resources	0	3 sites/2.8 acres	4 sites/5.7 acres	8 sites/8.9 acres	7 sites/3.2 acres
Floodplains (acres)	0	7.6	6.7	7.4	7.4
Praires (acres)	0	0	0	0	0
Recreational Areas	0	0	0	0	0
Refuge Areas	0	0	0	0	0
Regulated Materials	0	5 parcels (a)	7 parcels(a)	6 parcels	4 parcels
Sovereign Lands (acres)	0	0	0	0	0
Special rivers	0	0	0	0	0
Streams (feet)	0	8935	10409	10675	10244
T&E, Wildlife, Plant	0	0	0	0	0
Unique Land Forms (acres)	0	0	0	0	0
Wetlands (acres)	0	9.0	7.1	7.1	7.9
Total Woodlands (acres)	0	36.3	34.8	50.7	54.5
Properties					
Businesses	0	0	0	0	0
Churches/Cemeteries	0	0	0.22 (b)	0.22 (b)	0
Farmland (acres)	0	395	405	457	424
Homes	0	10	10(c)	6(c)	8(c)

