

FARM AND CATCHMENT LEVEL ASSESSMENTS

Water risk assessment indicators



A. KNOWLEDGE INDICATORS

How to score:

For each indicator (except A1), select the single score that best represents the situation.

For A1, add up the total of each score that applies (to give 1, 2, 3 or 4)

Principal: Higher level of knowledge gives a higher score

Indicators A1 to A16

Indicator	A1	Farm characteristics	
Description		Describing the basic characteristics	
Relevance		To put farm and basic water availability into perspective	
Risk category		General	
Scoring			Score
	a	Location (eg. town, region and country)	1
	b	GPS coordinates	1
	d	Surface area	1
	f	Average annual rainfall	1
Circle each score that applies and enter sum here			<input type="text"/>

Indicator	A2	River basin / catchment	
Description		The river basin/catchment or sub-catchment in which the farm is located.	
Relevance		The most important context for understanding the interaction between the farm and its surrounding environment	
Risk category		Risks TO and FROM farm	
Scoring			Score
	a	Not known	0
	b	Nearest river / water course is known	1
	c	The general catchment is known, but not mapped	2
	d	The boundary of the catchment (of appropriate size) is drawn on a map, also showing the farm.	3
Circle one score that applies and enter value here			<input type="text"/>

Indicator	A3	Total water use	
Description		Total annual water use, for all uses, where water is supplied or abstracted from water sources	
Relevance		Understanding needs and scale of water use	
Risk category		Risks TO and FROM farm	
Scoring			Score
	a	Not known	0
	b	Estimated	1
	c	Accurately measured annual total	2
	d	Accurately measured monthly or seasonal totals	3
	e	Accurately measured daily totals	4
Circle one score that applies and enter value here			<input type="text"/>

KNOWLEDGE INDICATORS continued

Indicator	A4	Water sources	
Description		All sources of water used by the farm including wells, surface water bodies, municipal supply, collected rainfall, etc	
Relevance		Fundamental. Each source may have different risks.	
Risk category		Risks TO and FROM farm	
Scoring			Score
	a	No assessment made	0
	c	All sources are known	1
	d	All sources are marked on a map	2
	e	As 'd' and volumes abstracted from each source are known	3
	g	As 'd' and 'e' and detailed construction of each source is known	4
Circle one score that applies and enter value here			<input type="text"/>

Indicator	A5	Mapping of water use	
Description		How much water is used for each purpose on the farm (eg. irrigation, for livestock, food processing, washing, for employees)	
Relevance		Understanding needs. Identifying inefficiencies.	
Risk category		Risks TO and FROM farm	
Scoring			Score
	a	No assessment made	0
	b	Different water uses are identified (eg. irrigation, washing, livestock use, etc)	1
	c	Annual water use for each purpose is estimated	2
	d	Annual water use for each purpose is measured	3
	e	Monthly water use for each purpose is measured	4
	f	Daily water use for each purpose is measured	5
Circle one score that applies and enter value here			<input type="text"/>

Indicator	A6	Water treatments	
Description		Treatments to make incoming raw water safe and suitable for its intended use (high quality is needed for uses such as drinking and food processing).	
Relevance		Understanding quality needs	
Risk category		Risks TO farm water quality	
Scoring			Score
	a	No assessment or knowledge of treatments	0
	b	Treatments are known, but their effectiveness for meeting requirements of intended use is not assessed	1
	c	Treatments are known, and known to achieve the quality required for intended use	2
	e	No water treatment is applied or required	3
Circle one score that applies and enter value here			<input type="text"/>

Indicator	A7	Water storage	
Description		Facilities for collection and/or storage of water. Can include collection of rainwater.	
Relevance		Understanding resilience to variable water supply rate and/or periods of water failure or scarcity	
Risk category		Risks TO farm	
Scoring			Score
	a	No assessment	0
	b	Water storage facilities are known	1
	c	As 'b' and volumes of water storage facilities are known	2
	d	As 'c' and the buffer capacity of storage facilities is known (eg. how many hours or days of normal use).	3
	e	No water storage is required	4
Circle one score that applies and enter value here			<input type="text"/>

KNOWLEDGE INDICATORS continued

Indicator	A8	Wastewater (controlled and regulated discharges)	
Description		Controlled discharges of water and wastewater (eg. discharges to public sewer, or regulated discharges to the environment complying with quality standards.)	
Relevance		Poorly managed wastewater can pollute water bodies.	
Risk category		Risks FROM farm	
Scoring			Score
	a	No assessment	0
	b	Points of wastewater discharge are known	1
	c	Volumes of wastewater discharge are known, but not quality	2
	d	Volumes and quality of wastewater are known (after treatment if applicable)	3
Circle one score that applies and enter value here			<input type="text"/>

Indicator	A9	Uncontrolled discharges, run-off or seepages	
Description		Flows of water from the farm, continuous or intermittent, such as run-off from paved or livestock areas, or fields (where flows and quality are not controlled)	
Relevance		Poorly managed run-off/discharges can pollute water bodies	
Risk category		Risks FROM farm	
Scoring			Score
	a	No assessment	0
	b	Locations of discharges/run-off/seepage are known	1
	c	Origin of discharges/run-off/seepage are known (eg. livestock waste, manure application, soil preparation, etc)	2
	d	Volumes of discharge known (at least approximately), but not quality	3
	e	Volumes and quality of discharges known (eg. sediment and/or nutrient load)	4
	f	Assessment shows there are no significant uncontrolled discharges	5
Circle one score that applies and enter value here			<input type="text"/>

Indicator	A10	Regulators	
Description		Organisations which regulate and licence water and/or wastewater and environmental impact	
Relevance		Good relations and compliance are important for maintaining a reliable water supply and trust	
Risk category		Risks TO farm	
Scoring			Score
	a	No active identification of regulators, only reacting to communications	0
	b	Some regulators actively identified and engaged	1
	c	All relevant regulators identified and engaged	2
	d	Formal contact with each regulator at least yearly	3
Circle one score that applies and enter value here			<input type="text"/>

KNOWLEDGE INDICATORS continued

Indicator	A11 Permits	
Description	Official permits or licences for water abstraction and wastewater discharge. Often they include conditions such as volume or quality limits.	
Relevance	Compliance and awareness of conditions are important for maintaining reliable water supply	
Risk category	Risks TO farm. Breaches may be a risk to others (Risks FROM farm).	
Scoring		Score
	a No active management of permits/licences	0
	b Permits/licences for water abstraction are known and managed	1
	b Permits/licences for water abstraction and controlled discharges (eg. wastewater) are known and managed	2
	d No permits or licences are held or required	2
Circle one score that applies and enter value here		<input type="text"/>

Indicator	A12 Other water users in the catchment	
Description	Identify other water users (eg. farmers, isolated homes) in the defined catchment (as for Indicator A2) including water-dependent environmental features (eg. rivers, wetlands, ponds, etc)	
Relevance	Understanding needs of others with a right to water, their potential impact on the farm's water supply and/or impact of farm water use on them.	
Risk category	Risks TO and FROM farm	
Scoring		Score
	a No knowledge or assessment	0
	b Some or main water users are known	1
	b All water users or user groups are known (stakeholders)	2
	c Study completed to identify all water users and their needs	3
	d Assessment shows no other water users or water-dependent environmental features	3
Circle one score that applies and enter value here		<input type="text"/>

Indicator	A13 Land use across defined river basin/catchment	
Description	Land use can have an impact on water flows and pollution. Land use includes natural (eg. forest, grassland, wilderness) and manmade eg. (agriculture, urban, industry)	
Relevance	Land use can influence water quality and availability, and flood risk. (eg. water can be polluted by industry, irresponsible use of fertilisers/pesticides. Run-ff can be increased by loss of forest or hard/paved surfaces, such as roads, car parking, etc)	
Risk category	Risks TO farm	
Scoring		Score
	a No assessment	0
	b Knowledge of the principal types of land use	1
	b Land use is assessed and mapped	2
	c Polluting and potentially polluting activities are identified and mapped.	3
Circle one score that applies and enter value here		<input type="text"/>

KNOWLEDGE INDICATORS continued

Indicator	A14 Irrigation scheduling	
Description	Where irrigation is used, deciding when and how much water to apply to crops. Water needs depend on crop type, its stage of growth and the weather.	
Relevance	Poor scheduling can result in underwatering, overwatering, wastage of water and fertilisers and associated costs. Good scheduling optimises crop health and production, and reduces costs.	
Risk category	Risks TO and FROM farm	
Scoring		Score
	a No scheduling. Irrigation is applied at fixed times and rates with no adjustment for conditions or need.	0
	b Scheduling based on human visual observation of plant condition and weather.	1
	c Water budget approach. Water needs are estimated, based on forecast weather conditions	2
	d Soil moisture is directly measured to determine irrigation needs. (various methods: tensiometer, gravimetric soil sample, electrical resistance block)	3
	e Not applicable (irrigation not used)	3
Circle one score that applies and enter value here		<input type="text"/>

Indicator	A15 Mapping water flows	
Description	An assessment of the water volumes that enter and leave the farm and are stored on the farm. These should add up mathematically (at least approximately).	
Relevance	Understanding water needs, possible inefficiencies, and to demonstrate volumes are accurately assessed.	
Risk category	General	
Scoring		Score
	a No assessment	0
	b All relevant flows are known (not quantified, but already a first step to eventually implement monitoring)	1
	c Relevant flows are known and quantified	2
	d The annual water balance of main flows is assessed	3
	e Seasonal water balances are assessed	4
Circle one score that applies and enter value here		<input type="text"/>

Indicator	A16 Water balance of the catchment	
Description	Advanced process requiring specialist support. An assessment of the water volumes that enter and leave the defined catchment, including the farm. These should add up mathematically (at least approximately). Includes rainfall, evapotranspiration, river flows, groundwater flows, water abstractions and discharges.	
Relevance	Understanding the scale and significance of water use by the farm compared to other water uses and natural flows.	
Risk category	General	
Scoring		Score
	a No assessment	0
	b All relevant flows are known (not quantified, but already a first step to eventually implement monitoring)	1
	c Relevant flows are known and quantified	2
	d The annual water balance of main flows is assessed	3
	e Seasonal water balances are assessed	4
Circle one score that applies and enter value here		<input type="text"/>